ICREA**MEMOIR2023**

Antonio Acín Dal Maschio
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Antonio Acín is an ICREA Research Professor at ICFO-The Institute of Photonic Sciences. He has a degree in Physics from the Universitat de Barcelona (UB) and in Telecommunication Engineering from the Universitat Politècnica de Catalunya. He got his PhD in Theoretical Physics in 2001 from the UB. After a post-doctoral stay in Geneva, in the group of Prof. Gisin (GAP-Optique), he joined ICFO in 2003. At ICFO, Acín leads the Quantum Information Theory group. His research has been awarded with 4 grants from the European Research Council: 1 Starting, 1 Proof of Concept, 1 Consolidator and 1 Advanced Grant, the latter starting in 2020. He also received an AXA Chair in Quantum Information Science in 2016.

Research interests

Acín's main research interest is in quantum information theory. This is a scientific area that studies how information is processed and transmitted when encoded on quantum particles. Using quantum effects, new information tasks become possible: more powerful computers, novel cryptographic protocols with unprucedented levels of security or more precise sensing devices. It is a highly inter-disciplinary area combining tools and concepts from mathematics, computer science, physics and engineering. Acín's research activity also covers aspects of foundations of quantum physics, quantum thermodynamics, many-body physics and quantum optics.

Selected publications

– Supic I, Bowles J, Renou M-O, **Acin A** & Hoban MJ 2023, 'Quantum networks self-test all entangled states', *Nature Physics*, 19, 670–675.
– Senno G, Strohm T & **Acin A** 2023, 'Quantifying the intrinsic randomness of quantum measurements', Phys. Rev. Lett. 131, 130202.
– Lukanowski K, Balanzo-Juando M, Farkas M, **Acin A &** Kolodynski J 2023 'Upper bounds on key rates in device-independent quantum key distribution based on convex-combination attacks', *Quantum*, 7.
– De Santis D, Farina D, Mehboudi M & **Acin A** 2023, 'Ancillary Gaussian modes activate the potential to witness non-Markovianity', *New Journal Of Physics*, 25, 023025.

ICREA**MEMOIR2023**

Jordi Agustí Ballester

Institut Català de Paleoecologia Humana i Evolució Social (IPHES)
Humanities

PhD in Biological Sciences by the Univ. of Barcelona in 1981. Director of the Inst. of Paleontology M. Crusafont from 1985 to 2005. ICREA Research Professor at IPHES since 2005. Member of the Royal Academy of Sciences and Arts of Barcelona. Narcís Monturiol Medal of the Generalitat de Catalunya for his scientific merits. Scientific Literature Prize of the Generalitat de Catalunya (2001). President of the Regional Committee on Neogene Mediterranean Stratigraphy from 1999 to 2009 and voting member of the Subcomission on Neogene Stratigraphy (IUGS, UNESCO). He is author or co-author of 151 papers published in indexed journals (WOS), among them Nature (4), Science (1) and Proceedings of the National Academy of Sciences USA (3), as well as 162 papers in non-indexed Spanish and international journals. He is author or co-author of 52 book chapters. He has edited 14 books or monographs and written 16 books. He has directed 14 PhD thesis and 9 Master thesis. H-Index (WOS):41,

Research interests

My main field of interest is the environmental and biogeographic changes in the Mediterranean terrestrial ecosystems in the last 10 milion years. I accomplish this goal throughout the study of the fossils of small mammals. This key time includes a number of critical climatic phases, such as the onset of the Northern Hemisphere Glaciation at 2.6 Ma, the early Pleistocene crisis at 1.8 Ma and the early-middle Pleistocene transition at 0.8 Ma. These crises have modelled the evolution of our own lineage, the hominids, which experienced significant changes following these climatic events. My research has therefore been developed in those areas having extraordinary conditions to follow these changes, either in the Iberian Peninsula (Vallès-Penedès and Guadix-Baza basins) or outside (northern Africa and, most specially, Georgia). Most of these areas are also key ones in order to elucidate the evolution of our lineage during the last 10 Ma, in relation with climatic and environmental changes.

Selected publications

- Lordkipanidze D, **Agustí J** & Rook L 2023, 'The biotic context of the Early Pleistocene hominins from Dmanisi (Georgia, southern Caucasus)', *Journal of Human Evolution, 174,* 103278.

- **Agusti J** et al. 2023, 'Guefait-1 (eastern Morocco), a new stage in the evolution of the late Miocene (Vallesian) small mammalian faunas of Northern Africa', *Historical Biology*, 35, 1637–1655.
- **Agusti J** & Pinero P 2023, 'Evidence for parallel development of ever-growing molars in Early Pleistocene rodents from southern Spain and their paleoenvironmental implications', *Acta Palaeontologica Polonica*, 68, 2, 379 - 391.
- Quintana Cardona J & **Agusti J** 2023, Dental variation in *Hypnomys mahonensis* Bate, 1918 (Gliridae, Rodentia, Mammalia) from the newly rediscovered type-locality of Punta Esquitxador 17 (Menorca, Balearic Islands, Western Mediterranean), *Historical Biology,* 35, 721–733.
- Sánchez-Bandera C et al. 2023. 'Glacial/interglacial climate variability in southern Spain during the late Early Pleistocene and climate backdrop for early Homo in Europe'. *Palaeogeography, Palaeoclimatology, Palaeoecology* 625, 111688.
- Pandolfi L, Sorbelli L, Oms O, Rodriguez-Salgado P, Campeny G, Gómez de Soler B, Grandi F, **Agustí J** & Madurell-Malapeira J 2023, 'The *Tapirus* from Camp dels Ninots (NE Iberia): implications for morphology, morphometry and phylogeny of Neogene Tapiridae', *Journal of Systematic Palaeontology,* 21, 2250117.
- Martínez-Monzón A, Přikryl T, Sánchez-Bandera C, Bisbal-Chinesta JF, **Agustí J**, Vall-Llosera GC, Gómez de Soler B & Blain HA 2023, 'Inferring eco-climate parameters for the Pliocene Climate Optimum using frog body size as a new proxy' *Lethaia,* 56, 1–12.
- Yravedra Sainz de los Terreros J et al. 2023, 'To den or not to den. Contributions to the taphonomic history of the Early Pleistocene site of Venta Micena 4 (Orce, Guadix-Baza Basin)'. *Quaternary Science Reviews* 308, 108031.

ICREA**MEMOIR2023**

Tomás Alarcón
Centre de Recerca Matemàtica (CRM)
Experimental Sciences & Mathematics

I obtained my PhD in Theoretical Physics from the University of Barcelona in 2000. After that I spent many wonderful years working as a postdoc at the University of Oxford, UK (2001-2003), University College London, UK (2003-2006), and Imperial College London, UK (2006-2009). I briefly held a senior researcher and group leader position at BCAM, Bilbao, Spain (2009-2010), after which I moved the Centre Recerca Matematica where I lead the Cancer Modelling Group. I have also held visiting fellowships at the Universidad Complutense de Madrid, IIMAS (UNAM, Mexico DF), OCCAM (University of Oxford, UK), the Mathematical Institute (University of Oxford, UK), and the Mathematical Biosciences Institute (Columbus, Ohio, USA). In October 2015, I was appointed to an ICREA Research Professorship at the Centre de Recerca Matematica.

Research interests

My research focuses on Mathematical Biology, particularly in multi-scale and stochastic modelling of tumour growth and tumour-induced angiogenesis. The main aim of my research is to understand the mechanisms involved in drug resistance and formulate therapeutic strategies which are robust to such mechanisms. Although tumour growth is my main field of specialisation, I am interested in other areas of Mathematical Biology, particularly regarding cell reprogramming in cancer, senescence and ageing, tumour-induced angiogenesis, and epigenetic regulation.

Selected publications

- Carrasco-Mantis A, **Alarcon T** & Sanz-Herrera JA 2023, 'An in silico study on the influence of extracellular matrix mechanics on vasculogenesis', *Computer Methods And Programs In Biomedicine*, 231, 107369.

Selected research activities

Co-organiser (jointly with Guillermo Abramson, Centro Atomico de Bariloche (Argentina), and Sarah AM Loos, University of Cambridge (UK)) of the workshop ***Modelling non-Markov Movement Processes***, November 2023, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK

Co-organiser (jointly with Juan Calvo, David Poyato, y Juan Soler, Universidad de Granada (Spain)) of the MNAT-CRM summer school ***Biomat 2023: Multiscale Methods at the Frontier Between Data and Mathematical Models***, June 2023, Centre de Recerca Matematica, Barcelona

ICREA**MEMOIR2023**

M. Mar Albà Soler

Institut Hospital del Mar d'Investigacions Mèdiques (IMIM)
Life & Medical Sciences

Mar Albà graduated in Biological Sciences at the University of Barcelona (UB), and obtained her PhD at the same University in 1997. During 1997-1999 she studied for the MSc in Bioinformatics and Molecular Modeling at Birkbeck College while working as a postdoctoral researcher in the group of John Hancock at the MRC Clinical Research Centre, in London. Later she joined the group led by Paul Kellam at University College London to develop new computational tools to study herpesvirus evolution and function. She was awarded a Ramón y Cajal tenure track position in 2002 to work at Universitat Pompeu Fabra (UPF). In 2005 she was appointed ICREA Research Professor. She works at the Hospital del Mar Medical Research Institute (IMIM) and has taught bioinformatics at Universitat Pompeu Fabra for 20 years. She has directed 11 doctoral thesis and is author of more than 100 publications.

Research interests

As a result of a continuous process of gene birth and death, the genomes from different species contain different sets of genes. Some of these genes encode new functional proteins and facilitate the adaptation of the organism to a changing environment. Some new genes originate by gene duplication, but others emerge *de novo* from previously non-coding genomic sequences. We study the different mechanisms of gene birth using a combination of comparative genomics, high throughput RNA sequencing (RNA-Seq) and ribosome profiling data (Ribo-Seq). We have shown that transcription and translation are pervasive and result in many putative precursors of novel proteins. We are aiming at a quantitative and qualitative description of the still poorly understood process of *de novo* gene formation.

Selected publications

- Montañés JC, Huertas M, Messeguer X & **Albà MM** 2023, 'Evolutionary trajectories of new duplicated and putative de novo genes'. *Molecular Biology and Evolution,* 40(5):msad098.
- Boll LM, Perera-Bel J, Rodriguez-Vida A, Arpí O, Rovira A, Juanpere N, Vázquez Montes de Oca S, Hernández-Llodrà S, Lloreta J, **Albà MM*** & Bellmunt J* 2023. 'The impact of mutational clonality in predicting the response to immune checkpoint inhibitors in advanced urothelial cancer'. *Scientific Reports* 13, 1, 15287 - 15287. * co-corresponding.
- Gröger A, Martínez-Albo I, **Albà MM**, Ayté J, Vega M & Hidalgo E 2023, 'Comparing mitochondrial activity, oxidative stress tolerance, and longevity of thirteen Ascomycota yeast species', *Antioxidants* 12, 10, 1810.

Selected research activities

Seminars at University College London (March 29), Max Planck Institute for Biology Tübingen (May 26), Institute Curie Paris (September 8) and Université Strasbourg (October 20). Co-organization of the conference Microproteins 2021 at Helsingor Denmark (May 31- June 2).

ICREA**MEMOIR2023**

Anna Alberni Jordà
Universitat de Barcelona (UB)
Humanities

I studied English Philology at the University of Barcelona and obtained my PhD in Catalan Philology in 2003 at the same University. I have been a researcher and assistant lecturer at the University of Barcelona (1996-2000) and at the University of Girona (2005-2009). From 2003 to 2005 I was a postdoc researcher at the University of Rome-La Sapienza and at the University of L'Aquila. In 2005 I accepted an ICREA Junior position at the University of Girona, and in 2009 I moved to the University of Barcelona, where I am ICREA Research Professor at the Department of Linguistics and Catalan Philology–IRCVM. I have been the PI of two ERC projects: The Last Song of the Troubadours. Linguistic Codification and Construction of a Literary Canon in the Crown of Aragon (ERC-StG-2008, No. 240170), and Ioculator seu Mimus. Performing Music and Poetry in Medieval Iberia (ERC-CoG-2017, No. 772762).

Research interests

My research explores the Catalan lyric tradition within medieval Romance poetry, revealing its significance in European cultural history. I am interested in poetic genres, intertextuality, discursive traditions, and textual criticism. The study of a 15th-century songbook containing troubadour works, lyrical and narrative texts by Catalan poets, and a 14th-century French poetry anthology, led me to delve deeper into how the troubadours' poetic language shaped our understanding of lyricism. I am currently developing the MiMus DB, a database that houses information from a vast corpus of archive documents related to artists involved in the musical life of the courts of the kings of the Crown of Aragon from the mid-13th to the mid-15th century. The MiMus DB reveals evidence that not only corroborates existing hypotheses about intertextual borrowings and allusions in medieval poetry but also allows researchers to gain new insights into the creation, dissemination and reception of texts.

Selected publications

- **Alberni A**, Cingolani SM, Fernàndez-Clot A, Sari S & Vela C 2023, *MiMus DB, Ministrers i Música a la Corona d'Aragó medieval*, Universitat de Barcelona. Database.
- **Alberni A**, Fedi B & Squillacioti P 2023, *Corpus TOC – Trattatistica occitano-catalana attorno a Las Leys d'Amors, (Opera del Vocabolario Italiano). Database.*

ICREA**MEMOIR2023**

Rosa María Albert Cristóbal
Universitat Autònoma de Barcelona (UAB)
Humanities

I am an archaeologist with a focus on Microarcheology, the study of the invisible record. I obtained my Ph.D. in 1999 at the UB, after three years of researching with Prof. S. Weiner at the Weizmann Institute of Science. During my doctoral studies, I paved the way for the use of quantitative and morphological phytolith analysis, which enabled me to shed fresh light on the use of fire by earlier populations. From 2005/to 13 I founded and directed GEPEG recognized as a Quality Research Group by Catalan Government. I have produced more than 135 contributions and managed more than 20 research projects (80 SCI). Since 2018, I am a co-director of the TerrACE European Advanced Research Grant, to study the use of agricultural terraces. Since the 1st of December, I am based at the Dept. of Prehistory of the Autonomous University of Barcelona (UAB) where I moved after 20 years of conducting my research at the UB.

Research interests

My scientific interest lies in improving our understanding of the relationship between humans and plants from a long-term perspective. To do this, my research focuses on rebuilding the vegetation of human-occupied landscapes and understanding the human use of plants, including studying fire, agriculture, and grazing practices and their impact on the landscape. Methodologically, I apply a fine resolution multi-proxy analysis based on the identification of the mineralogical composition and microscopic content (not visible to the naked eye) of archaeological sediments, and closely related, to identify plant remains (phytoliths, starches, calcium oxalates), as well as other microremains of biological origin (diatoms, spicule sponges, chrysophytes, fecal spherulites). In recent years, I have also dedicated part of my time to developing digital platforms for database exchange to enhance the dissemination of microarchaeological research (www.PhytCore.org). As a Phytolith expert, I have been a member of the International Committee on Phytolith Nomenclature (ICPN) since 2014, which led in 2019, to the release of the ICPN 2.0 contribution to aid in naming and describing phytoliths.

Selected publications

– Brown AG, Fallu D, Cucchiaro S, Alonso M, **Albert RM**, Walsh K, Pears BR, Scaife R, Langdon C, Tarolli P, Cockroft D, Snape L, Lang A, Ascough P, Zhao P, Van Oost K & Waddington C 2023, 'Early to Middle Bronze Age Agricultural Terraces in North-easst England: morphology, dating, and cultural implications'. *Antiquity,* vol 97, 392, pp348-366

ICREAMEMOIR2023

Núria Aliaga-Alcalde
Institut de Ciència de Materials de Barcelona (CSIC - ICMAB)
Experimental Sciences & Mathematics

In 2003 I finished my PhD at Indiana University (USA) followed by two postdoctoral researches at the Max Planck Institut für Bioanorganische Chemie (MPI, Germany, 2003-2005) and at the University of Leiden (The Netherlands, 2005-2007), respectively. In 2007 I started as ICREA Research Fellow at the Department of Inorganic Chemistry of the University of Barcelona (UB) becoming ICREA Research Professor in September 2012 at the Institute of Materials Science of Barcelona (ICMAB-CSIC). I am group leader of the "Nanomaterials and Functional Surfaces" group since 2014 (FunNanoSurf, http://departments.icmab.es/funnanosurf/), which is part of the ICMAB's "Functional Surfaces and Interfaces" Research Unit, and also there, vice-coordinator of Research Line 4, "Tunable and Low-Cost Molecular Electronics". My research focuses on molecular-based materials, their nanostructuring and their applications in bulk, in solution, on surfaces and as active components in electronic devices and as sensors.

Research interests

My work focuses on the relevance of molecular design in Nanoscience and Nanotechnology, where multifunctional molecular platforms play key roles, providing homogeneous and tunable units with properties ready to be exploited at the nanoscale (such as sensors, switches, quantum computing materials or electronic elements). My goal is to generate molecules with electronic, magnetic and/or luminescent qualities and methodologies to efficiently attach and organise them on substrates (e.g. surfaces/devices). For this purpose, my group synthesises curcuminoids (CCMoids) and derivatives, which are deposited on graphene, Au and SiO2/Si, among others, analysing their behaviour. Our goal is optimal combinations [CCMoids+substrates] of high efficiency and robustness, low cost, that can lead to flexible and/or printable, biodegradable and easily recyclable/disposable systems, fostering a circular economy and promoting a sustainable management of molecular-based materials and their application.

Selected publications

- Alvarado HL, Limón D, Calpena-Campmany AC, Mallandrich M, Rodríguez-Cid L, **Aliaga-Alcalde N,** González-Campo A & Pérez-García L 2023, 'Intrinsic Permeation and Anti-Inflammatory Evaluation of Curcumin, Bisdemethoxycurcumin and Bisdemethylcurcumin by a Validated HPLC-UV Method', *International Journal Of Molecular Sciences*, 24, 7, 6640.

Selected research activities

PI of 1 ERC-PoC, "Launch of a universal sublimation technology for molecular transfer on SUBstrates (101138186, smolSUB)".

1 Spanish patent. Application number: P202230143 (Ref. Number: ES1641.1728, already published). European extension in progress.

Invited talk at the 16th European School of Molecular Nanoscience (ESMolNa2023): "Compilation of studies on curcuminoids on two/three-terminal devices and surfaces".

Invited lecture at the University of Barcelona, associated with the master's degree in organic-inorganic chemistry: "Curcuminoids: effective molecular platforms for the creation of sensors and electronic devices".

Participation with oral communications on Curcuminoids: III congrés AMIT-CAT-Dones en Nanociència i Nanotecnologia, XXXXIX Reunión Bienal de la Sociedad Española de Química and 2nd Conference on Advanced Materials in Spain.

Member of a thesis tribunal.

Participation in the biannual S3E Start (Southern European Entrepreneurship Engine 2023 training), which focuses on research teams and technology transfer officers, offering a hands-on training programme to hone their commercial skills and secure early funding for technology development.

Member of ICMAB talent-retention-attraction committee (https://icmab.es/about/organisation/committees/talent-retention-attraction-recruitment).

ICREA**MEMOIR2023**

Patrick Aloy Calaf
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Dr Patrick Aloy is an ICREA Research Professor and Principal Investigator of the Structural Systems Biology lab at the IRB. He has a BSc in Biochemistry and a MSc in Biotechnology from the Univ. Autònoma de Barcelona, Spain, and spent six years as postdoctoral researcher and staff scientist at the European Molecular Biology Laboratory, Heidelberg, Germany. For twenty years, Dr Aloy has been developing and implementing new technologies and algorithms, applying state-of-the-art methods to specific problems and bridging the gap between theoretical models and experiments in different disciplines. In the last years, he has pioneered system-scale analyses of macromolecular assemblies and networks using high-resolution three-dimensional structures, which has become a new discipline in structure prediction. Dr Aloy has over 150 publications in first-rate journals, with over 17,500 citations and remarkable press coverage, illustrating the scientific and social impact of the work.

Research interests

The main goal of his lab is to combine molecular, cell and computational biology to unveil the basic wiring architecture and dynamics of physio-pathological pathways to increase our understanding of how biological systems change from the healthy state to disease. In the last years he has been developing resources to process, harmonize and integrate bioactivity data on small molecules, providing compound bioactivity descriptors that push the similarity principle beyond chemical properties. Currently, the main research line in the lab is to collect heterogeneous datasets and develop novel methodologies to integrate different layers of regulation to unveil disease signatures. Moreover, they are convinced that artificial intelligence (AI) will transform drug discovery, as it is reshaping other areas of science and technology, and biological signatures are the key to guide the (semi) automated design of chemical compounds to globally revert disease states, beyond individual targets.

Selected publications

- Fernandez-Torras A, Locatelli M, Bertoni M & **Aloy P** 2023, 'BQsupports: systematic assessment of the support and novelty of new biomedical associations', *Bioinformatics*, 39, 9, btad581.
- Ünlü B, Pons C, Ho UL, Batté A, **Aloy P** & van Leeuwen J 2023, 'Global analysis of suppressor mutations that rescue human genetic defects', *Genome Medicine*, 15, 1, 78.
- Lobentanzer S, **Aloy P**, Baumbach J, et al. 2023, 'Democratizing knowledge representation with BioCypher', *Nature Biotechnology*, 41, 8, 1056-1059.
- Dan Y, Radic N, Gay M, et al. 2023, 'Characterization of p38α Signaling Networks in Cancer Cells Using Quantitative Proteomics and Phosphoproteomics', *Molecular & Cellular Proteomics*, 22(4), 100527.
- Kim DK, Weller B, Lin CW, et al. 2023, 'A proteome-scale map of the SARS-CoV-2-human contactome', *Nature Biotechnology*, 41(1):140-149.

Selected research activities

CRG-SCB Annual Symposium on Proteomics (Organizer). Barcelona, ES. Nov 2023

Karolinska Institutet Seminar Series (Invited Speaker). Stockholm, SE. Sep 2023.

BioMed Conference on Proximity-Inducing Pharmacology (Invited Speaker). Barcelona, ES. May 2023.

Conference on Precision Toxicology (Invited Speaker). Birmingham, UK. April 2023.

Systems Biology: Networks (Invited Speaker). Cold Spring Harbor Laboratory, US. March 2023.

ICREA**MEMOIR2023**

Ramón Álvarez Puebla
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics

Ramón Álvarez Puebla is an ICREA Research Professor at the Universitat Rovira i Virgili and the Center for Chemical Technology of Catalonia, both in Tarragona. He studied Chemistry at the Universidad de Navarra and got his PhD from the Universidad Pública de Navarra in Surface Science. In 2004 he joined the group of Ricardo Aroca at the University of Windsor (Canada) where he remained in a cross appointment with the General Motors Research and Development center until the end of 2005. In 2006, Dr Álvarez was promoted to Research Officer at the National Center for Nanotechnology (NINT) belonging to the National Research Council of Canada. In 2008 he moved to Spain at the Universidad de Vigo, Spain. He joined ICREA in October of 2012.

Research interests

Dr. Álvarez-Puebla is an expert in surface science and spectroscopy with emphasis on the fabrication and characterization of plasmonic particles and their integration into advanced "all optical" sensing devices for biomedicine, chemical biology and environmental monitoring. Currently he is interested in: - Design and development of plasmonic functional materials and their integration into real live "all optical" sensors. - Development of new technologies for pathogen/disease marker detection by using localized surface plasmon resonances, Raman and SERS. - In vivo intracellular monitoring and imaging of relevant cytoplasm metabolites under different conditions (health/disease). - Optical technologies for the ultrafast and ultrasensitive recognition of active compounds in combinatorial libraries.

Selected publications

- Negrin-Montecelo Y, Geneidy AHA, Govorov AO, **Alvarez-Puebla RA**, Besteiro LV & Correa-Duarte MA 2023, 'Balancing Near-Field Enhancement and Hot Carrier Injection: Plasmonic Photocatalysis in Energy-Transfer Cascade Assemblies', *Acs Photonics*, 10, 9, 3310-3320.
- Zorlu T, Correa-Duarte MA & **Alvarez-Puebla RA** 2023, 'Composite nanoparticle-metal-organic frameworks for SERS sensing', *Journal Of Chemical Physics*, 158, 17, 171001.
- Zorlu T, Becerril-Castro IB, Puertolas B, Giannini V, Correa-Duarte MA & **Alvarez-Puebla RA** 2023, 'Yolk-Shell Nanostars@Metal Organic Frameworks as Molecular Sieves for Optical Sensing and Catalysis', *Angewandte Chemie-international Edition*, 62(26):e202305299.
- Alvarez-Puebla RA 2023, *Chapter 7: Surface-enhanced Raman spectroscopy (SERS) in Springer Handbook of Advanced Catalyst Characterization,* Springer,
Invited Book Chapter.
- Brian Becerril-Castro I, Salgueiriño V, et al. 2023, 'Nano/Micromotor-Driven SERS for Highly Sensitive and Spatially Controlled Sensing' *Advanced Functional Materials,* 2314084
- Zorlu T, Puértolas B et al. 2023, 'Optical Quantification of Metal Ions Using Plasmonic Nanostructured Microbeads Coated with Metal–Organic Frameworks and Ion-Selective Dyes', *ACS Nanosci. Au,* 3, 222–229.

ICREA**MEMOIR2023**

Raül Andero Galí

Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

Raul Andero obtained his Ph.D. in Neuroscience (Extraordinary Doctoral Prize) from the Universitat Autònoma de Barcelona (UAB) in 2010 studying behavioural animal models of stress and memory. Then he started as Postdoctoral Fellow and later promoted to Research Associate at the laboratory of Dr Ressler – Howard Hughes Medical Institute, Emory University, USA -. Professor Andero joined McLean Hospital, Harvard Medical School as Faculty – Instructor in Psychiatry – in 2015. He combined studies with psychiatric patients and animal models of fear memory. He established his laboratory in 2016 at the UAB-Institute of Neuroscience as Ramón y Cajal Fellow. Since 2021 as ICREA Research Professor he continues the work of his laboratory aiming to translate behavioural and molecular basic findings into the clinic.

Research interests

Professor Andero's group is focused on behavioural and neural mechanisms of stress and memory in the brain. Specifically, the laboratory studies how stress changes molecular processes underlying fear memories in the brain of both animal models and humans. Additionally, they aim to further understand sex differences in these fear memory circuits which will help to find more effective treatments for patients suffering anxiety and fear-based disorders such as Posttraumatic stress disorder (PTSD), panic disorder or specific phobias.

Selected publications

- Velasco ER, Florido A, Perez-Caballero L, Marin I & **Andero R** 2023, 'The Impacts of Sex Differences and Sex Hormones on Fear Extinction', *Current Topics in Behavioral Neurosciences*, 64, 105-132. Springer, Cham.

Selected research activities

Professor Andero has been awarded as Principal Investigator (PI) the Europa Excelencia grant (MICINN) for his groundbreaking research on *The Tac2 Pathway in Memory Formation*. Additionally, he plays a pivotal role as an Investigator in the newly established Spanish Network of Stress Research, supported by Redes de Investigación (MICINN). Furthermore, in 2023 he was granted the Marie Sklodowska Curie Actions Award as PI by the European Commission. Under his leadership, alongside Dr. Florido as beneficiary, this project will start in 2024.

ICREA**MEMOIR2023**

Laia Andreu Hayles
Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)
Experimental Sciences & Mathematics

Laia Andreu Hayles' research focuses on the study of the interactions between forests and the environment and on reconstructing past climate conditions using tree rings and isotopic geochemistry. Warming temperatures associated with global climate change are having dramatic and profound impacts on forests, and her research centers on assessing these changes across several key regions of the planet. She is currently conducting research in boreal, tropical, Central Asian and Mediterranean regions, which are 'hot spots' of current climate and environmental change.

Research interests

The impact of human activities on the environment and the climate system is indisputable. A knowledge-based understanding of such global environmental changes is paramount, and my research centers on assessing these changes across several regions of the planet. Specifically, I use tree rings and isotopic geochemistry to: (1) estimate climate conditions prior to the existence of instrumental records (i.e. paleoclimate) and (2) assess the response of forests to natural and anthropogenic changes in the climate and to increases in atmospheric carbon dioxide (CO_2). My multidisciplinary research embraces atmospheric sciences and ecology, and has provided insights on past interactions between the climate and land ecosystems.

Selected publications

- Pacheco-Solana A, Oelkers R, D'Arrigo R, et al. 2023, 'Radiocarbon and wood anatomy as complementary tools for generating tree-ring records in Bolivia', *Frontiers In Plant Science*, 14, 1135480.
- Rao MP, Davi NK, Magney TS et al. 2023, 'Approaching a thermal tipping point in the Eurasian boreal forest at its southern margin', *Communications Earth & Environment*, 4, 1, 247.
- **Andreu-Hayles L,** Tejedor E, D'Arrigo R, et al. 2023, 'Dendrochronological advances in the tropical and subtropical Americas: Research priorities and future directions', *Dendrochronologia*, 81, 126124.
- Leland C, **Andreu-Hayles L**, Cook ER, et al. 2023, 'Impacts of climate and tree morphology on tree-ring stable isotopes in central Mongolia', *Tree Physiology*, 43(4), 539-555.
- Levesque M, **Andreu-Hayles L**, D'Arrigo R, Oelkers R & Buckley BM 2023, 'Nonlinear Growth and Physiological Responses of White Spruce at North American Arctic Treeline', *Journal Of Geophysical Research-biogeosciences*, 128, 4, e2022JG007096.

Selected research activities

• December 2023 (Primary convener and chair) sessions 'GC44C - Climate Change, Variability, and Impacts in South America II Oral' & 'GC41I - Climate Change, Variability, and Impacts in South America I Poster' in the AGU Fall Meeting 2023, 11-15 December 2023, San Francisco, United States of America.

• 23 November 2023 (Discussion panel) 'Taula rodona XVIII Congrés d'Història de Barcelona - Barcelona, Spain.

• 16 June 2023 (Invited talk) 'Stable isotopes in tree rings', International Workshop organised by the ERC-Stg RAINDROPS - Universitat Pompeu Fabra, Spain.

• 23 May 2023 (Participation by invitation) 'COST Action: CA21138 - Joint effects of CLimate Extremes and Atmospheric depositioN on European FORESTs, First CLEANFOREST Annual meeting, 23-24 May 2023 - International Center for Digital Transformation and Digital Skills, Greece.

• 06 March 2023 (Discussion panel) 'CVAS + 2k + TSM PAGES Meeting,' Mar 6-10, 2023 (online) - AWI Potsdam, Germany.

ICREA**MEMOIR2023**

Isabelle Anguelovski
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

I obtained a PhD (Urban Studies & Planning, MIT) before returning to Europe in 2011 with a Marie Curie fellowship. At the intersection of urban planning and policy, social inequality and development studies, my research examines the extent to which urban plans, policies, and socio-environmental interventions contribute to just, resilient, healthy, and sustainable cities. I also study how community groups in distressed neighborhoods contest environmental inequities as a result of urban (re)development processes. I am based at UAB-ICTA where I lead the research line Cities & Environmental Justice, direct the Barcelona Lab for Urban Environmental Justice & Sustainability, and head the ICTA Gender, Diversity, and Wellbeing Commiteee. Much of my work takes place in marginalized neighborhoods resisting displacement from unequal development in Europe and the Americas.

Research interests

I am a critical social scientist trained in urban studies & planning (PhD, MIT, 2011), nonprofit management (Harvard University, 2004), international development (Paris Sorbonne, 2001), and political studies (Science Po, 2000).
As part of collaborative and individual international research projects, I study how environmental injustices materialize and get contested. My current works focuses on main research areas: 1) The politics of the green city as a growing global planning orthodoxy; 2) The social and racial manifestations and impacts of green gentrification for historically marginalized residents 3) Urban planning for health and wellbeing, with a focus on health equity and justice 4) Justice and inclusivity in climate adaptation planning, including distributional and procedural insecurities produced by adaptation plans, interventions, and land use configurations and regulations.

Selected publications

- Kotsila P, **Anguelovski I**, Garcia-Lamarca M & Sekulova F 2023, *Injustice in Urban Sustainability: Ten Core Drivers*, 1st edn, Routledge, New York.
- **Anguelovski I** & Corbera E 2023, 'Integrating justice in Nature-Based Solutions to avoid nature-enabled dispossession', *Ambio*, 52, 1-9.
- **Anguelovski I**, Honey-Rosés J & Marquet O 2023, 'Equity concerns in transformative planning: Barcelona's Superblocks under scrutiny', *Cities & Health,* 7, 6, 1-9.
- Kotsila P & **Anguelovski I** 2023, 'Justice should be at the centre of assessments of climate change impacts on health', *Lancet Public Health*, 8, 1, E11 - E12.
- Oscilowicz E, **Anguelovski I** et al. 2023, 'Grassroots mobilization for a just, green urban future: Building community infrastructure against green gentrification and displacement', *Journal Of Urban Affairs*.
- Amorim-Maia AT, **Anguelovski I**, Connolly J, & Chu E 2023, 'Seeking refuge? The potential of urban climate shelters to address intersecting vulnerabilities', *Landscape And Urban Planning*, 238, 104836.

Selected research activities

European Research Council – Proof of Concept 2023-2025. Climate Justice Ready

Coordinator of the funded Catalan Research Group (SGR) BCNUEJ

Vice-President Consell Assessor Científic (Scientific Advisory Board) for the City of Barcelona and the implementation of the Plà de Ciencia

ICREA**MEMOIR2023**

Jose Apesteguia
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Jose Apesteguia received his PhD in Economics from the Public University of Navarra in 2001. Since then he has been at the University of Bonn as a post-doc and at the Universitat Pompeu Fabra, first as a "Ramón y Cajal" fellow and then as an ICREA Research Professor.

Research interests

In my research I study individual decision-making with an emphasis on its psychological foundations. I use theoretical tools as well as adopt an empirical approach to try to better understand individual decision-making, and to improve the predictive power of the decision-making models in economic environments.

Selected publications

- **Apesteguia J**, Ballester MA & Cuhadaroglu T 2023, 'A behavioural Model of Adaptation', *Journal of Economic Behavior and Organization*, 207, 146-156.
- **Apesteguia J** & Ballester MA 2023, 'Random utility models with ordered types and domains', *Journal Of Economic Theory*, 211, 105674.

Selected research activities

-Seminar invitations: University of Navarre, November 2023; University of Bonn, November 2023; University of Cambridge, November 2023.

-Workshop presentations: Society for the Advancement of Economic Theory (SAET), Paris, July 2023.
D-TEA Workshop, Paris, July 2023.

-Conferences: invited lecture at the 74th European meeting of the Econometric Society, Barcelona, August 2023.

-PhDs: David Puig (Universitat Pompeu Fabra).

-Scientific Committee: "Bounded Rationality in Choice" Annual Meetings, Spanish Economic Association Meeting.

-Editorial: Journal of the European Economic Association (Associate Editor), Journal of Mathematical Economics (Associate Editor).

-Teaching: Behavioral Decision Theory, PhD in Economics, Universitat Pompeu Fabra; Topics in Microeconomics, BSc in Economics, Universitat Pompeu Fabra; Bojos per l'economia!, CREi-Fundació Catalunya La Pedrera.

-Grants: Spanish Ministry of Science: PID2021-125538NB-I00 (2022-2025), 162962 Euros.

ICREA**MEMOIR2023**

Jordi Arbiol Cobos
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Studied Physics at Universitat de Barcelona (UB) in 1997, where also obtained his PhD (European Doctorate and PhD Extraordinary Award) in 2001. He worked as Assistant Professor at UB (2001-2009). From 2009 to 2015 he was ICREA Prof. at Institut de Ciència de Materials de Barcelona, ICMAB-CSIC. Since 2015 he is ICREA Prof. at Institut Català de Nanociència i Nanotecnologia (ICN2) and Leader of the Advanced Electron Nanoscopy Group. President of the Spanish Microscopy Society (SME) (2017-2021), Vice-President (2013-2017) and Executive Board Member (2009-2021). Executive Board Member of the International Federation of Societies for Microscopy (IFSM) (2019-2026). Founding member of e-DREAM. Scientific Coordinator of the Joint Electron Microscopy Center at ALBA Synchrotron (JEMCA). Since 2023 Associate Editor of Nano Letters (ACS). Received the FWO Commemorative Medal (Flanders Research Foundation) in 2021, the BIST IGNITE Award in 2018 and awarded with the EU40 Materials Prize 2014 (E-MRS)

Research interests

Explore by means of electron microscopy and related spectroscopies the structure-properties relationships in nanomaterials for physical applications (photonics/plasmonics/phononics/electronics/quantum) adding AI-based methodologies for advanced automated data analysis (deep and machine learning). Understand the behavior of nanomaterials for energy and environmental applications down to the atomic scale and create in-situ and correlative methodologies combining electron microscopy, synchrotron and AI.

Selected publications

- Jenkinson K et al. 2023, Direct Operando Visualization of Metal Support Interactions Induced by Hydrogen Spillover During CO2 Hydrogenation, *Advanced Materials,* **35**, 2306447.
- Khan SA, et al. 2023, 'Epitaxially Driven Phase Selectivity of Sn in Hybrid Quantum Nanowires', *ACS Nano*, 17, 11794-11804.
- Olšteins D, et al. 2023, 'Cryogenic multiplexing using selective area grown nanowires', *Nature Communications*, 14, 7738.
- Pei K, et al. 2023, 'Constructing an Active and Stable Oxygen Electrode Surface for Reversible Protonic Ceramic Electrochemical Cells', *Applied Catalysis B: Environmental*, 330, 122601.
- Xing C, et al. 'Thermoelectric Performance of Surface-Engineered $Cu_{1.5-x}Te$–Cu_2Se Nanocomposites', *ACS Nano*, 17, 8442-8452.
- Yang L, et al. 2023, 'Self-supported NiO/CuO electrodes to boost urea oxidation in direct urea fuel cells', *Nano Energy*, 115, 108714.
- Zhang CY, et al. 2023, 'Identifying the Role of the Cationic Geometric Configuration in Spinel Catalysts for Polysulfide Conversion in Sodium–Sulfur Batteries', *Journal of the American Chemical Society*, 145, 18992-19004.
- Huang C, et al. 2023, 'Combined Defect and Heterojunction Engineering in ZnTe/CoTe2@NC Sulfur Hosts Toward Robust Lithium–Sulfur Batteries', *Advanced Functional Materials*, 33, 2305624.
- Wang X, et al. 2023, 'Unveiling the Role of Counter-Anions in Amorphous Transition Metal-Based Oxygen Evolution Electrocatalysts', *Applied Catalysis B: Environmental*, 320, 121988.
- Paquelet Wuetz B, et al. 2023, 'Reducing charge noise in quantum dots by using thin silicon quantum wells', *Nature Communications*, 14, 1385.

Selected research activities

- 45 Publications in 2023

- 1 Plenary, 7 Keynote and 4 Invited Talks

- Exec. Board Member at International Federation of Societies for Microscopy (IFSM)

- Associate Editor of Nano Letters (ACS)

- World's Top 2% Scientist at Stanford Univ. ranking (among top 1% in 2022)

- Nanoscale Horizons Outstanding Review Award

ICREA**MEMOIR2023**

Marco Armiero
Universitat Autònoma de Barcelona (UAB)
Humanities

Marco Armiero is an Icrea Research Professor at the Institute for the History of Science, Autonomous University of Barcelona. From 2019 to 2023, he served as the president of the European Society for Environmental History. While his roots lie in that field, he has developed a transdisciplinary research agenda that integrates environmental history with political ecology and environmental humanities.
Between 2013 and 2022, he directed the Environmental Humanities Laboratory in Stockholm, establishing it as a global player in the emerging field. His work encompasses themes such as the nationalization of nature, migrations and the environment, and environmental justice. Through his research, he has played a pivotal role in bridging environmental humanities and political ecology.

Research interests

My research clusters around three overarching topics: environmental justice; migrations and the environment; and fascism and nature. While thematically diverse, my research is traversed by a fil rouge giving coherence to those themes. Methodologically, I avoid any dichotomy between nature and society. Thematically, from toxicity to fascism, from migration to mountain communities, my research focuses on processes of expropriations and imposition of expert management of the environment and the resistance of subaltern communities. This friction manifests across my research: for instance, in the tension between urban planners and Italian migrants' urban moral ecologies in the US; in the conflicts between experts' science and grassroots knowledge in struggles over contamination and risk prevention; or in fascist repression of subaltern practices both in rural and urban ecologies.

Selected publications

- **Armiero M** 2023, *La tragedia del Vajont. Ecologia politica di un disastro*, Einaudi, Torino.
- **Armiero M** & Bettini G 2023, 'Environmental changes, displacement and migration,' in The Cambridge History of Global Migrations, volume II Migrations, 1800-Present edited by M. J. Borges and M. Y. Hsu, Cambridge University Press, Cambridge, pp. 422-439.
- **Armiero M** & Pellow D 2023, 'Multispecies Alliances Against the Wasteocene', *Topoi,* vol. 24, n. 54, pp. 685-702.
- **Armiero M** 2023, '12 questions to Marco Armiero', *Gaia-ecological perspectives for science and society*, vol. 32, no.3, 280 - 281.
- **Armiero M** 2023, *Otpadocen*, Buna, Tuzla (translation of the volume *Wastocene. Stories form the Global Dump*)
- Tappi A, Tébar Hurtado J, **Armiero M** & Soto Fernández D 2023, 'La perspectiva de la Historia Ambiental: de la sensibilidad verde a la radicalidad ecológica', *Segle xx. Revista catalana d'història*, 16, 272 -288.

Selected research activities

I am committed to fostering public engagement and dissemination through diverse activities aimed at reaching a wider audience. These include, among other things:

- My appearances on radio and television (Italian Public Television and Radio; Radio Popolare Network)

- The coordination of the Occupy Climate Change! graduate school, involving 80 students and 20 teachers

- Collaboration with the theater collective DOM

- Serving as the editor-in-chief of Resistance: A Journal of Radical Environmental Humanities

- Serving as president of the European Society for Environmental History (2019-2023)

ICREA**MEMOIR2023**

Joaquín Arribas López
Parc de Salut Mar (PSMAR) & Vall d'Hebron Institut d'Oncologia (VHIO)
Life & Medical Sciences

Dr. Arribas completed his B.Sc. studies in Biochemistry at Universidad Autónoma de Madrid in 1987, where he also got his Ph.D. in Cellular and Molecular Biology in 1992, working on proteasome regulation. Sponsored by a fellowship from the Spanish Ministry of Education and Science, he joined the Memorial Sloan-Kettering Cancer Center in New York, USA (1992-96), working on the proteolytic processing of transmembrane growth factors. After his post-doc, he joined the oncology department at Hospital Vall d'Hebron in Barcelona in 1997 as a Staff Scientist and has since led the Growth Factors research group. In 2010, he was appointed VHIO's director of the Preclinical Research Program and CIBERONC's Scientific director in 2017. He resigned from both positions to become director of the Hospital del Mar Institute for Medical Investigations (IMIM) and lead the Growth Factors group at VHIO, and the Immune Redirection group at IMIM.

Research interests

As the leader of a multicenter research team, Dr. Arribas' research interests center on HER2+ cancers and senescence's role in cancer onset and metastasis, with a primary focus on breast cancer.
More specifically, the research activities conducted by his team are:

- Develop novel therapeutic strategies to treat breast and pancreatic cancer.
- Evaluate anticancer treatments (including immune redirection) in patient-derived cancer xenografts and identify resistance mechanisms to current therapies.
- Develop and characterize CAR-T cell-based therapies against tumor-specific antigens in preclinical models.
- Characterize cellular senescence's role in breast cancer progression and treatment.

Selected publications

– Serra-Camprubí Q, Verdaguer H, Oliveros W, et al. 2023, 'Human Metastatic Cholangiocarcinoma Patient-Derived Xenografts and Tumoroids for Preclinical Drug Evaluation', *Clinical Cancer Research*, 29, 2, 432 – 445.
– Duro-Sánchez S, Alonso MR & **Arribas J** 2023, 'Immunotherapies against HER2-Positive Breast Cancer', *Cancers*, 15, 4, 1069.
– Quintana Á, Arenas EJ, Bernadó C, Navarro JF, González J, Esteve-Codina A, Moliné T, Marti M, Curigliano G, Schmid P, Peg V, **Arribas J** & Cortés J 2023, 'Evaluation of triple negative breast cancer with heterogeneous immune infiltration', *Frontiers In Immunology*, 14, 1149747.
– Fiascarelli A, Merlino G, Capano S, Talucci S, Bisignano D, Bressan A, Bellarosa D, Carrisi C, Paoli A, Bigioni M, Tunici P, Irrissuto C, Salerno M, **Arribas J**, de Stanchina E, Scaltriti M & Binaschi M 2023, 'Antitumor activity of the PI3K δ-sparing inhibitor MEN1611 in PIK3CA mutated, trastuzumab-resistant HER2+breast cancer', *Breast cancer research and treatment*, 199 – 1 – 13 – 23.
– Saura C, Ortiz C, Matito J, et al. 2023, 'Early-Stage Breast Cancer Detection in Breast Milk', *Cancer Discovery*, 13 (10): 2180–2191.
– Pérez Del Río E, Román Alonso M, Rius I, Santos F, Castellote-Borrell M, Veciana J, Ratera I, **Arribas J** & Guasch J 2023, 'Three-dimensional cell culture of chimeric antigen receptor T cells originated from peripheral blood mononuclear cells towards cellular therapies', *Cytotherapy*, 25, 12, 1293-1299.
– del Río EP, Alonso MR, Rius I, Santos F, Castellote-Borrell M, Veciana J, Ratera I, **Arribas J** & Guasch J 2023 'Three-dimensional cell culture of chimeric antigen receptor T cells originated from peripheral blood mononuclear cells towards cellular therapies', *Cytotherapy*, 25 – 12 – 1293 – 1299

ICREA**MEMOIR2023**

Vladimir Asriyan
Centre de Recerca en Economia Internacional (CREI)
Social & Behavioural Sciences

Vladimir Asriyan is ICREA Research Professor at Centre de Recerca en Economia Internacional, Research Fellow at the Centre for Economic Policy Research, and an Affiliated Professor at the Barcelona School of Economics.

He was born in Yerevan, Armenia and, prior to moving to Barcelona, obtained a B.A. in Economics and Mathematics from the University of California-San Diego and a Ph.D. in Economics from the University of California-Berkeley.

His research lies at the intersection of macroeconomics and finance, and its broad objective is to understand how imperfections in the functioning of financial markets impact the macroeconomy and what implications this has for corrective policy. His research has furthered our understanding of the origins of financial crises and how policymakers should aim to manage these major economic phenomena.

Research interests

My research is at the intersection of macroeconomics and finance, and it focuses on studying imperfections in financial markets and how they hinder economic activity. One strand of my work studies markets plagued with information asymmetries. The takeaway from this work is that information asymmetries are an important source of economic fragility, and the commonly discussed policies aimed at dealing with them may backfire instead of achieving the stated objectives. Further, my research provides a blueprint for thinking about the design of optimal interventions in markets. Another, more recent strand of my research focuses on the closely related question of understanding credit cycles. This work, for instance, has shown how credit cycles affect the efficiency of resource allocation in the economy, and why understanding the origins of credit cycles is important for the effective design of corrective policies.

ICREA**MEMOIR2023**

Salvador Aznar Benitah
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Salvador Aznar Benitah is a group leader at the Institute for Research in Biomedicine (IRB Barcelona). He holds a BSc/MSc in Biochemistry from the University of McGill (Montreal, Canada), from where he moved to the Biomedical Research Institute (Madrid, Spain) to obtain a PhD in Molecular Biology. His professional career continued at the London Research Institute (Cancer Research UK) in the laboratory of Prof. Fiona Watt where he acquired extensive knowledge on adult stem cells. He started as a Junior ICREA researcher at the CRG in 2007 where he studied the role of adult stem cells in tissue homeostasis and cancer. Since September 2012 he is an ICREA Research Professor. In September 2013 he became a Senior Researcher in the Oncology Department at the Institute for Research in Biomedicine (IRB Barcelona). In 2018 he was appointed as the Coordinator of the Aging and Metabolism Department at the IRB Barcelona.

Research interests

Our global aim is to characterize the molecular pathways that regulate the behaviour of normal stem cells during homeostasis, and how they become deregulated during carcinogenesis and ageing. Research Lines: - What intrinsic mechanisms regulate adult stem cell function, and how are they deregulated during ageing and cancer? - How do adult stem cells communicate with their local environment and how is the system coordinated to dictate stem cell function? - What systemic cues communicate with adult stem cells and how do distant adult stem cells coordinate their function at the level of the whole organism? - How does deregulation of pathways that control stem cell behaviour contribute to the progression of carcinomas, specially during metastasis?

Selected publications

- Moiseeva V, Cisneros A, Sica V, et al. 2023, 'Senescence atlas reveals an aged-like inflamed niche that blunts muscle regeneration', *Nature*, 613, 169-178.
- Solá P, Mereu E, Bonjoch J et al. 2023, 'Targeting lymphoid-derived IL-17 signaling to delay skin aging', *Nature Aging*, 3, 688-704.
- Redondo-Munoz M, Rodriguez-Baena FJ, Aldaz P, et al. 2023, 'Metabolic rewiring induced by ranolazine improves melanoma responses to targeted therapy and immunotherapy', *Nature Metabolism*, 2023.
- Smith JG, Koronowski KB, Mortimer T, et al. 2023, 'Liver and muscle circadian clocks cooperate to support glucose tolerance in mice', *Cell Reports*, 42, 6, 112588.

Selected research activities

-Obtained an ERC Proof of Concept

-
Obtained an AECC Coordinated Grant (I coordinated it)

-Appointed member of the EMBO Council

-Appointed member of the AACR (American Association for Cancer Research) Organizing Committee

-Appointed Coordinator of the Aging and Metabolism Department at IRB Barcelona

-Organizer of the Keystone Aging meeting

-Organizer of the Gordon Research Conference on Epithelial Stem Cells

ICREA**MEMOIR2023**

Joan Bagaria i Pigrau
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Born on 17 August 1958 in Manlleu (Catalonia). Fulbright Fellow at Univ. of California, Berkeley, 1985-87. PhD in Logic and the Methodology of Science, UC Berkeley, 1991. Postdoctoral researcher, UC Berkeley, 1991-92. Associate Professor at several Catalonian universities, 1992-2001. ICREA Research Professor at Univ. of Barcelona, since 2001. Invited researcher at UC Berkeley, Kobe Univ., National Univ. of Singapore, Kurt Gödel Research Center (Vienna), Fields Institute (Toronto), Univ. Paris VII, CalTech, Mittag-Leffler Institut (Sweden), Hebrew Univ., Harvard Univ., etc. First President of the European Set Theory Society, 2007-11; ICREA Director's Scientific Advisor, since 2005; Chairman of the INFTY ESF-Research Networking Programme, 2009-14; Simons Foundation Fellow at Isaac Newton Institute, University of Cambridge, UK, 2015. Director of the Barcelona Research Group on Set Theory (BCNSETS), and coordinator and PI of the UB-based Barcelona Logic Group (BCNLOGIC).

Research interests

I am a mathematical logician working mainly in Set Theory. Set Theory is the strongest and most encompassing of mathematical theories. It is both the theory of infinity and the standard foundation for mathematics, in the sense that all of mathematics can be interpreted and formally reduced to it. I develop sophisticated techniques, such as the method of Forcing for building models of Set Theory and the theory of Large Cardinals, and apply them to the solution of hard problems in Set Theory itself and in other areas of logic and mathematics. Most interestingly, one can prove sometimes that a given problem cannot be solved using standard mathematical tools, which are embodied in the standard Zermelo-Fraenkel with Choice (ZFC) axioms of Set Theory, and therefore new axioms are needed for its solution. Finding and classifying new axioms, thereby expanding the frontiers of mathematical reasoning, is also an essential part of Set Theory, and of my work.

Selected publications

– **Bagaria J** & Ternullo C 2023, 'Steel's Programme: Evidential Framework, the Core and Ultimate-L', *The Review of Symbolic Logic*, 16, 3, 788 – 812.
– **Bagaria J** & Wilson TM 2023, 'The Weak Vopenka Principle for definable classes of structures', *The Journal of Symbolic Logic*, 88, 1, 145 – 168.
– **Bagaria J** & Poveda A 2023, 'More on the preservation of large cardinals under class forcing', *The Journal of Symbolic Logic*, 88, 1, 290 – 323.
– **Bagaria J** & da Silva SG 2023, 'w_1-strongly compact cardinals and normality', *Topology and its Applications*. Volume 323, 108276.
– **Bagaria J** & Lücke P 2023, 'Huge Reflection', *Annals of Pure and Applied Logic*, Volume 174, Issue 1, 103171.
– **Bagaria J** 2023, 'Large cardinals as principles of structural reflection', *Bulletin Of Symbolic Logic*, 29, 1, pp 19 – 70.

Selected research activities

Invited researcher at:
-University of California, Berkeley (USA), April 28 to May 15.
-Fields Institute, Toronto (Canada), June 1-15.
-Kobe University (Japan), October 27 to November 4.
Invited talks:
-Self-similarity in the Higher Infinite. Berkeley Logic Colloquium. May 5.
-Large cardinals as reflection properties of the set-theoretic universe, a tutorial consisting of four 1-hour lectures. RIMS Workshop on Large cardinals and the continuum. RIMS, Kyoto University (Japan). October 23-27.
-Structural Reflection on the edge and beyond. Invited talk at the joint Kobe-Waseda Set Theory Seminar. Kobe University (Japan). November 1.
Managerial activities:
-Co-cordinator (with C. Ternullo) of the workshop "What can Philosophy do for Set Theory?". Universitat de Barcelona. March 29-31.
-Member of the Joint Editorial Board of the Bulletin and the Journal of the London Mathematical Society.
-Member of the Scientific Advisory Board of the Catalan Mathematical Society.

ICREA**MEMOIR2023**

Pau Baizán Muñoz
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Pau Baizán is ICREA Research Professor at Pompeu Fabra University, where he teaches demography. Previously, he was research scientist at the Max Planck Institute for Demographic Research (2000-2002), doctoral student and teaching assistant at the University of Louvain (1996-1999), where he obtained his PhD in Demography, and research associate at the University of Cambridge (1994-1995).

Research interests

My research focuses on improving our understanding of the patterns and causes of family formation and dissolution in various social, economic, cultural, and political settings. I investigate questions such as, "What is the impact of changing gender roles on fertility behaviour? To what extent does employment insecurity affect the likelihood to have a child? Why are there socio-economic differentials in parental child care?". A second line of research focuses on international migration and seeks to answer such questions as "Does economic restructuring influence international migration? How international migration impacts family dynamics? Does migration lead to an increase in educational investments in the origin countries?".

Selected publications

- Carrasco I & **Baizan P** 2023, 'Integración al mercado laboral de los inmigrantes intrarregionales en Chile: análisis de las trayectorias de empleo y de los logros ocupacionales basado en las encuestas de hogares de 2013, 2015 y 2017', *Notas de Población*,116, 159-193.

Selected research activities

Invited talks and conference presentations

"Homophily or competition? Explaining assortative mating patterns and their changes in contemporary China". *RC28 Spring meeting 2023*, 24-26 May, Paris*. Research on East Asian Demography and Inequality (READI) Conference, Tokyo,* July 15-16, 2023.

Research Grants

Socio-economic inequalities in family behaviour and wellbeing: the role of economic security, role compatibility and gender relations (UNEQUAL). Spanish Ministry of Science.

Supervision of PhD students. Thesis presented in 2023:

Ignacio Carrasco, *"Towards Stylised Facts on International Migration Research. Immigrants' labour market integration, dynamics of remittance behaviour, and underlying mechanisms of migration rates"*, UPF.

Courses:
"*Demographic Changes and Social Dynamics*" and "*Migration and Society*". Master in Sociology and Demography, UPF.

ICREA**MEMOIR2023**

Pablo Ballester Balaguer
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

Pablo Ballester studied Chemistry at the University of the Balearic Islands (UIB) where he also completed the PhD degree in 1986. In 1987 he was post-doctoral Associate with Prof. J. Rebek Jr. at the University of Pittsburgh. In 1988 after a post-doctoral stay at UIB with Porf. J. M. Saá he returned to Pittsburgh and moved to MIT in 1989. From 1991 to 2002 he held the positions of Assistant and Associate Professor and served as Secretary of the Chemistry Department, Vice-dean of of Sciences and Head of Chemistry Studies at UIB. In 2003 he was in sabbatical leave at the Scripps Research Institute (USA) with the rank of Associate Professor of Research and got an ICREA Research Professorship. He joined ICIQ as Group Leader in 2004. From 2016 to 2018, he served as ICIQ Vice-Director for BIST affairs. He is the recipient of the 2012 Janssen Cilag Organic Chemistry Prize and the Chemistry Fellow Distinction 2020-2021 Class. He was elected EurASc fellow in 2021.

Research interests

My scientific background lies in the areas of organic chemistry (making molecules) and supramolecular chemistry (study how molecules fit together). My current research focuses on the design, synthesis, study and characterization of functional molecular aggregates. I consider myself a mixture between a molecular architect and a molecular engineer. We study matter but we also produce matter and new materials. We apply molecular self-assembly processes as a methodology to construct large and functional supramolecular aggregates, i.e. molecular machines, molecular sensing assemblies and devices. A second area of my current interests resides in the design and application of molecular containers. These are molecular or supramolecular structures with an internal cavity sufficiently large to include or encapsulate other molecules. Unfortunately, although we construct monumental and even artistic structures they are not visible to the naked eye due to their reduced nanometer size.

Selected publications

- Mirabella CFM, Aragay G & **Ballester P** 2023, 'Influence of the solvent in the self-assembly and binding properties of [1 + 1] tetra-imine bis-calix[4]pyrrole cages', *Chem. Sci.,* 14(1):186-195.
- Rivoli A, Gomila RM, Frontera A & **Ballester P** 2023, 'Interchangeability and Disorder in the Solid-State Structures of "Two Wall" Calix[4]pyrroles Equipped with Iodine and Ethynyl para-Substituents', *Chem. Asian J.,* 18(3):e202201192.
- Sierra AF, Aragay G, Gomila RM & **Ballester P** 2023, 'Quantification of the P=O-HN hydrogen bond in the binding of creatinine with phosphonate calix [4]pyrroles', *Org. Chem. Front.,* 10, 996-1002.
- Hisano N, Valderrey V, Aragay G & **Ballester P** 2023, 'A robust heterodimeric bis-Rh(iii)-porphyrin macrocycle for the self-assembly of a kinetically stable [2]-rotaxane', *Dalton Trans.,* 52, 8344-8352.
- Escobar L, Sun Q & **Ballester P** 2023, 'Aryl-Extended and Super Aryl-Extended Calix[4]pyrroles: Design, Synthesis, and Applications', *Acc. Chem. Res.,* 56, 4, 500 - 513.
- Aragay G & **Ballester P** 2023, 'Water-Soluble Aryl- and Super Aryl-Extended Calix[4]pyrroles', *Isr. J. Chem.,* e202300041
- Kanagaraj K, Wang R, Zhao M-K, **Ballester P,** Rebek Jr J & Yu Y 2023, 'Selective Binding and Isomerization of Oximes in a Self-Assembled Capsule', *J. Am. Chem. Soc.,* 145, 10, 5816-5823.
- Sarkar S, **Ballester P**, Spektor M & Kataev EA 2023, 'Micromolar Affinity and Higher: Synthetic Host-Guest Complexes with High Stabilities', *Angew. Chem. Int. Ed,* 62, e202214705.

Selected research activities

- Defended theses supervisor URV: A. Rivoli PhD and D. Hüsstege MSc.
- Member of the Scientific Advisory Board, IQAC, Spain
- Scientific Collaborator of Agencia Estatal de Investigación (AEI), Area 14. CTQ/Ciencias y Tecnologías Químicas

ICREA**MEMOIR2023**

Marco Baroni
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Marco Baroni received a PhD in Linguistics from the University of California, Los Angeles, in the year 2000. After several experiences in research and industry, he joined the Center for Mind/Brain Sciences of the University of Trento, where he became associate professor in 2013. In 2016, Marco joined the Facebook Artificial Intelligence Research team. In 2019, he became ICREA research professor, affiliated with the Linguistics Department of Pompeu Fabra University in Barcelona. Marco's work in the areas of multimodal and compositional distributed semantics has received widespread recognition, including a Google Research Award, an ERC Starting Grant, and the ICAI-JAIR best paper prize and the ACL test of time award. Marco's current research focuses on the analysis of communication in deep-learning-trained artificial neural networks. In 2021, he was awarded an ERC Advanced Grant to work on this topic.

Research interests

While deep-learning-based artificial neural networks have revolutionized science, engineering and our daily life, we still know surprisingly little about how they work. Indeed, they can sometimes behave in completely unexpected ways, exposing weaknesses that can be used for harmful purposes. My current interest lies in opening the black box of modern neural networks, specifically in the domain of language, where I study so-called "large language models" such as ChatGPT. I am focusing on two main approaches to this challenge. On the one hand, I am studying how large language models react to inputs that are outside their training distribution. On the other, I use tools from probability, linear algebra and information theory to measure the complexity of the internal representations of large language models.

Selected publications

- Lake B & **Baroni M** 2023, 'Human-like systematic generalization through a meta-learning neural network', *Nature,* 623, 115-121.
- Dessì R, Bevilacqua M, Gualdoni E, Rakotonirina N, Franzon F & **Baroni M** 2023. *Cross-Domain Image Captioning with Discriminative Finetuning*. Proceedings of CVPR 2023 (IEEE/CVF Conference on Computer Vision and Pattern Recognition), 6935 - 6944.
- Rakotonirina NC, Dessi R, Petroni F, Riedel S & **Baroni M** 2023, 'Can discrete information extraction prompts generalize across language models?', *Proceedings of the 11th International Conference on Learning Representations (ICLR),* 2023 Mai 1-5; Kigali, Rwanda.
- Mahaut M, Franzon F, Dessi R & **Baroni M** 2023, 'Referential communication in heterogeneous communities of pre-trained visual deep networks', *Proceedings of AAMAS* (22nd International Conference on Autonomous Agents and Multiagent Systems): 2619-2621.
- Cheng E, Kervadec C & **Baroni M** 2023. 'Bridging information-theoretic and geometric compression in language models'. Proceedings of EMNLP 2023 (Conference on Empirical Methods in Natural Language Processing), East Stroudsburg PA: ACL.

Selected research activities

- Member of the ERC SH4 Consolidator panel
- Remote panel evaluator for the ERC Synergy Grant panel
- Area chair for ICLR
- In two international PhD thesis committees and a US tenure track evaluation panel

ICREA**MEMOIR2023**

Xavier Barril Alonso
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Xavier Barril is an ICREA Research Professor at the University of Barcelona, School of Pharmacy. His research focuses on the discovery of bioactive molecules exploiting new mechanisms of action and the development of computational methods to achieve this goal efficiently. He is a well-known expert in the field of structure-based drug discovery, with 100 scientific publications, 40 invited talks at international conferences and 15 supervised Doctoral theses. He is also listed in the top 2% of most cited researchers (Stanford Ranking). Prof. Barril has a strong focus on applied research, which has resulted in15 patents, two spin-off companies (Minoryx Therapeutics in 2011 and Oniria Therapeutics in 2021), and active participation in the private drug discovery sector (scientist at Vernalis 2002-2005 and part-time CTO at Gain Therapeutics 2018-2023).
As of 2024, Prof. Barril is on leave of absence and moved to Boehringer-Ingelheim's German research site.

Research interests

My main research interest is the discovery of bioactive molecules with novel mechanisms of action. These molecules can then be used as chemical probes to interrogate biological systems and validate new pharmacological targets, or as starting points to develop drug candidates. We aim to expand the so-called druggable genome by targeting untapped biological components, preferably through non-standard mechanisms of action, such as allosteric binding, conformational trapping or stabilisation of protein-protein complexes. To achieve this objective my group employs a multi-disciplinary and question-driven approach that combines computational, biophysical and biological techniques. We are particularly strong in computer-aided drug design and we develop new computational approaches that enable us to tackle such novel and difficult targets with confidence.

Selected publications

- Edo-Osagie A, Serillon D, Ruani F, **Barril X**, Gourlaouen C, Armaroli N, Ventura B, Jacquot de Rouville H-P & Heitz V 2023, '
Multi-Responsive Eight-State Bis(acridinium-Zn(II) porphyrin) Receptor
.',
Journal of the American Chemical Society, 145,19,10691-10699.
- Miñarro-Lleonar M, Bertran-Mostazo A, Duro J, **Barril X** & Juárez-Jiménez J 2023, 'Lenalidomide Stabilizes Protein-Protein Complexes by Turning Labile Intermolecular H-Bonds into Robust Interactions', *Journal Of Medicinal Chemistry*, 66, 9, 6037-6046.
- Rudinskiy M, Pons-Vizcarra M, et al. 2023, 'Validation of a highly sensitive HaloTag-based assay to evaluate the potency of a novel class of allosteric β-Galactosidase correctors',
PLoS ONE, 18, 11, e0294437.

Selected research activities

PhD thesis director:

'

Technological developments in virtual screening for the discovery of small-molecules with novel mechanisms of action.' by Marina Miñarro Lleonar
24/02/2023

One patent application (EP23382389.7)

Invited talks at:

* 2023 ACS Fall Meeting - Taking a Deep Dive into Chemical Space. San Francisco (US), 17/08/2023

* Keystone Symposia - Computational Design and Modeling of Biomolecules. Banff (Canada), 17/03/2023

ICREA**MEMOIR2023**

Frederic Bartumeus
Centre d'Estudis Avançats de Blanes (CEAB) & Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)
Life & Medical Sciences

Since 2014 I have been an ICREA Research Professor in Computational and Theoretical Ecology at CEAB-CSIC and hold an associate research position at CREAF. I hold an MSc in plankton ecology (1997) and a PhD in Biological Sciences (2005) from the University of Barcelona, Spain. I joined the Department of Ecology and Evolutionary Biology at Princeton University (USA) from 2006 to 2009. I completed my postdoctoral research on vector-borne diseases at the Institut Català del Clima (IC3). With a Ramón y Cajal position (2010), I founded my lab at CEAB-CSIC. Currently, it is a joint lab with other researchers named the Theoretical and Computational Ecology Group. In 2018, I was awarded as Distinguished Researcher by the Spanish Research Council (CSIC) and the City Council of Barcelona (Spain) Premi Ciutat Barcelona 2017.

Research interests

Knowing how animals use the information to search and disperse in dynamic environments can generate direct applications (robotics, bioinformatics) and improve our baseline predictive power with consequences for fields as diverse as behavioural ecology, invasion ecology, or epidemiology. We are contributing to the sudden generation of massive, high-throughput animal movement and behavioural data in the context of vector-borne diseases with the use of novel technologies (internet, smartphones) and citizen participation. We also seek to understand organizational and dynamical principles of search behaviour by developing high-tech infrastructures for tracking movement behaviour at an unprecedented range of scales. More broadly, our work aims at building-up mechanistic links between animal behaviour, dispersal and population dynamics, including the development of data mining algorithms for behavioural annotation of high-resolution trajectories and biologging data, and spatial population modelling.

Selected publications

– Pardo-Araujo M, Garcia-Garcia D, Alonso D & **Bartumeus F** 2023, 'Epidemic thresholds and human mobility', *Scientific Reports*, 13, 11409.

– Blanco-Sierra L, Mariani S, Escartin S, Eritja R, Palmer JRB & **Bartumeus F** 2023, 'Drivers of longevity of wild-caught Aedes albopictus populations', *Parasites & Vectors*, 16, 328.

– Cerecedo-Iglesias C, **Bartumeus F**, Cortés-Avizanda A, Pretus JL, Hernández-Matías A & Real J 2023, 'Resource predictability modulates spatial-use networks in an endangered scavenger species', *Movement Ecology*, 11, 22.

– Badia-Boher JA, Real J, Riera JL, **Bartumeus F**, & *et al. 2023*, 'Joint estimation of survival and dispersal effectively corrects the permanent emigration bias in mark-recapture analyses', *Scientific Reports* 13, 6970.

– Lührsen D S, Zavitsanou E, Cerecedo-Iglesias C, Pardo-Araujo M, Palmer John RB, **Bartumeus F**, Montalvo T, Michaelakis A & Lowe R 2023, 'Adult *Aedes albopictus* in winter: implications for mosquito surveillance in southern Europe' *The Lancet Planetary Health*, 7, e279.

– Dekramanjian B, **Bartumeus F**, Kampen H, Palmer JRB, Werner D & Pernat N 2023, 'Demographic and motivational differences between participants in analog and digital citizen science projects for monitoring mosquitoes', Scientific Reports 13, 12384.

– Carney RM, Long A, Low RD, Zohdy S, Palmer JRB, Elias P, **Bartumeus F**, et al. 2023, 'Citizen Science as an Approach for Responding to the Threat of *Anopheles stephensi* in Africa', *Citizen Science: Theory and Practice,* 8, 1.

– Rocklöv J, Semenza JC, Dasgupta S, et al. 2023, 'Decision-support tools to build climate resilience against emerging infectious diseases in Europe and beyond', *Lancet Regional Health-Europe*, 32, 100701.

– Albó Timor A, Lucati F, **Bartumeus F**, et al. 2023, 'A fast and inexpensive genotyping system for the simultaneous analysis of human and *Aedes albopictus* short tandem repeats', *Parasites & Vectors*, 16, 347.

ICREA**MEMOIR2023**

Quique Bassat Orellana
Institut de Salut Global Barcelona (ISGlobal)
Life & Medical Sciences

Quique Bassat is an ICREA Research Professor at the Barcelona Institute of Global Health (ISGlobal). He has a degree in Medicine from the Universitat de Barcelona (UB, 1999), a specialization in pediatrics (UaB, 2004), and Masters in Tropical Medicine and International Health (UB, 2004) and Epidemiology (LSHTM, 2008). He obtained his PHD in the year 2009 (UB) with work on the treatment and clinical characterization of malaria in Africa. He was based for several years at the Centro de Investigação em Saúde de Manhiça (CISM), in Mozambique, where he currently conducts most of his research, although in recent years he has started projects in other countries, including Morocco, Papua New Guinea, Brazil or Bhutan. Since January 2024, he is the General director at ISGlobal

Research interests

As a paediatrician, my research is based on the premise that there is no greater public health intervention than that which can reduce child mortality, particularly in poor contexts. I have worked in LMICs (Mozambique, Morocco, Papua New Guinea, India, Brazil and Bhutan) to understand and prevent malaria, pneumonia and other infectious diseases that most impact child survival. I'm interested in biomarkers of host response as diagnostic and prognostic tools to help risk stratify children and better prioritize care. My research has included the clinical development of malaria vaccines and new or repurposed drugs and drug-based strategies for malaria and other IDs. To improve the poor existing data on the causes of child mortality. we have developed and implemented in resource constrained settings the minimally invasive autopsy (MIA) method for mortality surveillance purposes. I enjoy approaching innovation for the purposes of solving global health problems.

Selected publications

– **Bassat Q**, Blau DM, Ogbuanu I, et al. 2023, 'Causes of Death Among Infants and Children in the Child Health and Mortality Prevention Surveillance (CHAMPS) Network', *Jama Network Open*, 6, 7, e2322494.
– Balanza N et al. 2023, 'Prognostic accuracy of biomarkers of immune and endothelial activation in Mozambican children hospitalized with pneumonia'. *PLOS Glob Public Health*. 3(2):e0001553.
– Mahtab S, Madewell ZJ, Madhi SA, et al. 2023, 'Stillbirths and Neonatal Deaths Caused by Group B Streptococcus in Africa and South Asia Identified Through Child Health and Mortality Prevention Surveillance (CHAMPS)', *Open Forum Infectious Diseases*, 10, 9, ofad356 – ofad356.

Selected research activities

2023 was a particularly successful year as we received new competitive grants. This included the Horizon H2021project "EChiLiBRiST" (***Development and validation of a quantitative point-of-care test for the measurement of severity biomarkers to improve risk stratification of fever syndromes and enhance child survival"),*** which has been instrumental in attracting additional complementary funding and sub-studies (DTS, FIS, Widera Hop-on), on the area of prognostic biomarkers, where we continue to publish regularly innovative results. Additionally, we remain committed to publish analyses of our ongoing CHAMPS mortality surveillance, a project where the use of post-mortem techniques allows the unprecedented investigation of causes of death in stillbirths and children in high-mortality settings, to a level never explored in the past. Lastly, we continue exploring the clinical development and validation of new technologies for global health, ranging from a 3D printable low-cost retinograph, to a non-invasive ultrasound-based device designed to count white blood cells in the CSF through the open fontanel of young infants, bypassing the need of conducting lumbar punctures for the diagnosis of meningitis. Innovations such as these will allow a more equitable access to health solutions in those places where needs are highest.

ICREA**MEMOIR2023**

Eduard Batlle
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Eduard Batlle joined the Institute for Research in Biomedicine (IRB Barcelona) as ICREA Research Professor and Head of the Oncology Program in 2004. His research activity has focused on the mechanisms that drive colorectal cancer (CRC) initiation and progression. Amongst other findings, his research originally identified the transcription factor Snail as a repressor of E-Cadherin gene expression during the EMT (2000); the connection between intestinal stem cells and CRC (2002-2011); and more recently a key role for TGF-beta signaling in stromal cells during metastatic colonization (2012-2015). His track record has been recognized through several awards/honors such as the Sabadell Banc Award for Biomedical Research (2010), Josef Steiner Award (2013), ERC Starting and Advanced Grants (2007, 2013, 2019), the Pezcoller foundation-EACR award (2014), the Lilly Foundation Award (2016) and the King Jaume-I award in Medicine (2021).

Research interests

The inner layer of the intestinal tube, the intestinal epithelium, is in a constant process of renewal. Hundreds of millions of terminally differentiated intestinal cells are replaced by new cells every day during the life of an adult organism. This tremendous regenerative power is ultimately sustained by a small population of intestinal stem cells. It is believed that alterations in the functioning of intestinal stem cells account for the pathophysiology of various bowel disorders. Our laboratory studies the connection between the biology of Intestinal Stem Cells and Colon Cancer. We are also interested in the process of metastasis, the cause of death of most colorectal cancer (CRC) patients. Neither conventional chemotherapy nor current targeted therapies offer significant benefits once the disease has spread to distant organs. Furthermore, current CRC staging based on histopathology and imaging has a limited ability to predict the evolution of the disease. We have recently discovered that vast majority of genes that distinguish poor prognosis CRC subtypes are expressed by stromal cells rather than by epithelial tumor cells. We proposed that metastasis relies on a tumor cell non-autonomous program driven by TGF-beta in the tumor microenvironment.

Selected publications

- Domingo-Muelas A, Duart-Abadia P, Morante-Redolat JM, et al. 2023, 'Post-transcriptional control of a stemness signature by RNA-binding protein MEX3A regulates murine adult neurogenesis', *Nature Communications*, 14, 1, 373.
- Linares J, Sallent-Aragay A, Badia-Ramentol J, et al. 2023, 'Long-term platinum-based drug accumulation in cancer-associated fibroblasts promotes colorectal cancer progression and resistance to therapy', *Nature Communications*, 14, 1, 746.
- Fernández-Alfara M, Sibilio A, Martin J, et al. 2023, 'Antitumor T-cell function requires CPEB4-mediated adaptation to chronic endoplasmic reticulum stress', *Embo Journal*, 42 (9), e111494.
- Linares J, Varese M, Sallent-Aragay A, et al. 2023, 'Peptide-Platinum(IV) Conjugation Minimizes the Negative Impact of Current Anticancer Chemotherapy on Nonmalignant Cells', *Journal Of Medicinal Chemistry*, 66, 5, 3348-3355.
- Amirkhah R, Gilroy K, Malla SB, et al. 2023 'MmCMS: mouse models' consensus molecular subtypes of colorectal cancer', *British Journal of Cancer*, 128, 7, 1333-1343.

ICREA**MEMOIR2023**

Giuseppe Battaglia
Institut de Bioenginyeria de Catalunya (IBEC)
Engineering Sciences

Giuseppe, or as most people call him, Beppe, is the Molecular Bionics group leader at the Institute of Bioengineering of Catalonia. He graduated in Chemical Engineering (Palermo) and did his PhD in Soft Matter Physics (Sheffield). Beppe held positions in Sheffield (Assistant Professor 2006-2009, Associate Professor 2009-2011, and Full Professor 2011-2013)) and at University College London (Full Professor -2013-2023). Beppe's accolades include the HFSP Young Investigator Award in 2009, the APS/IoP Polymer Physics Exchange Award Lecture in 2011, the GSK Emerging Scientist Award in 2011, the Award for Special Contribution to Polymer Therapeutics in 2012, the RSC Thomas Graham Award Lecture in 2014, and the SCI/RSC McBain Medal for Colloid Science in 2015.

Research interests

Beppe oversees a multidisciplinary team comprising chemists, physicists, mathematicians, engineers, and biologists, collectively engaged in exploring the mechanisms underlying the trafficking of molecules, macromolecules, viruses, vesicles, and whole cells across physiological barriers within the human body. Using advanced microscopic tools and theoretical physics, they investigate biological transport from molecular to organism scales. This knowledge guides the development of innovative (nano)medicines, blending soft matter physics with synthetic chemistry. Beppe's group applies a constructionist approach, mimicking biological complexity to design functional units called Molecular Bionics, merging physical, engineering, and biomedical sciences.

Selected publications

- Acosta-Gutiérrez S, Buckley J & **Battaglia G** 2023, 'The Role of Host Cell Glycans on Virus Infectivity: The SARS-CoV-2 Case', *Adv Sci*. 10(1)2201853.
- Almadhi S, Forth J, Rodriguez-Arco L, et al. 2023, 'Bottom-Up Preparation of Phase-Separated Polymersomes', *Macromolecular Bioscience*, 23, 8, e2300068.
- Porro GM, Lorandi I, Liu X, Kataoka K, **Battaglia G** & Gonzalez-Carter D 2023, "Identifying molecular tags selectively retained on the surface of brain endothelial cells to generate artificial targets for therapy delivery" *Fluids Barriers CNS,* 2023, 20, 88.

ICREA**MEMOIR2023**

Miguel Beistegui
Universitat Pompeu Fabra (UPF)
Humanities

I was educated in France (BA and MA in Philosophy, Paris I-Sorbonne), the US (Ph.D in Philosophy, Loyola University, Chicago), and Germany (Postdoc in Philosophy, Hegel-Archiv, Bochum). Before becoming an ICREA Research Professor, I was a Professor of Philosophy at the University of Warwick (UK) for over 25 years. I have held Visiting Professorships in Milan (Università degli Studi di Milano), Moscow (The Institute of Philosophy of the Academy of Sciences), New York (The New School for Social Research), Boston (Boston College), and Ca'Foscari (Venice). I have been the recipient of various grants as Principal Investigator between 2007 and 2019 and am currently a co-PI on a project at the intersection of literature and political theory, which explores the utopian/dystopian narratives of Atwood, Ishiguro, and Houellbecq. .

Research interests

I am a philosopher with a broad range of interests (ontology, aesthetics, ethics, and political philosophy), with monographs on Heidegger, Deleuze, Proust, Chillida, and Lacan. Since the 2008 financial crisis, my thought has taken a critical turn. My recent work includes a trilogy on desire as: a genealogy of desire as a way of understanding who we are; as a specifically liberal technology of government; as a constructive approach to the self, aimed at exploring alternative and emancipatory practices. My most recent includes two books,: a critique of, and a reflection on ways to overcome, the forces or 'vices', such as stupidity and spite, which diminish our ability to think and our agency (individual or collective); a 'philosophy of crisis', which aims to: construct a rigorous concept of crisis; distinguish between types and levels of crises; show how such a concept can help us better understand, engage with, and overcome the most significant crises of our time.

ICREA**MEMOIR2023**

Maria Carme Belarte Franco
Institut Català d'Arqueologia Clàssica (ICAC)
Humanities

I am an archaeologist, with a PhD in Geography and History (1995) for the University of Barcelona. From 1996 to 1998 I was a postdoctoral researcher at the CNRS (Lattes, France). From 1999 to 2003 I had different postdoctoral positions at the University of Barcelona where I combined research with teaching tasks and spent research periods in France. In 2004, I took a position at the ICAC. I joined ICREA in 2006 as a researcher and became an ICREA Research Professor in 2010. I currently lead the Protohistory Archaeology team at the ICAC. I have conducted fieldwork in Spain, France, and Tunisia. I made stays as an invited researcher at the Universities of Chicago and Montpellier. In 2013, I received Positive Assessment from the AQU Catalunya (Catalan Evaluation Agency) in order to apply for a University Full Professor position. Since 2019 I have been Academic Supervisor of the Advanced Training Area at the ICAC. Since 2023 I am a member of Institut d'Estudis Catalans.

Research interests

The general goal of my research is to study the processes that transformed the Late Bronze Age local-scale groups into the complex societies of the Western Mediterranean Iron Age. Within this general goal, I deal with more specific topics such as urban planning, architecture, household organisation, domestic activities and funerary practices and rituals. Since 2020 I have been conducting the TRANSCOMB Project, funded by the Spanish Ministry of Science, renewed in 2023. Within this project, an interdisciplinary methodology for studying fire installations in the Iron Age societies of the Western Mediterranean has been implemented. It integrates different techniques coming from Bioarchaeology and Geoarchaeology, as well as Experimental Archaeology, in order to gather information on the use of fuels, natural resources management, and daily activities related to fire.

Selected publications

- **Belarte MC**, Portillo M, Mateu M, Saorin C, Pastor M, Vila S & Pescini V 2023, 'An interdisciplinary approach to the combustion structures of the Western Mediterranean Iron Age. The first results', *Journal of Archaeological Science Reports,* 47,103803.
- **Belarte MC**, Pastor Quiles M, Mateu M et al. 2023, 'Iron Age combustion structures in the north-eastern Iberian Peninsula: an interdisciplinary experimental study', *Archaeological And Anthropological Sciences*, 15, 6, 76.
- **Belarte MC** 2023, 'Building materials and techniques in Iron Age northern Iberia (C. 600-200 BC)', in Previato C & Bonetto G, *Terra, legno e materiali deperibili nell'architettura antica. Atti del Convegno Internazionale di Studi (Padova, 3-5 Giugno 2021)*, Roma, 187-200.
- **Belarte MC** & Sanmartí J 2023, *L'assentament ibèric d'Alorda Park, o de Les Toixoneres (Calafell, Baix Penedès, Tarragona), Campanyes d'excavació 1992-2001*, TRAMA 10, ICAC, Tarragona.

Selected research activities

PI: Estudio transdisciplinar, experimental y etnoarqueológico de estructuras de combustión de la Edad del Hierro en el Mediterráneo occidental (PID2022-137999NB-I00). 2023-2027

PI: Estudio transdisciplinar y experimental de estructuras de combustión en el Mediterráneo occidental durante la protohistoria (1er milenio a.C.) (PID2019-104661GB-I00). 2020-2023

PI: El territori de Cessetània occidental al primer mil·lenni aC: del bronze final a la romanització (CLT009/22/00012). 2021-2025

Oral communication: **Belarte MC**, Mateu M, Portillo M, et al.: 'Investigating a Greek kitchen from the late archaic occupation at Emporion (Empúries, L'Escala, north-eastern Spain) through interdisciplinary analyses', *29th EAA Annual Meeting*. Belfast (UK).

Member of the Institut d'Estudis Catalans.

Professor of the Master of Applied Classical Archaeology (MACA). URV-UAB-ICAC.

Academic Supervisor, Advanced Training Area at the ICAC.

Member of the Doctorate Committee (Doctorate in Classical Archaeology). URV-UAB-ICAC.

ICREA**MEMOIR2023**

Verónica Benet-Martínez
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Before joining ICREA and Pompeu Fabra U., I held professorships at the U. of California Riverside and the U. of Michigan. I obtained a PhD in Psychology from the U. of California Davis and was a funded Postdoctoral Research Fellow at the U. of California Berkeley. I am President of the European Association of Personality Psychology (EAPP), an appointed Fellow of the Society for Personality and Social Psychology (SPSP), was an Associate Editor for the Journal of Personality and Social Psychology (2009-2015), and I am an Editorial Board Member for several top-tier scientific journals in social-personality and cultural psychology. My research has been funded by government and private grants from the US, Catalonia, and the EU. I have received awards from SPSP (Outstanding Mid-Career Contributions in Personality Psychology; Inducted into *The Heritage Wall of Fame*) and the American Psychological Association (Otto Klineberg Intercultural and International Relations Award)

Research interests

Using observational and experimental research designs and different types of data (survey, behavioral, social network) I examine the following issues: ACCULTURATION/MULTICULTURALISM: Dynamics and socio-cognitive correlates of managing two or more cultural affiliations and identities; Individual differences in bicultural identity structure; Biculturalism and social-networks; Consequences of biculturalism (social, cognitive, and adjustment-related). CULTURE AND PERSONALITY/SELF-CONCEPT: Identification and measurement of culture-specific and -general personality constructs; Interplay of cultural values and personality in predicting well-being; Bilingualism and self-schemas. CROSS-CULTURAL RESEARCH METHODS: Cultural/linguistic issues in the development and adaptation of psychological scales and tests; Combined emic-etic methodology.

Selected publications

- Grigoryev D, Stogianni M, Berry J, Nguyen A, Bender M & **Benet-Martinez V** 2023, 'The integration hypothesis: A critical evaluation informed by multilevel meta-analyses of three multinational datasets', *International Journal of Intercultural Relations*, 97, 101897.
- Shamloo SE, Cocco VM, Faccini M, **Benet-Martinez** V & Trifiletti E 2023, 'Managing the unexpected: Bicultural identity integration during the COVID-19 emergency', *International Journal Of Intercultural Relations*, 93, 101781.
- Lu JG, **Benet-Martínez V** & Wang LC 2023, 'A socioecological-biological framework of culture and personality: Their roots, trends, and interplay' *Annu Rev Psychol*, 74, 363-390.
- Soler-Pastor E, Bobowik M, **Benet-Martínez V** & Repke L 2023, 'Disentangling the Link between Diverse Social Networks and Creativity: The Role of Personality Traits', *Spanish Journal Of Psychology*, 26, e10.

Selected research activities

Selected Keynotes and Invited Talks:

Benet-Martínez, V. (2023, September). Multi-cultural selves, multicultural minds: Cultural, social, and personality processes. Invited talk for the International EARA-EASP-EAPP meeting "Building Inclusive Identities" (chairs: Elisabetta Crocetti & Monica Rubini), University of Bologna, Italy.

Benet-Martínez, V. (2023, July). (Multicultural) identity integration: Components, psychological antecedents, and outcomes. Paper presented in the symposium "Towards an integrated sense of self at work: Advances and current trends in identity integration research" (Zhou, C., & van der Toorn, J., Chairs) at the 19th Meeting of the European Association of Social Psychology, Krakow, Poland.

ICREA**MEMOIR2023**

Jens Biegert
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

PhD 2001 with distinction TU Munich, Oberass./Habil. ETH Zürich. 2007 at ICFO, pioneered mid-IR photonics, attosecond soft X-rays and laser-induced electron diffraction with breakthroughs in molecular dynamics and dynamics in materials. As. Editor OPTICA and Ultrafast Science; Fellow of Studienstiftung des deutschen Volkes; Fellow of Optica; Fellow of the American Physical Society; Thousand Talents Program Award China; OSA Allen Prize; Bessel Prize of the Humboldt Foundation; ERC Advanced Grant and Proof of Concept Grant; Adj. Prof. at University of New Mexico USA; Guest Professor at Fritz Haber Institute of the Max Planck Society; Whitebook Extreme Light Infrastructure; former Executive Director Laserlab-Europe (46 infrastructures 22 countries), former Board of Chairs of Analytical Research Infrastructures of EU (40,000 researchers, 7 networks), Board of Directors Optica, Chair Optics Meetings Council, Strategic Planning and Finance Councils Optica.

Research interests

Our research in Attosecond Quantum Dynamics aims at revealing the dynamic behaviour of the quantum world within atoms molecules and solids that lead to macrocopic functionalities. We use attosecond soft x-ray pulses and quantum microscopy with single electrons to address fundamental problems such as molecular isomerization, phase transitions and superconductivity with applications across quantum sensing, energy harvesting and storage, efficient sensing and computing.

Selected publications

- Sanchez A, Tulsky VA, et al. 2023, 'Tailoring quantum trajectories for strong-field imaging', Optica 10, 1729.
- Sidiropoulos TPH, Di Palo N, et al. 2023, 'Enhanced quantum conductivity and many-body effects in a semi-metallic light-matter hybrid', *Nature Comm.* 14, 7407.

ICREA**MEMOIR2023**

Bart Bijnens
Universitat Pompeu Fabra (UPF)
Engineering Sciences

Bart Bijnens obtained an MSc in Electronic Engineering and PhD in Medical Sciences (1997, KULeuven, Belgium). He was tenured Professor of Cardiovascular Imaging&Dynamics at the Medical Faculty in Leuven (1998-04), supervised clinical research at St. George's Hospital in London (2005-6) and was resident Visiting Professor at the University of Zagreb (2007), Croatia. Since Sept. 2008, he is ICREA Research Professor in Barcelona, first at the UPF and currently at IDIBAPS, leading the 'Translational Computing in Cardiology' group. He is recognised as international expert in pathophysiological concepts and (image-based) assessment of CV diseases, with a reputation of being able to explain basic pathophysiology principles and put technical developments in context. This resulted in many international collaborations/publications/lectures as well as being requested by centres all over the world for advice on research in cardiovascular mechanics and imaging.

Research interests

Translational Cardiovascular Pathophysiology, focussing on assessing cardiac function and understanding changes induced by disease and how treatment can modulate this remodelling. This is approached by integrating information handling and computing, combined with basic pathophysiology knowledge in order to advance clinical sciences. This implies an approach from basic understanding of disease towards a clinical study; selecting/designing appropriate investigational tools to assess relevant clinical parameters; quantifying diagnostic information (from clinical information to imaging data) to extract pertinent information and interpreting results and relate them to pathophysiology. Recent projects include the combination of computational modelling with interpretable machine learning in order to find easy to implement/deploy techniques for the identification of patients at risk for adverse events, as well as to improve our understanding of disease and decission making.

Selected publications

– Sanchez-Martinez S, Randanne PC, Hawkins-Villarreal A, et al. 2023, 'Acute fetal cardiovascular adaptation to artificial placenta in sheep model', *Ultrasound In Obstetrics & Gynecology*, 62, 2, 255 – 265.

– Li KYC, Dejea H, De Winne K, et al. 2023, 'Feasibility and safety of synchrotron-based X-ray phase contrast imaging as a technique complementary to histopathology analysis', *Histochemistry And Cell Biology*, 160(5), 377-89.

– Bernardino G, Sepúlveda-Martínez Á, Rodríguez-López M, et al. 2023, 'Association of central obesity with unique cardiac remodelling in young adults born small for gestational age', *European Heart Journal-cardiovascular Imaging*, 24, 7, 930 – 937.

– Sutherland GR, **Bijnens** B, et al. 2023, 'Professor Liv Hatle 1936–2023, pioneer and doyenne of echocardiologists' *European Heart Journal*, 44, 39, 3944-5.

– Hasan BS, Hoodbhoy Z, et al. 2023, 'Can machine learning methods be used for identification of at-risk neonates in low-resource settings? A prospective cohort study', *BMJ Paediatrics Open*, 7, e002134.

– Akazawa Y, Fujioka T, et al. 2023, 'Right Ventricular Electromechanical Dyssynchrony and Its Relation to Right Ventricular Remodeling, Dysfunction, and Exercise Capacity in Ebstein Anomaly', *Journal of the American Society of Echocardiography,* 36, 6, 634-43.

– Planinc I, Ilic I, Dejea H, et al. 2023, 'A Novel Three-Dimensional Approach Towards Evaluating Endomyocardial Biopsies for Follow-Up After Heart Transplantation: X-Ray Phase Contrast Imaging and Its Agreement With Classical Histopathology', *Transplant International*, 36, 11046.

ICREA**MEMOIR2023**

Diego Blas Temiño
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

I was born in Burgos (Spain), but spent my early years in the scenic village of Benasque. I graduated in Physics from the Universidad de Zaragoza (2002), and moved to the Universitat de Barcelona for my PhD. During my thesis I focused on alternatives to General Relativity to try to alleviate the cosmological constant problem.

In 2008 I moved to EPFL, Switzerland were I developed theories of quantum gravity without Lorentz invariance and CLASS, a computer code widely used in modern cosmology. After few months in NYU, I moved to CERN in 2012, first as Senior Fellow and in 2014 as Staff Member. In this period, I widened my research towards analytical methods for large scale structure and new ideas to test dark matter models in astrophysics and precise (quantum) devices.

In 2018 I joined King's College London as Senior Lecturer and in 2021 the Universitat Autònoma de Barcelona and IFAE as Beatriz Galindo Distinguished Researcher. I was appointed ICREA Research Professor in 2023.

Research interests

Astrophysical probes of dark matter and gravitational waves
I look for new ways to use astrophysical data (from the timing of pulsars, to galactic dynamics, or the orbit of the Moon) to find new information about dark matter and gravitational waves.

New developments in gravitational wave searchers
I am part of the LISA Consortium, associated to the LISA Mission, and led the dark matter studies since 2019. I am also part of the Einstein Telescope. I was founding member of the AION Collaboration and member of the ELGAR initiative, both aiming at searching for gravitational waves and dark matter with atomic interferometers.

(Quantum) precision technologies for fundamental physics.
I am very interested in using cutting-edge technology to detect fundamental backgrounds. I have studied atomic clocks, co-magnetometers, atomic interferometers and electromagnetic cavities for dark matter and gravitational waves. I am really excite to open new directions in this line.

Selected research activities

I joined ICREA in 1 Dec 2023. The following summary is based only on scientific activities of December 2023.

Conferences and workshops. Invited plenary talk at Saturnalia workshop. Spain.

Dissemination. 108th ICREA colloquium (with ICREA Prof. M. Martínez): '*Listening to the dark side of the Universe: the dawn and future of gravitational wave detection*', Barcelona, December 2023.

Funding and participation in projects. Coordinator of 2021 SGR 00649 (40 k€). Co-Investigator of ST/T00679X/1 (324 k£). Member of COST Action CA21106 and PID2020-115845GB-I00 (MICINN, Spain).

Editorial activities. Editor of the collection of articles *LISA: Science with the Laser Interferometer Space Antenna*, published by Springer. Elected section coordinator to upgrade the White Paper of the community of High-Frequency Gravitational Waves.

Collaborations, leadership and visiting appointments.

- Elected member of the LISA Consortium Constituent Council (CCC). Mandate of CCC: redefine the role of the LISA Consortium (more than 1800 scientists) after the LISA Mission is adopted by ESA (which happened in Jan 2024).
- Topic Leader (*Dark Matter*), Science Interpretation WG, LISA Consortium.
- Manager of *Physics* Working Package of AION Collaboration.
- Member of Scientific Committee, Benasque Center for Science, Spain.
- Member of LISA Consortium, ELGAR Initiative, AION Collaboration, Einstein Telescope and RITCE- Spanish Quantum Information Network.
- Visiting Scientist of CERN, Associate Researcher of IFT-CSIC (Spain), External Collaborator of CAPA (Spain).
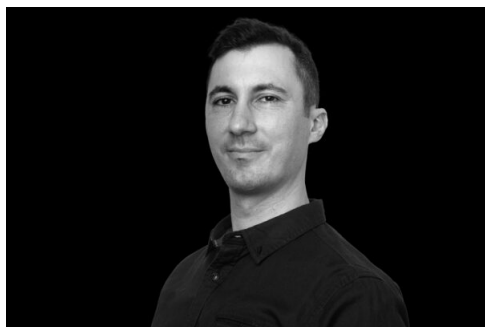
External evaluator for STFC Ernest Rutherford Fellowship (UK) and FONDECYT-CHILE.

Reviewer for PRD.

Organizing the *BIG&C* quarterly meetings (Barcelona, Spain) and 2 international workshops for 2024: *New Frontiers in Strong Gravity* (Benasque, Spain; Jul 24) and *IMFP24* (Benasque, Spain; Sep 24).

Mentor of the LISA, BIST and IFAE mentorship programs.

ICREA**MEMOIR2023**

Damian Blasi
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

I started my career in Physics, obtaining a BSc in Physics (2009) and a MSc in Interdisciplinary and Statistical Physics (2010) both from the Balseiro Institute in Bariloche, Argentina. I then was awarded a PhD in Computer Science (2018) from the Max Planck Institute for Mathematics in the Sciences while at the same time affiliated to the Department of Linguistics at the Max Planck Institute for Evolutionary Anthropology, both based in Leipzig, Germany. Between 2015-2019 I was a postdoctoral researcher at the Department of Comparative Linguistics and the Psycholinguistics Laboratory at the University of Zürich, Switzerland. In 2019-2020 I was the Maury Green Fellow at Harvard's Radcliffe Institute for Advanced Study. From 2020-2023 I was a Harvard Data Science Initiative Fellow based at the Culture, Cognition, and Coevolution Lab at Harvard's Human Evolutionary Biology Department. Since November 2023 I am an ICREA Research Professor.

Research interests

I research the relation between language, culture, cognition, and human evolution from the point of view of language diversity and a multidisciplinary approach drawing broadly from evolutionary anthropology, comparative linguistics, cognitive science of language and cultural evolution. I tap on empirical methods and data from across the sciences and the humanities to understand (1) the commonalities and differences across the world's languages, (2) how languages have been shaped by the myriad of changes that have taken place over the Holocene, and (3) what are the real-world consequences of the diversity of languages for science, technology, education, and medicine.

Selected publications

- Blum F, Barrientos C, Ingunza A, **Blasi D E** & Zariquiey R 2023. 'Grammars Across Time Analyzed (GATA): a dataset of 52 languages'. *Scientific Data, 10*(1) 835.

ICREA**MEMOIR2023**

David M. Block Allen
Universitat Pompeu Fabra (UPF)
Humanities

I am ICREA Research Professor in Sociolinguistics in the Departament d'Humanitats, Universitat Pompeu Fabra, where I am a member of the Grup de Recerca en Espais Interculturals, Llengües i Identitats (GREILI) and the Grup de Recerca en Aprenentatge i Ensenyament de Llengües (GR@EL; Facultat de Traducció). I am Fellow of the Academy of the Social Sciences (UK); Visiting Professor at University College London, Institute of Education; and editor of the Routledge book series Language, Society and Political Economy. I joined ICREA in September 2012 after 16 years at University College London Institute of Education, where I was Professor of Languages in Education. Prior to that, I worked in Barcelona for 18 years, teaching English in centres such as ESADE, and teaching Applied Linguistics at the Universitat de Barcelona and the Universitat Autònoma de Barcelona. I completed my PhD at the University Lancaster (UK) in 1995.

Research interests

In recent years, I have focused primarily on the dominant form of capitalism in the early 21st century (AKA neoliberalism) and the inequality and class warfare it has wrought from a sociolinguistic perspective. My most recent work examines four different aspects of contemporary society: (1) neoliberalism, ineqaulity and class; (2) politicial discourses in the toxic information environment in which we live; (3) the internationalization and Englishization of higher education worldwide as part of the broader neoliberalization of societies; and (4) new ways of framing discussions of the construct 'identity' in the early 21st century.

Selected publications

- **Block D** 2023, *Interviews in applied linguistics: Autobiographical reflections on research processes*, Routledge, London.
- **Block D** 2023, 'Language practices and processes among Latin Americans in Europe: Some closing thoughts on authenticity and belonging', In Márquez-Reiter R & Patino-Santos A Eds *Language Practices and Processes Among Latin Americans in Europe,* London: Routledge, London, 251-261.

ICREA**MEMOIR2023**

Cedric Boeckx
Universitat de Barcelona (UB)
Humanities

Cedric Boeckx is Research Professor at the Catalan Institute for Advanced Studies (ICREA), a member of the Universitat de Barcelona Institute of Complex Systems (UBICS), and a member of the section of General Linguistics at the Universitat de Barcelona. Before joining ICREA, he was Associate Professor of Linguistics at Harvard University. He is the author of numerous books, including Islands and Chains (2003), Linguistic Minimalism (2006), Bare Syntax (2008), Language in Cognition (2009), Syntactic Islands (2012), Elementary Syntactic Structures (2014), Reflections on Language Evolution (2021), and the editor of numerous volumes. He serves as Principal Investigator of the "Cognitive Biology of Language" research group.

Research interests

My current research focuses on developing new ways to shed light on the neurobiological foundations of the human language faculty. My graduate training and early career were in theoretical linguistics, but my more recent work has a more explicit biological, and experimental orientation. My current projects are all intended to facilitate integration among disciplines (linguistics, neuroscience, evolutionary biology, and genetics), and lead to better experimental testing of theoretical hypotheses, as well as to more solid interpretations of experimental findings. I also seek to exploit the full pluralism characteristic of the life sciences to force a rethinking of long-held assumptions in theoretical linguistics and other domains of cognitive science.

Selected publications

- **Boeckx C** 2023, 'What made us "Hunter-Gatherers of Words"', *Frontiers in Neuroscience* 17:1080861.
- Ruland M, Andirkó A, Romanowska I & **Boeckx C** 2023, 'Modelling of factors underlying the evolution of human language'. *Adaptive Behavior*. 31(4):351-364.

ICREA**MEMOIR2023**

Gemma Boleda
Universitat Pompeu Fabra (UPF)
Engineering Sciences

I am an ICREA Research Professor in the Department of Translation and Language Sciences of the Universitat Pompeu Fabra, where I co-lead the Computational Linguistics and Linguistic Theory (COLT) research group. I previously held post-doctoral positions at the the Computer Science department of Universitat Politècnica de Catalunya (Spain), the department of Linguistics of The University of Texas at Austin (USA), and the CIMEC Center for Brain/Mind Sciences of the University of Trento (Italy). Before that, I graduated in Spanish Philology at Universitat Autònoma de Barcelona and obtained my PhD in Cognitive Science and Language at Universitat Pompeu Fabra (both in Spain). I was also a visiting researcher at the Computational Linguistics & Phonetics department (CoLi) of Saarland University and the Institute for Natural Language Processing (IMS) of the University of Stuttgart, both in Germany.

Research interests

I want to understand how language works; in particular, how humans convey meaning through language. The focus of my research is how the linguistic system and its use in communication influence each other. For instance, a speaker of English can use different expressions (e.g. "the dog/chihuahua/small dog") when referring to a given chihuahua. The choice depends, a.o., on the words and grammar available in the language and the properties of the object. In turn, over time, specific speaker choices change the system itself. I study these dynamics in a range of semantic phenomena, and investigate which aspects are universal across languages, and what governs variation.

My team and I work with a cross-disciplinary approach that integrates methodologies from Linguistics, Artificial Intelligence, and Cognitive Science. Our approach requires large amounts of data, and part of our work involves gathering linguistic data on a large scale.

Selected publications

- Brochhagen T, **Boleda G**, Gualdoni E & Xu Y 2023, 'From language development to language evolution: A unified view of human lexical creativity', *Science*, vol. 381, no. 6656, pp 431-436.
- Gualdoni E, Brochhagen T, Mädebach A & **Boleda G** 2023, 'What's in a name? A large-scale computational study on how competition between names affects naming variation'. *Journal of Memory and Language*, 133, 104459.
- He Y, Liao X, Liang J & **Boleda G** 2023, 'The Impact of Familiarity on Naming Variation: A Study on Object Naming in Mandarin Chinese', *Proceedings of the 27th Conference on Computational Natural Language Learning (CoNLL)*, 456-475.
- Harrison S, Gualdoni E & **Boleda G** 2023, 'Run Like a Girl! Sport-Related Gender Bias in Language and Vision', *Findings of the Association for Computational Linguistics: ACL*, 14093-14103.
- Gualdoni E, Kemp C, Xu Y & **Boleda** G 2023, Quantifying informativeness of names in visual space, Proceedings of the Annual Meeting of the Cognitive Science Society, 45, pp 2084-2090

Selected research activities

Three researchers have received competitive post-doctoral grants to work with me: Germán Kruszewski (Marie Sklodowska-Curie), Iria De Dios (Juan de la Cierva), and Carmen Saldaña (Beatriu de Pinós).

ICREA**MEMOIR2023**

Luca Bonatti
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

I graduated in Philosophy at the University of Milan, Italy, and received my PhD in Philosophy of Mind at Rutgers, N.J.. I have been a member of the Laboratoire de Sciences Cognitives et Psycholinguistique, Paris, where I learned the little experimental psychology I know of, thanks to the help of friends and colleagues. I then entered the University of Paris 8, France as an associate professor. I moved to Italy at SISSA, Trieste, then to the University of Nantes, France, as a full professor, and finally to Barcelona, at the Universitat Pompeu Fabra, as an ICREA professor. I have also been visiting professor at the University of Budapest, Hungary, at the University of the Balearic Islands, Spain, and at New York University.

Research interests

I am fascinated by thinking, by the very fact that we conceive structured states of mind that can be true or false, that can be imaginary or real. I am fascinated by how pervasively thinking populates our mental life. We reason when we read, or when we speak, but also when we walk around, or when we dream. Indeed, thinking is at the roots of the unique cognitive place humans have in the animal kingdom. I investigate its early structure, finding ways to describe the potential primitives of the scaffoldings supporting the combinatorial structure of human thought. I try to reveal bits and pieces of the representations underlying our abilities to come to conclusions, to form expectations, or to find what happens next. When time allows, I also work on how infants and adults find linguistic structure in speech, and how we can pack so much conceptual information inside those tiny and odd bits of sounds that we call words.

Selected publications

- Martín Salguero A, Reverberi C, Solari A, Filippin L, Pallier C & **Bonatti LL** (2023) 'Seeing inferences: brain dynamics and oculomotor signatures of non-verbal deduction' *Scientific Reports*, **13**(1), 2341
- Bohus KA, Cesana-Arlotti N, Martín-Salguero A & **Bonatti LL** 2023, 'The scope and role of deduction in infant cognition', *Current Biology*, 33, 18, 4014-4020.e5.
- Canudas-Grabolosa I, Martín-Salguero A & **Bonatti LL** 2023, 'Natural logic and baby LoTH', *Behavioral And Brain Sciences*, 46, e266.

ICREA**MEMOIR2023**

Christian Brander
Institut de Recerca de la Sida - IrsiCaixa (IrsiCaixa)
Life & Medical Sciences

Christian Brander obtained a PhD in Immunology at the University of Bern and completed his post-doctoral training at Harvard Medical School, focusing on T cell immunity to HIV. He led several international efforts to build HIV research capacities across Southern Africa and Central and South America. He joined ICREA in 2008 with an appointment at the IRSICaixa AIDS Research Institute and as the scientific director of the Catalan HIV vaccine program HIVACAT. He is a co-inventor of the "HTI" immunogen, which has shown first promising results in clinical phase II trials of therapeutic HIV vaccination. He serves as a curator of the Los Alamos HIV Database and is an Associate Professor at the University of Vic.

Research interests

Our group aims to understand the cellular immunity to viral infections in different disease contexts. Using complementary tools for immune analysis and integrated -omics approaches, we seek to identify functional correlates of virus control and to explore the underlying cellular and molecular mechanisms that mediate such control. We combine immune assays with methylome, communicome and transcriptomics analyses to assess to what degree and at which stages of different viral infections the effector function profiles of virus-specific T cells are epigenetically controlled. We are especially interested in understanding these mechanisms in lympho-proliverative and neurological diseases driven by these viral infections and pay special attention to TCR repertoires of the involved T cells and their antigen specificities.

Selected publications

- Kobayashi-Ishihara M, Frazão Smutná K, et al. 2023, '
Schlafen 12 restricts HIV-1 latency reversal by a codon-usage dependent post-transcriptional block in CD4+ T
cells', *Commun Biol,* 6 - 1, 487.
- Duran-Castells C, Llano A, Kawana-Tachikawa A, Prats A, Martinez-Zalacain I, Kobayashi-Ishihara M, Oriol-Tordera B, Penya R, CGálvez C, Silva-Arrieta S, Clotet B, Riveira-Muñoz E, Ballana E, Garcia Prado J, Martinez-Picado J, Mothe B, Hartigan-O'Connor D, Wyss-Coray T, Meyerhans A, Gisslén M, Price RW, Soriano-Mas C, Muñoz-Moreno JA, **Brander C**, Ruiz-Riol M. "Sirtuin-2, NAD-dependent deacetylase, is a new potential therapeutic target for HIV-1 infection and HIV-related neurological dysfunction". *Journal Virol,* 97 - 2, pp. 2023 Feb 28;97(2):e0165522
- Elizalde-Torrent A, Borgognone A, Casadella M, Romero-Martin L, Escribà T, Parera M, Rosales-Salgado Y, Díaz-Pedroza J, Català-Moll F, Noguera-Julian M, **Brander C**, Paredes R & Olvera A 2023, 'Vaccination with an HIV T-Cell Immunogen (HTI) Using DNA Primes Followed by a ChAdOx1-MVA Boost Is Immunogenic in Gut Microbiota-Depleted Mice despite Low IL-22 Serum Levels', *Vaccines*, 11 - 11.
- Duran-Castells C, Prats A, Oriol-Tordera B, et al. 2023, 'Plasma proteomic profiling identifies CD33 as a marker of HIV control in natural infection and after therapeutic vaccination', *Ebiomedicine*, 95, 104732.

ICREA**MEMOIR2023**

Daniel Brockington
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

I completed my PhD at UCL with Kathy Homewood in 1998, a post doc with Bill Adams at Cambridge and then a short lectureship at Oxford, before moving to Manchester (the Global Development Institute) in 2005. I was awarded a personal chair there in 2012. In 2015 I moved to the University of Sheffield as Director of the Sheffield Institute of International Development (now IGSD). I joined ICTA at UAB 2022.

I much enjoy anthropological research which involves living with rural communities for one to two years. I´ve been fortunate to undertake three such periods in Tanzania in the course of my career. I also enjoy writing children´s books. I am a member of the Tanzanian Writers´ Forum and am completing a trilogy for upper middle grade readers that will be published in 2023 by African Professional Education Network, in Dar es Salaam. I love walking and cycling and checking the wind conditions to see if the conditions are right for kite-surfing.

Research interests

My research covers many aspects of conservation social science, rural resource management and livelihood change. I have published on the social impacts of conservation, capitalism and conservation, media and celebrity and large-N studies of NGO sectors. As well as working in Tanzania, I have also conducted research in South Africa, Australia, New Zealand and India. I have published around 200 papers and chapters. My books include *Fortress Conservation, Celebrity Advocacy and International Development*, *Celebrity and the Environment*, *Nature Unbound* (with Rosaleen Duffy and Jim Igoe), *The Anthropology of Conservation NGOs* (with Peter Billie Larson), *Prosperity in Rural Africa?* (with Christine Noe) *Prosperity in Rural Africa?* and *Contested Sustainability* (with Stefano Ponte and Christine Noe) *Contested Sustainability.* In pursuit of this work have held 2 personal fellowships from the ESRC and was awarded an Advanced ERC in 2022 for work on Conservation Data Justice.

Selected publications

- Sandbrook C, Albury-Smith S, Allan JR, et al. 2023, 'Social considerations are crucial to success in implementing the 30x30 global conservation target', *Nature Ecology & Evolution*, 7, 6, 784-785.
- Zhang, Y et al., 2023 'Governance and Conservation Effectiveness in Protected Areas and Indigenous and Locally Managed Areas', *Annual Review of Environment and Resources*, 48 - 559 - 588.
- Li Q, Huang J, Zhang Y, et al. 2023, 'Spatial variation of perceived equity and its determinants in a gateway community of Giant Panda National Park, China', *Frontiers In Ecology And Evolution*, 11, 1129556.
- Adams VM, Chauvenet ALM, Stoudmann N, Gurney GG,
Brockington D, Kuempel CD 2023, 'Multiple-use protected areas are critical to equitable and effective conservation', *One Earth*, 6, 9, 1173 - 1189.

Selected research activities

2023 has been about settling into Spain, Barcelona, UAB and ICTA personally and professionally. This has meant building a new research team focussed on Conservation Data Justice. I am currently supervising five PhDs at ICTA, and mentoring four post-docs, with one more soon to join.

The major writing activity consisted of two international collaborations. One, in *Nature Ecology & Evolution* laid out a research agenda for understanding the impacts of the '30 by 30' agenda (ensuring the conservation of 30% of the planet's lands and seas by 2030). The second, in *Annual Review of Environment and Resources* with over 50 authors, examined the relative performance of state-protection compared to community-conservation. This proved, in fact, a difficult topic to examine because of the want of commensurate data, and because of the different reasons for which diverse interest groups wish to conserve anywhere in the first place.

ICREA**MEMOIR2023**

Stefan T. Bromley
Universitat de Barcelona (UB)
Engineering Sciences

Stefan Bromley heads the Nanoclusters and Nanostructured Materials (www.ub.edu/nnmgroup) group within the Institute of Theoretical and Computational Chemistry at the University of Barcelona (IQTC-UB). He obtained his PhD in Computational Physics (University of Southampton, UK) in 1997 and previously held research posts in the UK (Postdoctoral fellow, Royal Institution), the Netherlands (Associate Professor, Delft University of Technology) and Spain (Ramón y Cajal fellow, UB). He has published >200 research articles and 8 book chapters, which have received >8500 citations (h-index = 48). He has given many invited talks about his work at international conferences and academic institutions and has co-edited two books and co-authored two reviews on computational modelling of nanoparticles and nanomaterials.

Research interests

With the constant technological drive for device miniaturisation, materials are increasingly being used at scales of only a few 100s or 1000s of atoms (i.e. the nanoscale). Such nanomaterials display novel size-dependent properties compared to materials at everyday length scales. Employing classical atomistic and quantum chemical modelling methods implemented on powerful supercomputers, we aim to provide a detailed predictive understanding of the structural, electronic and chemical properties of nanomaterials. We focus on how nanomaterials evolve with size, and designing new materials from nanoscale building blocks. Our research follows three main themes: (i) inorganic nanoclusters and nanostructured materials for energy applications (e.g TiO_2, ZnO, CeO_2), (ii) nucleation and properties of astronomically important nanomaterials (e.g. TiC, silicates), and (iii) design and understanding of low-dimensional materials for electronics/spintronics using organic molecular building blocks .

Selected publications

- Gobrecht D, Hashemi SR, Plane JMC, **Bromley ST**, Nyman G & Decin L 2023, 'Bottom-up dust nucleation theory in oxygen-rich evolved stars II. Magnesium and calcium aluminate clusters', *Astronomy & astrophysics*, 680.
- Tang Z, **Bromley ST** & Hammer B 2023, 'A machine learning potential for simulating infrared spectra of nanosilicate clusters.', *The Journal Of Chemical Physics*, 158, 22.
- Zeegers ST, Guiu JM, **Kemper F**, Marshall JP & Bromley ST 2023, 'Predicting observable infrared signatures of nanosilicates in the diffuse interstellar medium', *Faraday Discussions*, 10.1039/d3fd00055a.
- Alcon I, Ribas-Arino J, Moreira IPR & **Bromley ST** 2023, 'Emergent Spin Frustration in Neutral Mixed-Valence 2D Conjugated Polymers: A Potential Quantum Materials Platform', *Journal Of The American Chemical Society*, 145, 10, 5674-5683.
- Lopez-Suarez M, Lleopart G, Morales-Salvador R, Moreira IPR, **Bromley ST** 2023, 'Buckletronics: how compression-induced buckling affects the mechanical and electronic properties of sp(2)-based two-dimensional materials', *Philosophical Transactions Of The Royal Society A-mathematical Physical And Engineering Sciences*, 381, 2250, 20220248.
- Recio-Poo M, Morales-Garcia A, Illas F & **Bromley ST** 2023, 'Crystal properties without crystallinity? Influence of surface hydroxylation on the structure and properties of small TiO2 nanoparticles', *Nanoscale*, 15, 4809-4820.
- De Sousa JA, Pfattner R, Gutiérrez D, et al. 2023, 'Stable Organic Radical for Enhancing Metal-Monolayer-Semiconductor Junction Performance', *Acs Applied Materials & Interfaces*, 15, 3, 4635-4642.

Selected research activities

Invited talk: "*From Molecular Radicals to 2D Quantum materials: 2D Covalent Organic Radical Frameworks*", *Chem2Dmat - European Conference on Chemistry of 2D Materials,* Bologna, Italy.

Invited talk: "Silicate Clusters and Nanoparticles in the Interstellar Medium:
Theory, Experiment and Observation",
ISSPIC XXI - International Symposium on Small Particles and Inorganic Clusters, Berlin, Germany.

ICREA**MEMOIR2023**

Sandra Brucet
Universitat de Vic - Universitat Central de Catalunya (UVic)
Experimental Sciences & Mathematics

Since 2015 I am an ICREA Research Professor at University of Vic and Coordinator of the Aquatic Ecology Group (GEA). I hold a PhD in Biology from University of Girona (Spain). After my PhD, I was a postdoc at the University of Oslo (2006) and the National Environmental Institute of Denmark (2006-2008), I worked as a research scientist at the European Commission-Joint Research Centre (Italy) (2009-2012), I was a Marie Curie Fellow at the University of Aarhus (Denmark) (2013-2015) and a Visiting Scientist at the Middle East Technical University, Turkey (2013).
Since I created the group in 2015, GEA has grown considerably from the initial 3 researchers up to 21 members nowadays. In 2023, GEA has been awarded "Grup de Recerca Consolidat" distinction. Since its creation, GEA has obtained more than 30 competitive research projects, 7 PhD thesis were defended and more than 100 indexed papers were published.

Research interests

Our research focuses on the response of aquatic ecosystems and their biodiversity to global changes (e.g. eutrophication, habitat destruction, climate change), including the whole trophic structure from phytoplankton to fish. We focus on different aquatic ecosystems (lakes, rivers, ponds) and use complementary approaches such as experiments, surveys, latitudinal comparisons and models. Currently, an important line of our research is the study of the biodiversity and functioning of ponds ecosystems. Within this line I am coordinating the EU H2020 project PONDERFUL with the main objective to use pond ecosystems as Nature Based Solutions to mitigate and adapt to climate change and to protect biodiversity. I am also PI (at UVic) of the international EU Biodiversa+ project TRANSPONDER whose aim is to improve our ability to assess biodiversity and ecosystem change in ponds by optimising tools and developing protocols for biodiversity monitoring.

Selected publications

- Cuenca-Cambronero M et al. 2023, 'Challenges and opportunities in the use of ponds and pondscapes as Nature-based Solutions', *Hydrobiologia, vol.* 850, pp 3257–3271
- Miranda R, Bartrons M, **Brucet S** & Benejam L 2023, 'Long-term monitoring on a new channelized stream section: changes in mesohabitat, composition, and size structure of fish assemblages', *Restoration Ecology*, vol 31, e13995
- Cunillera-Montcusi D, Bou J, Mehner T, **Brucet S**, Arim M & Borthagaray AI 2023, 'The European freshwater landscape and hotspot areas of mass effects and regional connectivity', *Diversity & Distributions*, 29, 8, 997-1008

- Vo HT, Vrachioli M, Frick F, Sauer J, **Brucet S**, et al. 2023, 'Socio-economic or environmental benefits from pondscapes? Deriving stakeholder preferences using analytic hierarchy process and compositional data analysis', *Journal of Environmental Management*, 342, 118298
- Boll T, Erdogan S, Aslan Bicki U, Filiz N, Özen A, Levi EE, **Brucet S** et al. 2023, 'Fish Size Structure as an Indicator of Fish Diversity: A Study of 40 Lakes in Turkiye', *Water*, 15, 12, 2147

Selected research activities

Coordinator PONDERFUL project: *Pond ecosystems for resilient future landscapes in a changing climate*. EU Horizon 2020. 6.993.407€.

PI TRANSPONDER project (UVic): *Transnational biodiversity and ecosystem assessment approaches for pondscapes in Europe*. Funded by: Biodiversa+ & Spanish Ministry of Science and Innovation. 1.726.748€.

co-PI 'BTI Aiguamolls' project.

Coordinator postdoctoral grant *Beatriu de Pinós*. AGAUR.

Coordinator postdoctoral grant *Investigo* AGAUR.

Supervisor FI predoctoral grant. AGAUR.

Coordinator of two *Investigo* grants for technicians. AGAUR.

Invited talk at the EC Science for policy workshop on climate change and biodiversity.

ICREA**MEMOIR2023**

Francesc Burjachs Casas
Institut Català de Paleoecologia Humana i Evolució Social (IPHES)
Humanities

Born on 3rd August 1955 in Blanes, Catalonia. Dissertation on Paleopalynology, Autonomous University of Barcelona (UAB, 1985). DEA on Quaternary, MNHN-IPH, Paris (1986). PhD in Biological Sciences (UAB, 1990). Contributor of the Botany Department (UAB, 1979-1990). Director and co-director of several archaeological excavations. Hired researcher at Institute of Earth Sciences Jaume Almera, CSIC, Barcelona (1990-1998). Research Assistant at Catholic University of Louvain-La-Neuve (1994). Associate Professor at University Rovira i Virgili (URV), Tarragona since 1998. ICREA Research Professor at URV (2001-2007) and at the Catalan Institute of Human Palaeoecology and Social Evolution (IPHES) since 2008. Training stages of palynological research abroad: CRA, Sophia Antipolis, France (1978) with Prof. M. Girard; IPH, Paris (1985-1987) with Prof. J. Renault-Miskovsky, and University La Sapienza, Roma (1991) with Prof. M. Follieri. He has published more than 390 papers and reports.

Research interests

My investigation seeks to understand the climatic changes that happened along human evolution. This information is important to appreciate some of the factors which have influenced our evolution towards the current species. More precisely, my work is developed in the science of Palynology, which basically consists in the study of the fossil pollen trapped in the soil that our ancestors stepped on. In this way, we can describe the landscape in which they lived, the climate they endured, the vegetables they ate, etc.

Selected publications

- Revelles J, Martí-Molist J, **Burjachs F**, et al. 2023, 'Socioecological impact of monogenetic volcanism in the La Garrotxa Volcanic Field (NE Iberia)'. *Science Reports*, 13,1, 8168.
- Iriarte E, Revelles J., Finsinger W, Mesquita-Joanes F, Rodrigo MA, **Burjachs F**, Expósito I, Martí Molist J, Planagumà Ll, Alcalde G & Saña M 2023, 'Youngest Iberian Holocene volcanic eruptions and palaeoenvironmental evolution of a barrier-paleolake in the Garrotxa Volcanic Field (NE Spain)', *The Holocene*, 33, 8, 939-959.
- Fernández-López de Pablo J, Polo-Díaz A, Rabuñal-Gayo JR, Gómez-Puche M, Carrión-Marco Y, Cantó A, McLaughlin R, Ferrer C & **Burjachs F** 2023, 'Impacts of Early Holocene environmental dynamics on open-air occupation patterns in the Western Mediterranean: insights from El Arenal de la Virgen (Alicante, Spain)'. *Journal of Quaternary Science*, vol. 38, no. 5, pp 725-749.
- Rull V, **Burjachs F**, Carrión JS, et al. 2023, 'Historical biogeography of Cannabis in the Iberian Peninsula: A probabilistic approach using palynological evidence'. *Perspectives in Plant Ecology, Evolution and Systematics*, vol. 58, 125704.
- **Burjachs F**, Karoui-Yaakoub N, Expósito I, Mtimet M-S, Amri L & **Martínez-Navarro B** 2023**,** 'Palaeoenvironmental features of the early Middle Pleistocene site of Wadi Sarrat in NW Tunisia (Northern Africa)'. *Review of Palaeobotany and Palynology*, vol. 317, 104972.

Selected research activities

Co-organiser of the *VII Reunió OIKOS de Bioarqueologia*. Organized by *Associació Catalana de BioArqueologia* (ACBA) and *Universitat de Girona* (Catalonia). 26-27 May 2023, Sala de Graus, *Facultat de Lletres*, University of Girona.

Rechercher of the Project *Using climate envelope models to predict spatial and temporal distribution patterns of climate-related Quaternary extinctions* (QUATEXT)
.

Spanish *Ministerio de Ciencia e Innovación, Programa Estatal para Impulsar la Investigación Científico-Técnica y su Transferencia*, ref. PID2021-122533NB-I00

ICREA**MEMOIR2023**

Paula Bustos
Institute for Political Economy and Governance (IPEG)
Social & Behavioural Sciences

Paula Bustos is an ICREA research professor at Pompeu Fabra University, a Research Fellow at the European Economic Association, Chair of the EEA Women in Economics Committee, CEPR Research Fellow and co-leader of Trade and Spatial Frictions Theme of the STEG-CEPR program. She obtained her PhD in Economics at Harvard University and her Bachelor Degree at Universidad Torcuato di Tella in Argentina. She studies the economic effects of climate change, new agricultural technologies and international market integration. Her work has been published in leading journals such as the *American Economic Review* and the *Quarterly Journal of Economics*. Her research on agricultural productivity and structural transformation has been funded by a Starting Grant from the European Research Council in 2017. Her new research line on adjustment to climate change in developing countries has been funded by a Consolidator Grant in 2023.

Research interests

My research can be described as empirical investigations in economic development guided by international trade theory. My first line of research studied the effects of a regional free trade agreement between Argentina and Brazil. I showed that it induced firms to export and innovate but reduced the demand for unskilled labor in the manufacturing sector. A second line of research studies the effect of the adoption of new agricultural technologies, such as GM crops, on economic development in Brazil. Unskilled workers lost their jobs in agriculture but reallocated to the local manufacturing sector. This inflow if unskilled workers reduced local innovation and growth. However, agricultural productivity growth also led to savings and capital flows towards urban regions where it financed the expansion of the manufacturing and service sectors. A recent line of research studies the effects of climate change on labor and capital allocation across sectors and regions in Brazil.

Selected publications

– **Bustos P** 2023, 'A Comment on: "Presidential Address: Demand-Side Constraints in Development: The Role of Market Size, Trade, and (In)Equality" by Pinelopi Koujianou Goldberg and Tristan Reed', *Econometrica*, 91 – 6 – 1955 – 1958.

Selected research activities

Grants
-PI of ERC Starting Grant "Economic Development and Structural Transformation" (2017-2024).
-2023: Awarded an ERC Consolidator Grant for the project "Adaptation to Climate Change in Developing Countries".
Professional activities
-Co-Editor, *Journal of International Economics*
-Yale Economic Growth Center, Kuznets Visitors Programme
-Chair of the Women in Economics Committee of the EEA
-Co-leader of Trade and Spatial Frictions Theme of the STEG-CEPR programme
-PhD thesis Co-Advisor, Daniela Solá, CEMFI, July 2023. Placement: Universidad Carlos III de Madrid
-PhD thesis Co-Advisor, Giorgio Pietrabissa, CEMFI, expected graduation July 2024. Placement: LSE, Department of Geography and Environment
-PhD thesis Co-Advisor, Sophie Nottmeyer, CEMFI, expected graduation July 2025.
-Mentor at the Women in Economics Mentoring and Networking Retreat (held in connection with EEA-ESEM 2023), Barcelona, August 2023
-Member of the Student Prize Committee for the 12th European Meeting of the Urban Economics Association, Milan, May 2023
-Programme committee member, 20th International Economic Association World Congress, Medellín, December 2023
-Evaluation Panel Member for the STEG Fourth Larger Research Grants Call Panel Meeting, December 2023
Conference presentations and invited seminars
-CEPR Paris Symposium (policy panel), LVIII Reunión Anual de la Asociación Argentina de Economía Política (keynote), Collegio Carlo Alberto Seminar, Bocconi U. Seminar, Workshop on Economics and the Environment: Challenges and Opportunities for the Future (U.Bologna), Columbia Business School Money Macro Workshop, Yale Economic Growth Center Development Workshop, STEG-IGC Conference on Structural Transformation, Growth and Economic Development.

ICREA**MEMOIR2023**

Andreu Cabot
Institut de Recerca en Energia de Catalunya (IREC)
Engineering Sciences

I graduated in Physics in 1998 and completed my PhD in 2003 from the University of Barcelona. From 2004 to 2007 I was a postdoctoral researcher at the University of California at Berkeley and in the Lawrence Berkeley National Laboratory, under Prof. A. Paul Alivisatos' guidance. I returned to the Electronics Department of the University of Barcelona in 2007, and in 2009 I joined the Catalonia Institute for Energy Research – IREC to create the Functional Nanomaterials Group. Now, as ICREA Research Professor, I lead a team of 22 people devoted to the preparation and characterization of metal and semiconductor nanostructures, the assessment of their functional properties and their bottom-up assembly to fabricate high-efficiency and cost-effective energy conversion and storage devices.

Research interests

My research focuses on the design, synthesis and manipulation of nanocrystals and nanomaterials, their functional characterization and their application in the energy field. I use mostly solution-based processes to produce these nanocrystals and to assemble them to the macroscale. Solution-based methods allow for both unique control over composition and crystal phase at the nanometer scale and high versatility in the development of cost-effective technologies. From an application point of view, I have centered my work on the development of materials for energy conversion and storage. In particular, my group develops solution-processed thermoelectric nanocomposites from the bottom-up assembly of colloidal nanocrystals, (photo, electro)catalysts to accelerate energy-related chemical reactions and electrodes for next-generation batteries.

Selected publications

- Wang X, Li J, et al. 2023, 'Sulfate-Decorated Amorphous–Crystalline Cobalt-Iron Oxide Nanosheets to Enhance O–O Coupling in the Oxygen Evolution Reaction', *ACS Nano*, 7, 1, 825–836.
- Zhang Y et al. 2023, 'Defect Engineering Stabilized AgSbTe2 with High Thermoelectric Performance', *Advanced Materials*, 35, 2208994
- Huang C et al. 2023, 'Combined Defect and Heterojunction Engineering in ZnTe/CoTe2@NC Sulfur Hosts Toward Robust Lithium-Sulfur Batteries', *Advanced Functional Materials*, 33, 2305624.
- Dai J. et al. 2023, 'MoS2@Polyaniline for Aqueous Ammonium-Ion Supercapacitors', *Advanced Materials*, 35, 2303732.
- Zhang CY, et al. 2023, 'Sodium-Sulfur Batteries with Unprecedented Capacity, Cycling Stability and Operation Temperature Range Enabled by a CoFe2O4 Catalytic Additive Under an External Magnetic Field', *Advanced Functional Materials*, 33, 2305908
- Zhang CY et al. 2023, 'Identifying the Role of the Cationic Geometric Configuration in Spinel Catalysts for Polysulfide Conversion in Sodium-Sulfur Batteries', *Journal of the American Chemical Society*, 145, 18992.
- Zeng G, Sun Q, Horta S, et al. 2023, 'A Layered Bi_2Te_3@PPy Cathode for Aqueous Zinc-Ion Batteries: Mechanism and Application in Printed Flexible Batteries', *Advanced Materials*, .
- He R. et al. 2023, 'A 3d-4d-5d High Entropy Alloy as a Bifunctional Oxygen Catalyst for Robust Aqueous Zinc-Air Batteries', *Advanced Materials*, 35, 2303719
- Dai J. et al. 2023, 'Aqueous Ammonium-Ion Supercapacitors with Unprecedented Energy Density and Stability Enabled by Oxygen Vacancy-Enriched MoO3@C', *Advanced Functional Materials*, 33, 2212440.

Selected research activities

Started 1 new European project

1 graduated PhD student

ICREA**MEMOIR2023**

Jordi Cabot Sagrera
Universitat Oberta de Catalunya (UOC)
Engineering Sciences

Jordi Cabot received his PhD degree in Computer Science from Universitat Politècnica de Catalunya (UPC) in 2006 and his Habilitation (French HdR) from the École Doctorale in Nantes in 2012. He has been a visiting researcher in Milan (Politecnico di Milano) and Toronto (University of Toronto) and an Associate Professor and Inria International Chair at École des Mines de Nantes where he led an Inria Research team in Software Engineering. Since May 2015, he is an ICREA Research Professor at Internet Interdisciplinary Institute (IN3), a research center of the Universitat Oberta de Catalunya (UOC) where he leads the SOM (Systems, Software and Models) research lab. Beyond his core research activities, he books some time for blogging and other dissemination and technology transfer actions.

Research interests

My research falls into the broad area of systems and software engineering, especially promoting the rigorous use of software models and engineering principles in all software engineering tasks while keeping an eye on the most unpredictable element in any project: the people involved in it. Current research topics include the development of pragmatic formal verification techniques to assess the quality and security of software systems, the analysis and data mining of open source projects (and the communities around them) to optimize their collaboration and organizational structures, the study of scalability challenges in the design and deployment of large systems and the role AI can play in software development (and vice versa).

Selected publications

- Savary-Leblanc M,; Burgueno L, **Cabot J**, Le Pallec X & Gerard S 2023, 'Software assistants in software engineering: A systematic mapping study', *Software-practice & Experience*, 53, 3, 856-892.
- Alfonso I, Garces K, Castro H & **Cabot J** 2023, 'A model-based infrastructure for the specification and runtime execution of self-adaptive IoT architectures', *Computing*.
- Burgueno L, Munoz P, Clariso R, **Cabot J**, Gerard S & Vallecillo A 2023, 'Dealing with Belief Uncertainty in Domain Models', *ACM Transactions On Software Engineering And Methodology*, 32, 2, 31, 1-34
- **Cabot J** & Clarisó R 2023, 'Low Code for Smart Software Development', *IEEE Software*, 40, 1, 89-93.

ICREAMEMOIR2023

Xavier Cabré Vilagut
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics

Born in 1966 in Barcelona. PhD in Mathematics (area: Partial Differential Equations), Courant Institute, New York University, 1994. Kurt Friedrichs Prize, New York University, 1995. Member of the Institute for Advanced Study, Princeton, 1994-95. Habilitation à diriger des recherches, Université Pierre et Marie Curie-Paris VI, 1998. Harrington Faculty Fellow, The University of Texas at Austin, 2001-02. Tenure Associate Professor, The University of Texas at Austin, 2002-03. ICREA Research Professor at the Universitat Politècnica de Catalunya, since 2003. Fellow of the American Mathematical Society, inaugural class, 2013. Plenary speaker at the 8th European Congress of Mathematics, 2021. Frontiers of Science Award, first edition, 2023.

Research interests

My research field is the mathematical analysis of Partial Differential Equations. These equations arise in mathematical physics, differential geometry, finance, and biology. My focus is on elliptic and parabolic equations, and on the analytical understanding of the regularity, symmetry, and other qualitative properties of their solutions. This often involves the use of geometric tools such as isoperimetric inequalities, whose study is an important part of my research. My main current project concerns a recently flourishing area: reaction problems for fractional diffusions associated to jump or Lévy processes. These are the so called 'anomalous diffusions', well noticed in the last decades in some reaction and biological fronts, as well as in mathematical finance.

Selected publications

- **Cabre X**, Cozzi M & Csato G 2023, 'A fractional Michael-Simon Sobolev inequality on convex hypersurfaces', *Ann. Inst. H. Poincaré Anal. Non Linéaire, vol.* 40, no. 1, pp 185-214.
- **Cabré X**, Csato G & Mas A 2023, 'Existence and symmetry of periodic nonlocal-CMC surfaces via variational methods', *Journal Fur Die Reine Und Angewandte Mathematik, vol. 804, pp 11-40.*

Selected research activities

Frontiers of Science Award by the Chinese government, on its first edition, 2023.

ICREA**MEMOIR2023**

Mario Cáceres Aguilar

Institut Hospital del Mar d'Investigacions Mèdiques (IMIM) &
Universitat Autònoma de Barcelona (UAB)

Life & Medical Sciences

Mario Cáceres obtained his PhD at the Universitat Autònoma de Barcelona (UAB) working on Drosophila chromosomal rearrangements (1995-2000). He then moved to the USA as a postdoc at the Salk Institute for Biological Studies (2001-2003) and Emory University (2003-2006), where his research shifted to the use of novel genomic techniques to compare gene-expression levels in humans and non-human primates, as a way to study human unique characteristics. In 2006 he was awarded a Ramón y Cajal position at the Centre for Genomic Regulation in Barcelona, and focused on the identification of genomic changes with potential functional consequences in the human lineage, such as those associated with expression differences and structural variants, especially inversions. In 2010 he joined ICREA and since then he leads the Comparative and Functional Genomics group, first at the UAB and from 2023 at the Research Programme on Biomedical Informatics of the Hospital del Mar Research Institute (IMIM).

Research interests

We are interested in understanding genomic structural variation and gene-expression changes, and how they relate to individual and species phenotypic differences. To address these questions, we use humans as a model and take a multidisciplinary approach that combines experimental and bioinformatic analysis of the great wealth of data available, generating results of interest to many diverse fields. Our main line of research is the global analysis of polymorphic inversions and other complex regions in the human genome, which aims to investigate the biological significance of the less known types of variants in humans. This ranges from the development of new methods to study these variants and the first database of human polymorphic inversions, to the characterization of their population distribution, functional effects and selection signatures, as a way to ultimately determine their contribution to common traits and disease susceptibility.

Selected publications

– COVID-19 Host Genetics Initiative 2023, 'A second update on mapping the human genetic architecture of COVID-19', *Nature*, 621, E7–E26.

Selected research activities

– Award of the Spanish State Research Agency (AEI) Grant 'Complete characterization of human polymorphic inversions with long-read sequence data (CompletION)'.
– Co-organizer of the XI Bioinformatics and Genomics Symposium of the Societat Catalana de Biologia. December 15-16, 2023, Barcelona (Spain).
– Co-organizer of the 2023 ACGT Computational Genomics Workshop. April 13-14, 2023, Sant Feliu de Guixols, (Spain).
– Invited speaker at the Nanopore Day, Madrid 2023. November 29, 2023. Madrid, (Spain).
– Member of the evaluating committee of the 2023 Best Scientific Article Award from the Societat Catalana de Biologia.
– NAR Genomics and Bioinformatics Associate Editor.
– BMC Genomics Associate Editor (up to 1/9/2023).
– Genes Journal Associate Editor (up to 17/5/2023).

ICREAMEMOIR2023

Caterina Calsamiglia Costa
Institute for Political Economy and Governance (IPEG)
Social & Behavioural Sciences

Research Professor at IPEG and affiliate researcher at IZA and CEPR and member of the Human Capital and Economic Opportunity group at the University of Chicago. 2005 Phd in Economics from Yale University. She started her career at UAB, moved to CEMFI in 2015 as a Research Professor. In 2014 she obtained an ERC Starting Grant to work on understanding the importance of the design of school choice procedures for the educational landscape and to develop non cognitive assessment tools. Her leadership in an interdisciplinary group of researchers working on socioemotional learning led the creation of Pentabilities, a method to promote formative assessment for socioemotional learning. In the acedemic year 2022-2023 she led the design and implementation of 4 large scale RCTs in schools in Spain.

Research interests

Her research focuses on Public Economics with an emphasis on school choice, educational policies, affirmative action, measurement of non-cognitive skills and welfare economics in general. Her work includes theoretical, experimental and empirical analysis. She is currently working very closely with the education sector, promoting the implementation and evaluation of rigurous formative assessment tools for socioemotional learning in primary, secondary, vocational training and college worldwide.

Selected publications

- **Calsamiglia C** & Miralles A 2023, "Catchment Areas, Stratification, and Access to Better Schools", *International Economic Review*. 64, 4, 1469-1492.

ICREA**MEMOIR2023**

Paula Casal Ribas
Universitat Pompeu Fabra (UPF)
Humanities

Paula Casal works at UPF's Law Department, having held positions at Reading University (2004-8) and Keele University (1996-2004). She was also Fellow in Ethics at Harvard University (1999-2000), a Keele Junior Research Fellow, also at Harvard (2000-1), Hoover Fellow at Université Catholique de Louvain (2001-02), Leverhulme Research Fellow at the University of Oxford (2002-4) and Christopher Family Fellow at Stanford University (2018). Her work has appeared in journals like *Ethics*, *Economics and Philosophy*, *Journal of Medical Ethics*, *Journal of Moral Philosophy*, *Journal of Political Philosophy*, *Hypatia*, *Political Studies* and *Utilitas*. She is Associate Editor of *Politics, Philosophy & Economics*, *Law, Ethics and Philosophy*, Co-Director of the UPF Center for Animal Ethics, and President of the Great Ape Project-Spain.

Research interests

My main field is distributive justice, which is a part of political philosophy that examines how social institutions should distribute benefits and burdens within a family or a nation-state, or across countries or generations. This requires assessing general principles (including equality, priority, and sufficiency) as well as policy responses (such as taxation and public spending proposals) to specific problems like gender inequality, local and global poverty or climate change. I have written from a biologically-informed perspective about gender, nonhuman animals, personhood and the distinction between natural and social inequality. I have also written about more specific issues, such as how to distribute the costs of child-rearing, the right to sea-access for landlocked states, the moral limits on religious and cultural accommodation, xenotransplantation and the Non-Identity Problem, and the distinction medical ethicists draw between therapy and enhancement.

Selected publications

- **Casal P** 2023, 'Gender and Responsibility', *Routledge Handbook of the Philosophy of Responsibility*, ed. M Kiener, Routledge, London, pp. 442-445.
- Krattenmachen, J, **Casal P** et al. 2023, 'Universities Should Lead on the Plant-Based Dietary Transition', *The Lancet Planetary Health,* 7, 5, E354 - E355.
- **Casal P** & Montes M 2023, 'Fatal Attractions. The Ethics of Persuasion in the Animal-Based Entertainment Industry', *Animal Suffering and Public Relations*, ed. N Almiron, Routledge, London, pp. 72-87.
- **Casal P** 2023, 'Some Humans are not Persons and Some Nonhuman Animals are Persons', *Mètode,* 116, pp. 16-22, *Moments of Science*, 1.

Selected research activities

Keynotes: Univ. A Ruiz de Montoya, Peru 27/1; Collège Internat de Philosophie 17/5; Triennial Conference Analytical Philosophy, Univ. Vienna 21/8; Univ. Antioquia, Medellín, Colombia 22/8; Lewis & Clark Law School, Portland, Oregon and UNMSM, 20/9; Ilustre Colegio de Abogados de Cataluña, 10/10; Internat Conference *The Factual Animal*, Univ. Valencia 28/11-1/12.

Talks: Conference Univ. Kitakyusu, Japan 8/4; Conference UPF-Univ. Laval 18/5: Workshop UPF- Univ. York 9/6; Discrimination Conference, Univ. Aarhus 16/8.

Organized: with P Turmel, *Festival of Ideas* UPF-Univ. Laval, Canada 18-20/5; *J Sebo Workshop* UPF 14/12; *Political Philosophy Workshop,* UPF 14/12.

Edited: monographic of *Revista Cultural* 142, with 7 contributions to animal ethics.

Supervised: LS de la Sierra's PhD *Climate, Migration & Corrective Duties* 12/12; J Recasens' MA *Climate Insurance as Compensation Mechanism.* A Baldacchino's MA *Limiting Family Size.*

Evaluated: Swiss National Science Foundation and Agencia Estatal de Investigación Grants.

Directed: Center for Animal Ethics, which organized numerous seminars, held meetings with vicerrectors of sustainability and produced reports on *Wildboar Culling* 6/3, *Octopus Farms* 12/4 & *Blood Farms* 9/6.

Media: Long interviews in *142 Revista Cultural,* pp. 50-54, 8/4; and *La Vanguardia*, Argentina 3/2.

ICREA**MEMOIR2023**

Carlos Castillo Ocaranza
Universitat Pompeu Fabra (UPF)
Engineering Sciences

Carlos' goal is to address problems of social significance through computational methods and interdisciplinary research, and his current focus is on algorithmic fairness. His background is web mining and information retrieval, and he has been influential in the areas of crisis informatics and web content quality and credibility. He is a prolific, highly cited researcher who has received two test-of-time awards, five best paper awards, and two best student paper awards. His works include a book on Big Crisis Data, as well as monographs on Information and Influence Propagation, and Adversarial Web Search. He leads the Web Science and Social Computing research group at Universitat Pompeu Fabra, and coordinates the Horizon Europe FINDHR project on non-discrimination in algorithmic hiring.

Research interests

The focus of my research is algorithmic fairness. Currently, I work on automated risk assessment methods that satisfy algorithmic fairness criteria, validating them through interdisciplinary research, in various applied settings. One particular area of focus is the usage of algorithms for human recommendation, including algorithmic hiring, where I seek to define and enforce fairness criteria in algorithms for ranking.

Selected publications

- Karimi-Haghighi M, **Castillo C**, Tolan S & Lum K 2023, 'Effect of Conditional Release on Violent and General Recidivism: A Causal Inference Study.' *Journal of Experimental Criminology*, Springer.
- Merchant A & **Castillo C** 2023, 'Disparity, Inequality, and Accuracy Tradeoffs in Graph Neural Networks for Node Classification.' *Proceedings CIKM '23,* 1818-1827.

ICREA**MEMOIR2023**

Gustau Catalán Bernabé
Institut Català de Nanociència i Nanotecnologia (ICN2)
Experimental Sciences & Mathematics

Gustau Catalán graduated in Physics at the Universitat de Barcelona (1997) and obtained his PhD, also in Physics, at the Queen's University of Belfast (2001). This was followed by a one-year round-the-world climbing expedition, the highlights of which were the setting up of a new route in the Dogon country of Mali ("The man with no name", 6c/250 metres, Ouro N'guérou) and the first ascent of a peak in the Himalayas (Draoich Parvat, 6200m, Garwhal). Upon returning to research, he has worked at the Mediterranean Institute for Advanced Studies (IMEDEA, 2002-2004), at the University of Groningen (2004-2005) and at the University of Cambridge (2005-2009). He joined ICREA in 2009 as a Research Professor and leader of the Oxide Nanophysics group at the Institut Català de Nanociencia i Nanotecnologia (ICN2), where he remains. His research centres on the physics of oxides at the nanoscale, with emphasis on ferroics.

Research interests

A common denominator of my work is the search for emerging physical phenomena at the nanoscale. Much of my better-known research concerns the coupling between electrical polarization and strain gradients (a phenomenon known as flexoelectricity) which happens to be very large at the nanoscale. Over the last decade, and with the help of an European Research Council (ERC) grant, I set up in Barcelona one of the world's first specialized laboratories specifically dedicated to this phenomenon (there are a number of them now). Prominent discoveries in this area from our group have been the large flexoelectricity of semiconductors, the existence (and important physiological role) of flexoelectricity in bones, and the identification of the participation of flexoelectricity in fracture physics. In parallel, I have also worked on other nanoscale phenomena in oxides: metal-insulator transitions, the physics of domain walls, antiferroelectricity and photovoltaic effects of polar materials.

Selected publications

– Spasojevic I, Santiso J, Caicedo JM, **Catalan G** & Domingo N 2023, 'Tunable Molecular Electrodes for Bistable Polarization Screening', *Small*, 19, 30, 2207799.

– Roleder K, **Catalan G**, Glazer AM, et al. 2023, 'Weak low-temperature polarity in a PbZrO3 single crystal', *Physical Review B*, 107, 14, L140102.

– Liu Y, Niu R, Majchrowski A, Roleder K, Cordero-Edwards K, Cairney JM, Arbiol J & Catalan G 2023, 'Translational Boundaries as Incipient Ferrielectric Domains in Antiferroelectric PbZrO3', *Physical Review Letters***, 130, 21, 216801.**

ICREA**MEMOIR2023**
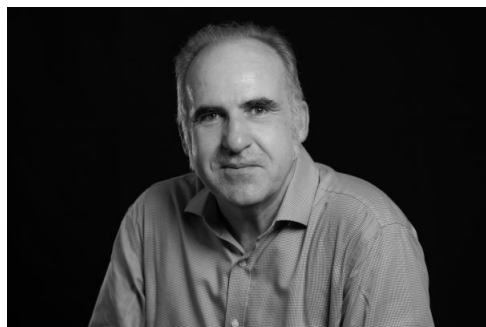
Miguel Ángel Cau Ontiveros
Universitat de Barcelona (UB)
Humanities

I am an archaeologist focused on Roman and Late Antique Mediterranean archaeology and archaeometry. After my Ph.D. (1998) (University of Barcelona), I was a postdoctoral TMR-EU Research Fellow (1998-2001) at the University of Sheffield (UK). I returned to Catalonia with an AGAUR Return Grant (2001-2002) and as a researcher for the EU project CERAMED (2003). I am an ICREA Research Professor since 2003 and current director of the ERAAUB Research Unit and of the Institute of Archaeology of the University of Barcelona (IAUB). I have participated in national and EU projects, such as GEOPRO, CERAMED, and Progetto Classe (World Heritage site of Ravenna). I have been Visiting Professor at the universities of Cagliari, Sassari (Italy), and Brown (USA). I am a co-founder of the international conference LRCW, and of the series Roman and Late Antique Mediterranean Pottery and Limina/Limites: Archaeologies, histories, islands, and borders in the Mediterranean (365-1556).

Research interests

I have a major research interest in Roman and Late Antique Archaeology, and in pottery studies especially in the analysis of coarse and cooking wares. I have specialised in the application of physico-chemical, mineralogical and petrographic techniques to the study of ceramics to investigate their provenance, technology, distribution, and consumption. I have a broad interest in the analytical study of ceramics, including the theoretical foundations of the discipline and the study of living pottery-making traditions. One of my main research interests is to investigate the transformation of the Roman world, particularly on Mediterranean islands. I am currently leading excavations at the Roman and Late Antique city of *Pollentia*, the Christian complex of Son Peretó (Mallorca), the exceptional Late Roman shipwreck of Ses Fontanelles, as well as field surveys, and ceramic ethnoarchaeology expeditions in the Balearics and Sardinia. I am also working at the Roman villa of Llorís (Lleida).

Selected publications

- **Cau Ontiveros MÁ**, Fantuzzi L, Rodríguez Martorell F, Tsantini E, Macias Solà JMª 2023, 'Sorting out problems with Late Roman Eastern Mediterranean cooking wares from Tarraco (Tarragona, Spain) combining archaeology and archaeometry', J*ournal of Archaeological Science: Reports,* vol. 48, 103837.
- **Cau-Ontiveros MÁ**, Mas-Florit C, Chávez-Álvarez E, Sala R, Meyer C, Ortiz H & Simón P 2023, 'Comprehensive geophysical prospection of the Roman and Late Antique city of Pollentia (Alcúdia, Mallorca, Spain)', *Archaeological Prospection*, vol. 30, nº.4, pp. 411-427.
- **Cau Ontiveros MÁ**, Mas Florit C, Chávez Álvarez ME, Valenzuela A, Fantuzzi L & Tuset J 2023, 'A Ceramic Assemblage from the Byzantine Period in the City of Pollentia (Alcudia, Mallorca)', in V. Caminneci, M. C. Parello and M. S. Rizzo (eds) LRCW 6, Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and archaeometry. Land and Sea: pottery routes, RLAMP Series, Archaeopress, Oxford (United Kingdom), pp. 738–748.
- Bellviure Pérez J, **Cau-Ontiveros MÁ**, Mas-Florit C & Chávez-Álvarez E 2023, 'Una nueva *tessera lusoria* procedente de *Pollentia* (Alcúdia, Mallorca)', *Archivo Español de Arqueología*, 96.
- Mas Florit C, **Cau Ontiveros MÁ**, Pecci A, Valenzuela A 2023, 'A Late Roman Deposit from the Roman Villa of Sa Mesquida (Mallorca, Balearic Islands, Spain)', in V. Caminneci, M. C. Parello and M. S. Rizzo (eds) 2023, LRCW 6, Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and archaeometry Land and Sea: pottery routes, RLAMP Series, Archaeopress, Oxford (United Kingdom), pp. 729–737.
- Vallori B, **Cau Ontiveros MÁ** & Chávez Álvarez ME 2023, 'Excavaciones en el templo toscano de Pollentia (Alcúdia, Mallorca): estudio de la secuencia constructiva y de los artefactos recuperados', *Zephyrus*, 91, 79-102.

Selected research activities

ICREA**MEMOIR2023**

Andrea Cerutti
Institut Hospital del Mar d'Investigacions Mèdiques (IMIM)
Life & Medical Sciences

Andrea Cerutti, MD, PhD, is an ICREA Research Professor since 2010 and leads the B Cell Biology Group at FIMIM, which is a research center located in the PRBB complex. He serves as grant reviewer for the European Research Council and the National Institutes of Health, and as manuscript reviewer for journals such as Cell, Cell Host&Microbe, Science, Nature, Immunity, Nature Immunology, Nature Medicine, Nature Communications, Journal of Experimental Medicine, Proceedings of the National Academy of Sciences, Cell Reports, etc. He is a member of The American Society for Clinical Investigation, The American Association of Immmunologists, and The Henry Kunkel Society and serves as Associate Editor of the journal Mucosal Immunology. He contributed to the organization of 2014 and 2016 Keystone Symposia meetings, published 148 research articles in immunology journals, and lectures in international meetings as well as American and European universities. His h-index is 54.

Research interests

The splenic marginal zone and gut mucosa can be viewed as interfaces between the immune system and the circulation or external environment, respectively. My group studies how B cells strategically positioned in these "frontline" areas make antibodies against circulating or intraluminal antigens, including intestinal microbes. We are particularly interested in the mechanism whereby splenic stromal cells or splenic innate immune cells, including neutrophils, dendritic cells, macrophages and innate lymphoid cells, facilitate the activation of splenic marginal zone B cells. We are also analyzing how intestinal B cells generate antibodies to commensal bacteria and how these antibodies shape the composition of the gut microbiota. Finally, we study the alterations of B cells in patients with primary antibody deficiency, including selective IgA deficiency and common variable deficiency. Our research is relevant to infections, inflammation, autoimmunity, immunodeficiency, and vaccine developmen

Selected publications

- Chen K, Hao Y, Guzmán M, Li G & **Cerutti A** 2023, 'Antibody-mediated regulation of basophils: emerging views and clinical implications'. *Trends in Immunology*, 44, 6, 408 - 423.

- Mascaro JM, Rodriguez-Pinto I, Poza G, et al. 2023, 'Spanish cohort of VEXAS syndrome: clinical manifestations, outcome of treatments and novel evidences about *UBA1* mosaicism', *Annals of the Rheumatic Diseases*, 82, 12, 1594-1605.

- Canales-Herrerias P & **Cerutti A** 2023, 'Gut IgA: never fear, the super inducers are here', *Cell Host & Microbe*, 31, 10, 1595–1597.

- Canales-Herrerias P, Garcia-Carmona Y, Shang J, Meringer H, Yee DS, Radigan L, Buta S, Martinez-Delgado G, Tankelevich M, Helmus DS, Dubinksy M, Everts-van der Wind A, Dervieux T, Bogunovic D, Colombel JF, Brenchley JM, Faith J, Cunningham-Rundles C, Cerutti A & **Mehandru S** 2023, 'Selective IgA2 deficiency in a patient with small intestinal Crohn's disease', *Journal of Clinical Investigation*, 133, 12, e167742.

- Garcia-Carmona Y, Fribourg M, Sowa A, Cerutti A & **Cunningham-Rundles C** 2023, 'TACI and endogenous APRIL in B cell maturation', *Clinical Immunology*, 253:109689.

ICREA**MEMOIR2023**

Darrick Chang
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

Darrick Chang is an ICREA Research Professor at ICFO. He obtained his bachelor's degree in physics from Stanford University in 2001, and his PhD in physics from Harvard University in 2008. Subsequently, he held a prize postdoctoral fellowship at the California Institute of Technology. In 2011, Darrick joined ICFO as the leader of the Theoretical Quantum Nanophotonics group. He was awarded an ERC Starting Grant in 2015, and an ERC Consolidator Grant in 2021. He has been involved in many previous/current international projects, including as a PI and scientific coordinator of European FET-Open projects GRASP and DAALI, as a PI in the Quantum Flagship project QIA and QuantERA project QuSiED, and as a foreign collaborator in US MURI projects QOMAND and Photonic Quantum Matter. He has approximately 85 publications, including 16 in the Nature family of journals, which have been cited over 17,000 times (Google Scholar).

Research interests

The research of Prof. Chang and his Theoretical Quantum Nanophotonics group at ICFO is based upon a vision that quantum effects are at the forefront of future technologies and discoveries, and that nanophotonic systems will be a prominent platform for this frontier. Specifically, they aim to harness the unique configurability, large optical forces, and strong light-matter interaction strengths achievable in nanophotonic systems to produce new applications and phenomena involving matter and light, which have no analogue in macroscopic setups. The group also develops theoretical techniques that enable a better understanding of the complex phenomena at play. The work is highly inter-disciplinary, and the group explores the potential impact across atomic physics, quantum optics, nonlinear optics, nano-mechanics, low-dimensional materials, and quantum information science. They also collaborate with leading experimental groups to bring their theoretical ideas toward reality.

Selected publications

- Li J, He Y, Cai Q, Fang Z, Wang Y, Qiu L, Zhou L, Wu S, **Grava S** & **Chang DE** 2023, 'Superradiant detection of microscopic optical dipolar interactions', *Physical Review Letters*, vol. 131, 253602.
- Calajo G, Jenke PK, Rozema LA, Walther P, **Chang DE** & Cox JD 2023, 'Nonlinear quantum logic with colliding graphene plasmons', *Physical Review Research*, 5, 1, 013188.

ICREAMEMOIR2023

Miguel Chillón Rodríguez

Universitat Autònoma de Barcelona (UAB)

Life & Medical Sciences

Born in Barcelona in 1966. PhD in Genetics at Hospital Duran i Reynals, Universitat de Barcelona (1994). Award in Human Genetics by the Spanish Association of Human Genetics (1995). HHMI postdoctoral fellow on Gene Therapy for Cystic Fibrosis, at the Internal Medicine Dept, University of Iowa, USA (1994-97). EMBO fellow in Genethon III (Evry, France) (1997-99) on viral vectors for Gene Therapy. Postdoctoral fellow on Gene Therapy (2000-2001) at the Universitat Autònoma de Barcelona (UAB). ICREA Research Professor at the UAB since 2001. Director of the Vector Production Unit, since 2004, and Assistant Professor of the UAB since 2005. He has published more than 80 papers, generated 14 patents, and co-founded 2 spin-offs in biotechnology: NanoTherapix (2009) and Kogenix Therapeutics (2016). Dr Chillon is currently the Chair of the ATMP platform of EATRIS, a strategic European ERIC entity, as well as the coordinator of the Advance Therapy Program (composed by 23 groups) of VHIR.

Research interests

Medicine still has many challenges to solve especially on complex diseases where a large number of both, genetic and environmental factors, are involved. Among them, aging-associated diseases and rare disorders have attracted attention because there are no effective curative treatments for them. Some of these diseases affecting the nervous system, which in addition is difficult to access and to manipulate with classical pharmacological treatments. To address these problems we have focused our research interests on three main objectives: (1) gene therapy strategies for diseases affecting the nervous system, such as rare neuromuscular and neurodegenerative disorders; (2) gene therapy strategies using chronokines for cognitive decline and dementia; and (3) development of more efficient and less immunogenic viral vectors. To determine the therapeutic potential of our research strategies we work with animal models and well as with iPS-derived neurons from biopsies taken from patients

Selected publications

- Roig-Soriano J, Sánchez-de-Diego C, Esandi-Jauregui J, Verdés S, Abraham C.R, Bosch A, Ventura F, **Chillón M**. 2023, 'Differential toxicity profile of secreted and processed alpha-Klotho expression over mineral metabolism and bone microstructure', *Scientific Reports*, 13, 1.
- Roig-Soriano J, Edo A, Verdes S, et al. 2023, 'AAV9-Mediated Expression of Secreted Klotho Reduced Several Aging-Associated Phenotypes and Increased Longevity', *Molecular Therapy*, 31, 4, 133 - 133.
- Rodriguez-Estevez L, Almolda B, Fernandez-Carasa I, et al. 2023, 'Gene Therapy Approach for Hereditary Spastic Paraplegia Type 52 (SPG52)', *Molecular Therapy*, 31, 4, 419 - 419.

Selected research activities

New Patent filed, Klotho fusion protein and uses thereof (EP23382593-4), Jun 5th 2023

ICREA**MEMOIR2023**

Paul Christou
Universitat de Lleida (UdL)
Life & Medical Sciences

BS Chemistry & PhD Plant Biochemistry, University College London. Senior Scientist at Agracetus Inc., Madison, WI, USA, where he developed genetic transformation technology that lead his group to generate the first commercial crop sold by Monsanto (Roundup Ready Soybean). Subsequently Head of Molecular Biotechnology Unit, John Innes Centre, Norwich, UK-led the Tropical Maize and Rice Biotechnology Laboratory sponsored by the Rockefeller Foundation. Head Crop Genetics & Biotechnology, Fraunhofer Institute Molecular Biotechnology & Applied Ecology, Aachen, Germany. Universitat de Lleida as an ICREA Professor & Head of the Applied Plant Biotechnology Laboratory. Founding Director Agrotecnio CERCA Center, 2013-2015. Recipient of ERC Advanced Grant BIOFORCE and ERC PoC Grant Multinutrient Maize. Received 2 Bill & Melinda Gate's grants. PI in 14 EU projects over past 25 years 2 as coordinator and 2 as deputy coordinator. Recipient of Narcís Monturioll Medal 2020.

Research interests

Our programs rely on our unique multi-gene/multi-pathway engineering capabilities to generate plants with high value recombinant pharmaceuticals for human health and veterinary medicine; cereals with enhanced nutrition, and novel strategies of sustainable agriculture with emphasis on developing countries, poverty alleviation and food security. A major focus is plant synthetic biology and genome editing. Our group is involved in training and capacity building in plant biotechnology focusing on developing countries. We also develop tools, methodology and a comprehensive understanding of the essential mechanisms underpinning the creation and performance of genome edited plants for the application of synthetic biology to major crops. During 2021 a major focus has been the use of plants to combat SARS-CoV-2.

Selected publications

- Muñoz-Basagoitia J, Monteirob FLL, et al. 2023, 'Cyanovirin-N binds to select SARS-CoV-2 spike oligosaccharides outside of the receptor binding domain and blocks infection by SARS-CoV-2', *Proc Natl Acad Sci USA*, 120 (10), e2214561120.
- Saba-Mayoral A, Rosa C, Sobrino-Mengual G, Armario-Najera V, **Christou P** & Capell T 2023. 'Production of the SARS-CoV-2 receptor-binding domain in stably-transformed rice plants for developing country applications'. *Plant Biotechnol J.* 21, 6: 1094-1096.
- Basallo O, Perez L, Lucido A, et al. 2023, 'Changing terpenoid biosynthesis in rice through synthetic biology'**.** *Frontiers in Plant Science,* 14.1133299.

ICREA**MEMOIR2023**

Rebekah Clements
Universitat Autònoma de Barcelona (UAB)
Humanities

Rebekah Clements is an ICREA at the Autonomous University of Barcelona. She completed degrees in law and Asian studies at the Australian National University where she was awarded the University Medal, before obtaining an MA in classical Japanese literature from Waseda University in 2008. She completed her PhD in East Asian History from the University of Cambridge (Trinity College) in 2011. Following her PhD she was a research associate at the Faculty of Asian and Middle Eastern Studies, University of Cambridge, working on the Leverhulme-funded project "Translation and vernacularisation in pre-modern East Asia" (PI: P.Kornicki), and held a junior research fellowship from Queens' College from 2012-2015 where she completed her first monograph, A Cultural History of Translation in Early Modern Japan (Cambridge University Press, 2015). From 2015-2018 she held a lectureship and then an associate professorship at Durham University. She joined ICREA in October 2018.

Research interests

Rebekah is a cultural historian of Japan, specializing in the Tokugawa period (1600-1868). Her research focuses on language, society, and the characteristics of Japanese early modernity, as understood in the broader context of East Asia. She is currently working on Korean exiles present in Japan following the Imjin War of 1592-1598. This work takes place within her project funded by the European Research Council, "The Aftermath of the East Asian War of 1592-1598" (2018-2023). The Aftermath project is a large scale attempt to understand the legacy of the Imjin War, also known as the East Asian War of 1592-1598 and Toyotomi Hideyoshi's Invasions of Korea. This conflict involved over 500,000 combatants from Japan, China, and Korea; up to 100,000 Korean civilians were removed to Japan. It was the largest conflict of the world of the sixteenth century and involved the largest successful overseas landings in world history by that date.

Selected publications

- Marino, G & **Clements R** 2023, 'Iberian Sources on the Imjin War: The *Relação do fim e remate que teve a guerra da Corea* (1599)', Sungkyun Journal of East Asian Studies, 23, 1, 27–48.
- **Clements R** 2023, 'The Prose of Our Land: Ban Kōkei, Translation, and National Language Consciousness in Eighteenth-Century Japan', *Sungkyun Journal of East Asian Studies*, 23, 2, 119–136.

Selected research activities

2023 saw the beginning of the dissemination phase of the "Aftermath of the East Asian War of 1592-1598" European Research Starting Grant Project, directed by Rebekah Clements. Rebekah gave invited talks at the University of California Los Angeles, the École des Hautes Études en Sciences Sociales, the University of Nevada, Reno, the University of Malaga, the Autonomous University of Barcelona, and Bochum University, as well as chairing panels at the University of Ghent, and the University of Copenhagen. The "Aftermath" project also held its official conference during 2023 (4-5 of September, Autonomous University of Barcelona), which brought together twenty-four scholars from four continents, and drew in additional funding from the Chiang Ching-kuo Foundation (Taipei) and the Japan Foundation Madrid.

ICREA**MEMOIR2023**

Esteve Corbera
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

Esteve Corbera (PhD Development Studies, 2006, U. of East Anglia) is ICREA Research Professor at the Institut de Ciència i Tecnologia Ambientals (ICTA), Universitat Autònoma de Barcelona. His research focuses on human-nature relationships and the impact of social, policy and environmental change on resource governance. He has conducted research on how international policies for biodiversity conservation and climate change mitigation have affected land-use systems, institutions and livelihoods of rural peoples in the global South. He has written over 110 peer-reviewed articles, several books and book chapters, and served as guest editor in 12 special issues. He is an associate editor of the journal Ecology and Society and participated in the 2014 Report of the Intergovernmental Panel on Climate Change. He was among the world's most cited multidiscinplinary scientists over four consecutive years (2019-2022, cross-field category, Clarivate analytics).

Research interests

I am a political ecologist building knowledge on the environmental and wellbeing outcomes of climate change and biodiversity conservation policies and producing scientific findings that inform global policies for sustainable land use. I employ multiple quantitative and qualitative methods to investigate 1) the social-ecological and behavioral effects of policies aimed at conserving biodiversity and mitigating climate change, such as payments for ecosystem services, the UN Reducing Emissions from Deforestation and Degradation (REDD) framework, and biodiversity offsets; 2) the implications of global change for the vulnerability and resilience of farming communities, and their capacity to adapt; and 3) the politics of knowledge production in conservation and environmental science and policy. My research in these fields draws on data from multiple levels, from multi-actor views gathered ethnographically to secondary information collected for quantitative assessments.

Selected publications

- Charoud H, Costedoat S, Izquierdo-Tort S, Moros L, Castillo MA, Wunder S & **Corbera E** 2023, 'Sustained participation in a Payments for Ecosystem Services program reduces deforestation in a Mexican agricultural frontier', *Scientific Reports,* 13, 22314.
- **Anguelovski I** & **Corbera E** 2023 'Integrating justice in Nature-Based Solutions to avoid nature-enabled dispossession', *Ambio 52, 45-53*.
- Mempel F, **Corbera E**, Rodríguez Labajos B & Challies E 2023, 'From railroad imperialism to neoliberal reprimarization: Lessons from regime-shifts in the Global Soybean Complex', *Environment and Planning E: Nature and Space.*
- **Corbera E** & Izquierdo-Tort S 2023, 'The environmentalism of the paid', In: Villamayor-Tomás, S. & Muradian, R. (Eds) *The Barcelona School of Ecological Economics and Political Ecology: A Companion in Honour of Joan Martinez-Alier*. pp. 367-381, Springer Ltd.

Selected research activities

1 new PhD student (La Caixa-Inphinit). 1 new research project (Eur.194.000). 2 graduated PhDs. Speaker in an academic conference and a research workshop. Lecturer in Political Ecology (24 hours) & Research Design (12 hours). Subject editor, Ecology & Society.

ICREA**MEMOIR2023**

Alejandro Coroleu Lletget
Universitat Autònoma de Barcelona (UAB)
Humanities

After studying Classics and Renaissance Studies at the Universitat de Barcelona, I undertook postdoctoral research at The Warburg Institute (University of London). I taught and researched at the University of Nottingham between 1995 and 2008. I have also been Research Fellow at the Herzog August Bibliothek, Wolfenbüttel (Germany) and at the Ludwig Boltzmann Institut für Neulateinische Studien (Universität Innsbruck), as well as Visiting Lecturer at the University of Cambridge and at the University of Salzburg. In 2009 I accepted a Research Professorship at ICREA in the Department of Catalan at the Universitat Autònoma de Barcelona where I am conducting research on early-modern literary culture in Latin and in the vernacular.

Research interests

Classical and Comparative Literature: Latin literary culture in Europe (ca. 1475 - ca. 1740) Intellectual History and Renaissance Studies: Hispanic, Italian and European Humanism The reception of Greek and Roman literatures in early-modern Iberia (1450-1600). I have recently published the monograph *Latin political propaganda in the War of the Spanish Succession and its Aftermath, 1700-1740* (London-New York: Bloomsbury, 2004).

Selected publications

- **Coroleu A** 2023, 'Els incunables napolitans de Pere Miquel Carbonell i la difusió de Pier Paolo Vergerio a la Catalunya quatrecentista', CESURA - Rivista. 1, 1, pp. 3–16.
- **Coroleu A** 2023, 'Les traduccions d'autors neollatins en àmbit català entre 1880 i 1940', *Anuari TRILCAT*, 11, pp. 3-17.
- **Coroleu A** 2023, Review of Leon Battista Alberti, *De commodis litterarum atque incommodis,* edizione a cura di Mariangela Regoliosi, Firenze: Edizioni Polistampa, 2021, in *Faventia*, 44-45 (2022-2023), pp. 87-90.

Selected research activities

Principal Investigator of the Research project *Traducción y público lector en la Corona de Aragón (1380-1530): obras de inspiración clásica* (Ministry of Science and Innovation, Spain, 2020-24)

Member *o*f the SGR research group "Cultura i Literatura a la Baixa Edat Mitjana" (Generalitat de Catalunya, 2017-142)

General editor of the online journal T*ranslat Library (*University of Massachusetts Amherst-Universitat Autònoma de Barcelona)

Member of the editorial board of *ITACA: Quaderns de Cultura Clàssica* (Barcelona) and of the advisory board of *FuturoClassico* (Bari), *Studia Aurea* (Girona), *Humanistica Lovaniensia* (Leuven), *CESURA-Rivista* (Naples) and *TranScript.Traduzione e Scrittura nel Medioevo Europeo* (Venice)

First Vice-President of the International Association of Neo-Latin Studies (2022-2025)
and Secretary of the Societat Catalana d'Estudis Clàssics

I have co-organised the colloquium *Reading and studying Neo-Latin authors, c. 1600-1950*, held at the Institut d'Estudis Catalans (Barcelona) on 19-20 October 2023

I have given two seminars in Barcelona (Universitat Pompeu Fabra and Universitat Autònoma de Barcelona) and two papers at two international conferences held at Barcelona and Naples

Peer reviewer for 4 international journals

ICREA**MEMOIR2023**

Alfred Cortés Closas
Institut de Salut Global Barcelona (ISGlobal)
Life & Medical Sciences

After obtaining a PhD for research on fruitfly DNA binding proteins (CID-CSIC, Barcelona), I started to study malaria parasites. I worked for four years as head of the Molecular Parasitology lab at the Papua New Guinea IMR, where my research mainly focused on basic malaria parasite biology, but also on epidemiological aspects of the disease. Back to Europe, I joined the MRC-NIMR (London) as a postdoc for two years and a half to study gene expression and invasion of erythrocytes by malaria parasites. In 2006, I moved to IRB Barcelona with an ICREA junior contract. In 2011, I joined CRESIB-ISGlobal as a group leader, and in 2012 I was appointed ICREA Research Professor. The research of my team at ISGlobal focuses on the regulation of gene expression in malaria parasites, mainly on the mechanisms and functions of epigenetic variation and on the transcriptional regulation of specific processes such as sexual conversion and the heat-shock response.

Research interests

The central research interest of my team is epigenetic variation in Plasmodium falciparum, i.e., heritable differences between genetically identical parasites that result in transcriptional and phenotypic variation. We study the chromatin-based mechanisms involved in the epigenetic regulation of variantly expressed genes, and the role of epigenetic variation in the adaptation of parasite populations to changes in their environment. We combine genome-wide approaches with studies on specific variantly expressed genes that control important processes in parasite biology. Among these, we are especially interested in the genes that regulate solute uptake and sexual conversion. Regarding the latter, one of our current research priorities is understanding how some asexually-growing parasites "decide" to convert into sexual forms, which are necessary for malaria transmission. We also investigate the transcriptional response that secures parasite survival at febrile temperatures.

Selected publications

- Michel-Todó L, Bancells C, Casas-Vila N, Rovira-Graells N, Hernández-Ferrer C, González JR & **Cortés A**, 2023, "Patterns of Heterochromatin Transitions Linked to Changes in the Expression of Plasmodium falciparum Clonally Variant Genes", *Microbiol Spectr,* 11(1):e0304922.

Selected research activities

-**Principal investigator** in a **new grant** awarded by the Spanish Ministry of Science and Innovation (MICINN). Title: "Mechanisms of the transcriptional responses to changes in the environment in the malaria parasite *Plasmodium falciparum* (RESPONSE)".

-**Co-Promoter** in a **new grant** awarded by the Research Foundation – Flanders (FWO, Belgium). Title: "Host immune and metabolic determinants of sexual conversion in *Plasmodium parasites* (IMMETASEX)". Principal Investigator: Prof. Anna Rosanas-Urgell (ITM, Antwerp, Belgium).

-"**Unfunded collaborator"** in a **new grant** from the Opportunity Fund Program pilot grant (Saudi Arabia). Title: "Characterization of PfAP2-R (Ring): an essential AP2-DNA binding protein required for ring stage development during *Plasmodium falciparum* intra-erythrocytic developmental cycle". Principal Investigator: Prof. Arnab Pain (KAUST, Saudi Arabia).

-**Invited conference** at University of Montpellier

-**Invited speaker** at the 3rd Virtual Symposium on Advances in Malaria Research, United Scientific Group (USA), 2023 (>600 attendants).

-**PhD thesis** under my supervision **completed**: Lucas Michel Todó, Universitat de Barcelona (UB). Title: "Interplay of genetic, epigenetic and transcription factors in the regulation of transcriptional variation in *Plasmodium falciparum*".

-**PhD thesis evaluator** for theses defended at University of Montpellier (France) and at University of Antwerp (Belgium).

-Principal investigator in an ERC advanced grant proposal retained for the second phase of evaluation (pending decision).

ICREA**MEMOIR2023**

Maria Pia Cosma
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

ICREA Research Professor and Senior Scientist at Centre for Genomic Regulation since Sep 2010. From 2009-2015 Honorary Associate Investigator at CNR. 2003-2010 Associate Investigator at TIGEM, Naples. 2004-2010 Lecturer at European School of Molecular Medicine. 1997-2000 Marie Curie Postdoc at IMP, Vienna. PhD in Cellular and Molecular Genetics, Univ. Federico II of Naples, 2000. Visiting Scientist in many Universities in USA. Awarded several prizes as: EMBO Young Investigator (YIP), 2003; Marie Curie Excellence Award, 2005; "Vanguardia de la Ciència" prize, 2014; City of Barcelona prize, 2015; EIC Women Leadership 2022. She is Order of Merit of the Italian Republic: Knight, 2007. ERC Starting Grant awardee, 2009 and HFSP Grant awardee, 2010. EMBO Member since 2010. Coordinator of H2020 FET-Open, Cellviewer, since 2016 and Launchpad. La Caixa Health Reacher Award in 2018. Coordinator of H2020 FET-Open, EcaBox, 2022.

Research interests

Main interests of Cosma's group are to dissect mechanisms and factors controlling somatic cell reprogramming and tissue regeneration in mammals. We are investigating gene networks and reprogramming factors controlled by the activation of Wnt/ß-catenin pathway. Furthermore, by using super resolution microscopy we made discoveries on the remodelling and looping of the chromatin fiber during the reprograming process. The activation of Wnt pathway controls regeneration in response to damage in lower and higher vertebrates. We found that the Wnt/ß-catenin signalling is also key to control cell-fusion-mediated regeneration in mammals. We recently showed that human Muller glia cells can fuse with mesenchymal stem cells. The resulting hybrids can differentiate in retinal neurons in human retinal organoids. Moreover we identified the interactions between the chemokine receptors and specific chemokines able to enhance migration and integration of transplanted cells into the retina.

Selected publications

- **Cosma MP** & Neguembor MV 2023, 'The magic of unraveling genome architecture and function', *Cell Reports*, 42, 4, 112361.
- Martin L, Neguembor MV & **Cosma MP** 2023, 'Women's contribution in understanding how topoisomerases, supercoiling, and transcription control genome organization', *Frontiers In Molecular Biosciences*, 10, 1155825.
- Generoso SF, Neguembor MV, Hershberg EA, et al.2023, 'Cohesin controls X-chromosome structure remodeling and X reactivation during mouse iPSC-reprogramming'. *PNAS*, 120 (4) e2213810120.
- Martin L, Castells-García A, **Cosma MP** & Neguembor MV 2023, 'STORM microscopy and cluster analysis for PcG studies', *Methods and Protocols*, 2655, 171-181.
- Sebastian-Perez R, Aranda S, Nakagawa S, Pesaresi M, Gomez-Garcia PA, Alcoverro-Bertran M, Gomez-Vazquez JL, Carnevali D, Borràs E, Sabidó E, Nissim-Rafinia M, Meshorer E, Di Croce L & **Cosma, MP** 2023, 'SMARCAD1 contributes to heterochromatin establishment at the 5transition from the 2C-like to the pluripotent state', *eLife,*

Selected research activities

Invited Talks:

Wnt Signaling Gordon Conference GRC, Barcelona, Spain 30th July to 3rd August 2023;

EMBO Workshop on DNA topology Villars-sur-Ollon, Switzerland, 3rd – 7th September 2023;

Louis-Jeantet Symposium, Geneva, Switzerland, 10th October 2023;

IGBMC, Strasburg, Belgium, 28th April, 2023;

LBI for Hematology and Oncology, Vienna, Austria, 12th May 2023;

Shenzhen Bay Laboratory, Shenzhen, China, 18th October, 2023;

University of Basque Country, Bilbao, Spain, 4th December 2023

ICREA**MEMOIR2023**

Xavier Costa Perez

Internet i Innovació Digital a Catalunya (i2CAT)

Engineering Sciences

Xavier Costa-Pérez is ICREA Research Professor and Scientific Director at the i2cat Research Center. His research focuses on the digital transformation of society driven by the interplay of mobile networks and AI. His team generates research results which are regularly published at top scientific venues, produces innovations which have received several awards for successful technology transfers, participates in major EC R&D projects and contributes to standardization bodies. He has served on the committees of several conferences, published papers of high impact and holds tenths of granted patents. He served as Editor at IEEE Transactions on Mobile Computing, IEEE Transactions on Communications and Elsevier Computer Communications journals. Xavier received both his M.Sc. and Ph.D. degrees in Telecommunications from UPC.

Research interests

The ever-wider availability of technologies such as mobile networks, artificial intelligence, cloud services, data analytics and ICT platforms is dramatically altering the way we live, work and interact – in what is usually referred to as the Fourth Industrial Revolution. The upcoming Beyond 5G disruptive technologies represent a key pillar for enabling this digital revolution unfolding around us. In contrast to previous mobile network generations, a key new aspect for the mobile industry moving forward is the need to expand the mobile ecosystem to also incorporate industry verticals like automotive, manufacturing, smart-grids and health. While early research and field-trials results are promising, The AI-driven automation of mobile networks for a cost-efficient digital transformation (DX) is still at its infancy and will require of a huge research effort to deliver on the DX promises in the next decades.

Selected publications

- Lasierra O, Garcia-Aviles G, Municio E, Skarmeta A & **Costa-Perez X** 2023, 'European 5G Security in the Wild: Reality versus Expectations', *Proceedings Of The 16th Acm Conference On Security And Privacy In Wireless And Mobile Networks, Wisec*, 13-18.
- Rossanese M, Garcia-Saavedra A, Elena Lutu A & **Costa Perez X** 2023, 'Data-driven Analysis of the Cost-Performance Trade-off of Reconfigurable Intelligent Surfaces in a Production Network', *Proceedings of the ACM on Networking,* 1, 12, 1-20.
- Ayala-Romero JA, Garcia-Saavedra A, **Costa-Perez X** & Iosifidis G 2023, 'EdgeBOL: A Bayesian Learning Approach for the Joint Orchestration of vRANs and Mobile Edge AI', *IEEE-ACM Transactions On Networking*, 31, 6, 2978-2993.
- Lendinez A et al. 2023, 'Enhancing 5G-Enabled Robots Autonomy by Radio-Aware Semantic Maps', *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Detroit, MI, USA, 2023, pp. 6267-6272.
- Municio E, Garcia-Aviles G, Garcia-Saavedra A & **Costa-Pérez X** 2023, 'O-RAN: Analysis of Latency-Critical Interfaces and Overview of Time Sensitive Networking Solutions', *IEEE Communications Standards Magazine*, 7, 3, 82-89.
- Romero A, Delgado C, Zanzi L, Li X & **Costa-Perez X** 2023, 'OROS: Online Operation and Orchestration of Collaborative Robots Using 5G', *Ieee transactions on network and service management*, 20 - 4 - 4216 - 4230.
- Rezazadeh F, Zanzi L, Devoti F, Chergui H, **Costa-Perez X** & Verikoukis C 2023, 'On the Specialization of FDRL Agents for Scalable and Distributed 6G RAN Slicing Orchestration', *Ieee Transactions On Vehicular Technology*, 72, 3, 3473 - 3487.
- Adamuz-Hinojosa O, Sciancalepore, V, Ameigeiras P, Lopez-Soler JM & **Costa-Perez X** 2023, 'A Stochastic Network Calculus (SNC)-Based Model for Planning B5G uRLLC RAN Slices', *Ieee Transactions On Wireless Communications*, 22, 2, 1250 - 1265.

ICREA**MEMOIR2023**

Josep Dalmau
Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()
Life & Medical Sciences

Dr. Dalmau received his MD, PhD from Autonoma University of Barcelona. He trained in Neuro-oncology at Memorial Sloan-Kettering Cancer Center, New York, and then joined the faculty. After 11 years, he became co-director of Neuro-oncology, University of Arkansas. In 2002 he was named Professor of Neurology at the University of Pennsylvania. Currently he is ICREA Research Professor, IDIBAPS-Clinic Hospital, Associate Professor Medicine, University of Barcelona, Adjunct Professor Neurology, University of Pennsylvania, and Guest Researcher, NIH, USA. He is Editor of Neurology: Neuroimmunology and Neuroinflammation, and member of many academic societies including the National Academy of Medicine, USA. He has received numerous awards, including the Jacoby Award (American Neurological Association), the Zülch Prize (Max Planck Society), and Premio Rey Jaime I (Spain). Since 2015 he is listed as a Highly Cited Researcher by Clarivate Analytics.

Research interests

My research focuses on immune-mediated diseases of the nervous system. Although this work initially focused on cancer associated (paraneoplastic) disorders, it evolved with our discovery of a category of diseases named antibody-mediated encephalitis. These diseases occur in association with antibodies against neuronal cell-surface proteins, ion channels, or synaptic receptors involved in synaptic transmission and plasticity. Antibody-mediated changes in the structure or function of these antigens result in several different syndromes characterized by psychosis, epilepsy, memory deficits, abnormal movements, sleep dysfunction, or cognitive decline. My research group carries out translational studies including the identification of novel diseases (e.g., anti-NMDAR encephalitis among others), the development of diagnostic tests and treatment strategies, as well as basic studies aimed at elucidating the cellular and molecular mechanisms underlying the immune-mediated brain dysfunction.

Selected publications

- **Dalmau J** & Graus F 2023, 'Diagnostic criteria for autoimmune encephalitis: Utility and pitfalls for antibody-negative disease', *Lancet Neurol*. 22 (6):529-540
- Landa J, Serafim AB, Gaig C, et al. 2023 'Patients' IgLON5 autoantibodies interfere with IgLON5-protein interactions' *Frontiers Immunol,* 14, 1151574.
- Ceanga M, Rahmati V, Haselmann H, Schmidl L, Hunter D, Brauer A-K, Liebscher S, Kreye J, Prüss H, Groc L, Hallermann S, **Dalmau J**, et al. 2023, 'Human NMDAR 1 autoantibodies disrupt excitatory-inhibitory balance leading to hippocampal network hypersynchrony', *Cell Report*, 42, 10, 113166.
- Armangue T, Olivé-Cirera G, et al. 2023, 'Neurological complications in herpes simplex encephalitis: clinical, immunological and genetic studies', *Brain*, 146, 4306-43198.

ICREA**MEMOIR2023**

Xavier Daura Ribera

Universitat Autònoma de Barcelona (UAB)

Life & Medical Sciences

I studied Biological Sciences at UAB, Barcelona, where I graduated in 1991 and obtained my PhD in 1996. I then moved to the laboratory of WF van Gunsteren at ETH Zurich, an international reference in the field of computational modeling and simulation of biomolecular systems. These were extraordinary years in which we performed seminal work on the simulation of polypeptide folding using molecular dynamics methods. In 2002 I was appointed ICREA Research Professor and returned with this position to the Institute of Biotechnology and Biomedicine (IBB) of the UAB, starting a group in Computational Biology. Today, our work is primarily concerned with the identification and development of new strategies to combat infections by multidrug-resistant bacteria, using computational and experimental approaches. I have also been an Adjunct Professor at the UAB since 2005 and, more recently, I have joined the CIBER-BBN (ISCIII). During the period 2011-2017 I served as Director of the IBB.

Research interests

The main objective of our research group is the development of new strategies to combat infections by multidrug-resistant (MDR) bacteria, in particular of the Gram-negative (GN) group. The increasing emergence and spread of MDR pathogens constitutes at present one of the major threats to public health. The shortage of effective antimicrobials for the treatment of MDR GN infections is particularly critical as cases of pan-resistance are not uncommon. The discovery of new drug targets and modes of action (MoA), less prone to the development of resistance, has therefore become a pressing need. In parallel, the development of effective vaccines may offer a solution for high-risk population groups. Our team combines a range of computational and experimental techniques for the identification of antimicrobial-target candidates with new MoA and vaccine candidates eliciting prescribed resposes. Much of this work is done in collaboration with the group of Bacterial Molecular Genetics of IBB.

Selected publications

- Gómez AC, Horgan C, Yero D, Bravo M, **Daura X**, O'Driscoll M, Gibert I & O'Sullivan TP 2023, 'Synthesis and evaluation of aromatic BDSF bioisosteres on biofilm formation and colistin sensitivity in pathogenic bacteria', *Eur J Med Chem*, 261, 115819.
- Coto-Segura P, Segú-Vergés C, Martorell A, Moreno-Ramírez D, Jorba G, Junet V, Guerri F, **Daura X**, Oliva B, Cara C, Suárez-Magdalena O, Abraham S & Mas JM 2023, 'A quantitative systems pharmacology model for certolizumab pegol treatment in moderate-to-severe psoriasis', *Front Immunol*, 14, 1212981.
- Coves X, Bravo M, Huedo P, Conchillo-Solé O, Gómez AC, Esteve-Codina A, Dabad M, Gut M, **Daura X**, Yero D & Gibert I 2023, 'A Stenotrophomonas maltophilia TetR-Like Transcriptional Regulator Involved in Fatty Acid Metabolism Is Controlled by Quorum Sensing Signals', *Appl Environ Microbiol*, 89(6):e0063523..
- Junet V, Matos-Filipe P, García-Illarramendi JM, Ramírez E, Oliva B, Farrés J, **Daura X**, Mas JM & Morales R 2023, 'A decision support system based on artificial intelligence and systems biology for the simulation of pancreatic cancer patient status', *CPT Pharmacometrics Syst Pharmacol*, 12, 7, 916-928.

Selected research activities

Participation in EU Patent application EP23382593.4 'Klotho fusion protein and uses thereof'

ICREAMEMOIR2023

Ruth de Diego Balaguer
Universitat de Barcelona (UB)
Social & Behavioural Sciences

After a Degree in Psychology I specialised during my PhD at the University of Barcelona (UB) in Psycholinguistics and Cognitive Neuroscience. I spent three years as a post-doc at the INSERM in Paris (Université Paris Est, Créteil, UPEC) where I studied the involvement of the striatum in the learning of new rules in language. I was a Research-Lecturer at the Ecole Normale Supérieure in Paris before I created my lab at the UB, back in Barcelona as an ICREA Junior Researcher. After that, I became an ICREA Research Professor and consolidated my group at the UB with an ERC Starting Grant. My research is mainly focused on the cognitive functions and neural circuits engaged in the extraction of grammatical rules while learning a new language.

Research interests

My research combines information from brain-damaged patients, developmental populations and brain-imaging in healthy individuals to understand whether words and rules of language require different neural and cognitive mechanisms to be acquired since the earliest stages of contact with a new language. I am particularly interested in i) the role of the attentional systems in the acquisition of different aspects of language; ii) the role of the striatum as a brain structure that could make the interface between language and other cognitive functions necessary in the learning process; and iii) how is the acquired information consolidated and modified when we learn new additional information.

Selected publications

– Martinez-Alvarez A, Gervain J, Koulaguina E, Pons F, **de Diego-Balaguer R** 2023, 'Prosodic cues enhance infants' sensitivity to nonadjacent regularities', *Science Advances*, 9(15), eade4083.
– Bosch L, Colomé A, de Diego-Balaguer R & Rodriguez-Fornells A, 2023, *El Lenguaje*, in D. Redolar Ripoll & A. Valero-Cabré (Eds.), 'Neurociencia Cognitiva (Chapter 16)', Madrid, Editorial Médica Panamericana.

Selected research activities

Grants
Grup de Recerca Consolidat. Generalitat de Catalunya. Brain Dynamics and Structure of Human Cognition (2021SGR352). PI: Ruth de Diego Balaguer.

Invited Talks
-In the right place, at the right time: temporal expectations modulate language learning. Mind and Matter Conference, University of Helsinki.
-Implications of neuro-cognitive maturation for learning and education. Jornada d'educació Lingüística basada en l'evidencia. Barcelona.
-The tight relationship between attention and language learning. CIMCYC, Universidad de Granada.
-Cerebro y conducta: La ventana a nuestra esencia como humanos. Aula Blas Cabrera. Universidad Internacional Menéndez Pelayo.

Selected Conferences
-Quintero-Manes B, et al. Understanding offline statistical learning: Consolidation of information in short waking rest periods after task. Society for Neuroscience, Washington DC, USA
-Quintero-Manes B, et al. Disentangling the specific networks related to statistical learning from those for rule generalization. Neurobiology of Language Conference. Marseille, France.

Supervisions:
-David Lopez-Martos (Master in Brain, Cognition and Behaviour, UB)
-Clara Soberats (PhD Thesis, co-supervision with Wolfram Hinzen, UPF).

Outreach
-Pint of Science. ¿Qué nos hace mejor aprendices de un lenguaje?
-#100tífiques. Escola Angela Roca
-Radio interview in Radio Clásica, Programa Longitud de onda.

Review activities
ERC Advanced Grants,
ANR France, Ikerbasque
Editor for eLife, PLoS Biology.

ICREA**MEMOIR2023**

Gianni De Fabritiis
Universitat Pompeu Fabra (UPF)
Experimental Sciences & Mathematics

ICREA research professor, associate professor, and group leader of the Computational Science Laboratory at UPF, and CEO/CSO at Acellera Ltd. Bachelor's degree with honors in applied mathematics (1997) from the University of Bologna and a Ph.D. from the University of London (2002). I worked for the CINECA supercomputing center in Italy (1998-1999) and was a postdoctoral researcher at University College London (2003-2006). In 2006, I founded Acellera Ltd where I currently act as a CSO. In 2008 I won a tenure-track Ramon y Cajal research position and later the national I3-tenured program. In 2014 I became ICREA Research Professor. I performed research stays as a visiting professor at Stanford University and at UCLA. He has published over a hundred articles in high-ranking international journals with an h-index of 50 and over 10000 citations with 1650 citations per year in 2023.

Research interests

The group's research interests are rooted in the applications of computation to science, where we regard intelligence as a form of computation itself.
1) Molecular simulation and machine learning. We use computation such as physics-based simulations and modern machine learning to provide novel, innovative methodological approaches in biomedicine.
2) Computational intelligence. We investigate machine learning methods that would bring machine intelligence closer to human-level intelligence. We train intelligence agents using reinforcement learning in virtual environments, we built scalable software for reinforcement learning and low-sample learning.

Selected publications

- Majewski M, Perez A, Tholke P, et al. 2023, 'Machine learning coarse-grained potentials of protein thermodynamics', *Nature Communications*, 14, 1, 5739-5739.
- Eastman, P et al. 2023, 'OpenMM 8: Molecular Dynamics Simulation with Machine Learning Potentials', *Journal of physical chemistry b*, 128 - 1 - 109 - 116.
- Cremer J, Sandonas LM, Tkatchenko A, Clevert DA, **De Fabritiis G** 2023, 'Equivariant Graph Neural Networks for Toxicity Prediction', *Chemical research in toxicology*, 36 - 10 - 1561 - 1573.
- Navarro C, Majewski M & **De Fabritiis G**, 2023 'Top-Down Machine Learning of Coarse-Grained Protein Force Fields', *Journal of chemical theory and computation*, 19 - 21 - 7518 - 7526.
- Galvelis R, Varela-Rial A, Doerr S, Fino R, Eastman P, Markland TE, Chodera JD & **De Fabritiis G** 2023, 'NNP/MM: Accelerating Molecular Dynamics Simulations with Machine Learning Potentials and Molecular Mechanics', *Journal Of Chemical Information And Modeling*, 63, 18, 5701-5708.
- Herrera-Nieto P, Perez A & **De Fabritiis G** 2023, 'Binding-and-Folding Recognition of an Intrinsically Disordered Protein Using Online Learning Molecular Dynamics', *Journal Of Chemical Theory And Computation*, 19, 13, 3817-3824.
- Sabanés Zariquiey F, Pérez A, Majewski M, Gallicchio E & **De Fabritiis G** 2023, 'Validation of the Alchemical Transfer Method for the Estimation of Relative Binding Affinities of Molecular Series', *Journal Of Chemical Information And Modeling*, 63, 8, 2438 - 2444.
- Eastman P, Behara PK, Dotson DL et al. 2023, 'SPICE, A Dataset of Drug-like Molecules and Peptides for Training Machine Learning Potentials', *Sci Data* 10, 11.

ICREA**MEMOIR2023**

Coen de Graaf
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics

Graduated in Chemistry in 1993 at the University of Amsterdam. PhD student at the University of Groningen, the Netherlands, from 1994 to 1998 (supervisors: Prof. Wim Nieuwpoort and Prof. Ria Broer). Post-Doc in the group of Prof. Francesc Illas of the University of Barcelona with a Marie Curie fellowship from 1998-2000 (subject: magnetism in low-dimensional Heisenberg systems). Post-Doc in the Quantum Chemistry group of the University Rovira i Virgili (2000-2005) with a Ramón y Cajal fellowship. Presently ICREA Research Professor in the same group.

Research interests

Electron transfer between molecules plays a fundamental role in the conversion of sunlight to useful forms of energy. This can take place by the generation of electricity in photovoltaic cells or indirectly by making possible catalytic reactions. Electron transfer processes can be studied in great detail through computational schemes and this has undoubtably helped to make capturing sunlight more profitable. In our group we are developing new computational schemes based on non-orthogonal configuration interaction to explore alternatives to the existing theoretical methods. The complementary information generated through this new approach can provide us very interesting information about the singlet fission process in which incoming sunlight produces (theoretically) twice as much electricity as in standard solar cells based on silicon. We also apply the non-orthogonal computational schemes to other areas such as molecular magnetism and core-level spectroscopy.

Selected publications

- Y. Yan, L. Abella, R. Sun, Y.-H. Fang, Y. Roselló, Y. Shen, A. Rodriguez-Fortea, C. de Graaf, Q. Meng, Y.-R. Yao, L. Echegoyen, B.-W. Wang, S. Gao, J. M. Poblet, and N. Chen 2023, 'Actinide-lanthanide single electron metal-metal bond formed in mixed-valence di-metallofullerenes', *Nature Communications,* 14, 6637.
- Lopez X, Straatsma TP, Sanchez-Mansilla A & **de Graaf C** 2023, 'Non-orthogonal Configuration Interaction Study on the Effect of Thermal Distortions on the Singlet Fission Process in Photoexcited Pure and B,N-Doped Pentacene Crystals', *Journal Of Physical Chemistry C*, 127, 33, 16249-16258.
- Moreno-Vicente A, Roselló Y, Chen N, et al. 2023, 'Are U-U Bonds Inside Fullerenes Really Unwilling Bonds?', *Journal Of The American Chemical Society*, 145(12), 6710-6718.
- Sousa C, Sánchez-Mansilla A, Broer R, Straatsma TP & **de Graaf C** 2023, 'A Nonorthogonal Configuration Interaction Approach to Singlet Fission in Perylenediimide Compounds', *Journal Of Physical Chemistry A*, 127, 47, 9944-9958.
- López X, Sánchez-Mansilla A, Sousa C, Straatsma TP, Broer R 6 **de Graaf C** 2023, 'Comparison of Computational Strategies for the Calculation of the Electronic Coupling in Intermolecular Energy and Electron Transport Processes', *Journal of physical chemistry a*, 127 - 50 - 10717 - 10731.
- Moreno-Vicente A, Alias-Rodriguez M, Dunk PW, **de Graaf C**, Poblet JM & Rodriguez-Fortea A 2023, 'Highly oxidized U(vi) within the smallest fullerene: gas-phase synthesis and computational study of boron-doped U@C27B', *Inorganic Chemistry Frontiers*, 10, 3, 908 - 914.
- Manni GL, Galván IF, Alavi A, et al. 2023, 'The OpenMolcas *Web*: A Community-Driven Approach to Advancing Computational Chemistry', *Journal Of Chemical Theory And Computation*, 19, 20, 6933-6991.

ICREA**MEMOIR2023**

Xavier de la Cruz Montserrat

Vall d'Hebron Institut de Recerca (VHIR)

Life & Medical Sciences

My career revolves around the application of in silico tools to address biological questions. My Ph.D. was about the study of the protein structure principles underlying function, a work that I pursued in my stay at the NIH (1993-1997) and the UCL (1997-2000). After joining ICREA, this topic has focused most of my activities (PCB, 2001-2009; IBMB-CSIC, 2009-2012). However, my interests have gradually shifted towards the study of translational problems in biomedicine. In this direction, in 2012, I joined the Vall d'Hebron Institute of Research (VHIR), to enhance the applicability of our work on the pathogenicity of genetic variants, bringing it closer to healthcare stakeholders. Our work has gained international recognition following our participation in the prestigious CAGI contest, where we achieved second place in the group classification for both the Enigma (2018-2019) and ARSA (2023) Challenges, respectively.

Research interests

Our main research aims at understanding the molecular basis of hereditary disease, integrating two complementary aspects: the molecular impact of causative variants and how genetic background regulates the propagation of this impact. At a technical level, to reach our objective, we integrate the results of the most advanced genomic experiments (single-cell, Hi-C, etc.) using state-of-the-art machine learning tools. To enhance the biomedical reach of our research, we work in collaboration with clinical groups from different hospitals. As a result of these efforts, we have recently made significant advances in understanding the functional effect of BRCA1/2 protein variants underlying hereditary breast and ovarian cancers. Finally, mention that we are also devoting an important part of our efforts to the fundamental study of epigenetic processes, to reach a full picture of which phenomena contribute to the generation of phenotype and, more precisely, of clinical phenotype.

Selected publications

- Gracia-Diaz C et al. 2023, 'Gain and loss of function variants in EZH1 disrupt neurogenesis and cause dominant and recessive neurodevelopmental disorders', *Nature Communications*, 14, 1.
- Aguirre J, Padilla N, Özkan S, Riera C, Feliubadaló L & **de la Cruz X** 2023, 'Choosing Variant Interpretation Tools for Clinical Applications: Context Matters', *International Journal Of Molecular Sciences*, 24, 14, 11872.
- Sheppard SE, Bryant L, Wickramasekara RN, et al. 2023, 'Mechanism of KMT5B haploinsufficiency in neurodevelopment in humans and mice', *Science Advances*, 9, 10, eade1463.

Selected research activities

- I have coordinated the full development of the Mention in Bioinformatics in the Biomedicine Degree, at the UIC (Universitat Internacional de Catalunya).

- We have introduced our novel prediction methodology to the scientific community through a three-pronged approach: the defense of two PhD theses by Luz Marina Porras (January 2023) and Selen Özkan (December 2023), our participation and subsequent second-place ranking in the ARSA challenge at the international CAGI 6 contest, and dissemination via our dedicated website https://www.biotoclin.org/ATM/.

ICREA**MEMOIR2023**

Susana de la Luna Gargantilla
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

I obtained a BsC in Biology in 1985 at Universidad Autónoma de Madrid. For my PhD studies, I joined Juan Ortín's lab at the CBMSO and worked on the biology of influenza virus, characterizing molecularly and functionally the viral polymerase. After getting the PhD in 1989 at UAM, I stayed in Ortín's lab at CNB until 1994 when I moved to London to the lab of Nick La Thangue at the National Institute for Medical Research. There, I worked on the G1/S transition in the mammalian cell cycle focusing in the transcription factor E2F, with fellowships from the HFSO (at NIMR) and EU-Marie Curie (at Glasgow University) Programs. In 1998, I returned to Spain with a reintegration contract to join the HSA21/Down syndrome Research group led by Xavier Estivill (IRO, Barcelona). In 2002, I joined ICREA and established my own research group working on the functional characterization of the family of kinases DYRK and their relationship with disease at the Centre for Genomic Regulation-CRG.

Research interests

Protein kinases are central to all cellular processes in eukaryotes, and often linked to disease when they are altered. My group works on a family of protein kinases known as DYRK (dual-specificity tyrosine-regulated kinases), whose members -DYRK1A, DYRK1B, DYRK2, DYRK3, DYRK4- participate in the regulation of processes critical for cell viability and homeostasis. In general, alterations in DYRKs (expression or mutation) are linked to different cancer types. In addition, mutations in several DYRK genes are associated to developmental disorders, as in the case of the DYRK1A haploinsufficiency syndrome or the DYRK1B-associated metabolic syndrome. My group aims to dissect how DYRK activities are linked to human pathology. We are particularly interested on the DYRK-associated activities that impact on the regulation of expression programs either directly on chromatin or indirectly through modulation of signaling pathways.

Selected publications

- Di Vona C, Barba L, Ferrari R & **de la Luna S** 2023, 'Loss of the DYRK1A protein kinase results in the reduction in ribosomal protein gene expression, ribosome mass and reduced translation', *Biomolecules,* 14, 1, 31-54.
- Jiménez-Izquierdo R, Morrugares R, Suanes-Cobos L, Correa-Sáez A, Garrido-Rodríguez M, Cerero-Tejero L, Khan OM, **de la Luna S**, Sancho R & Calzado MA 2023, 'FBXW7 tumor suppressor regulation by dual specificity tyrosine-regulated kinase 2', *Cell Death and Disease,* vol. 14, no. 3, pp 202-215.
- Murray A, Gough G, Cindrić A, ..., **de la Luna S**, et al. 2023, 'Dose imbalance of DYRK1A kinase causes systemic progeroid status in Down syndrome by increasing the un-repaired DNA damage and reducing LaminB1 levels', *EBioMedicine*, vol. 94, pp 104692-104718.
- Vezzoli M, de Llobet Cucalon LI, Di Vona C, Morselli M, Montanini B, **de la Luna S**, Teichmann M, Dieci G & Ferrari R 2023, 'TFIIIC as a potential epigenetic modulator of histone acetylation in human stem cells', *International Journal of Molecular Sciences*, vol. 24, no. 4, pp 3624-3631.

ICREA**MEMOIR2023**

Hugues de Riedmatten
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Since Sep. 2010, Hugues de Riedmatten is an ICREA Research Professor and group leader in quantum optics at the Institute of Photonic Sciences (ICFO) in Barcelona. He obtained a Master in Physics Engineering from EPFL in 1999, and a PhD in experimental quantum optics from the University of Geneva in 2003, for his work on long distance quantum communication in optical fibers. He was then postdoctoral scholar at Caltech, where he worked on initial demonstrations of quantum networks with cold cold atomic ensembles and single photons. In 2006, he was appointed senior researcher at the Univ. of Geneva, where he led the solid state quantum memory activities. He has published more than 100 articles in peer-reviewed journals . He was the recipient of the Barcelona City Prize 2017, of an ERC Starting Grant and of a Frontier Research grant from the US Moore Foundation Hugues is a member of the executive team of the quantum flagship FPA Quantum Internet Alliance, and an associate editor of Optica.

Research interests

Hugues de Riedmatten leads the Quantum Photonics group at ICFO. His research interests are in quantum information science (QIS) and quantum optics. QIS is a research field that aims at controlling quantum coherence in light and matter in order to enable new information processing capabilities impossible with classical resources. He is interested in the quantum control of light matter interaction between single photons and atomic ensembles implemented with rare-earth doped solids and cold atomic gases. Other research lines include quantum non-linear optics with Rydberg atoms, and the detection and manipulation of single ions in the solid-state. The goal is to develop the quantum technology to implement quantum information networks and quantum repeaters. A more fundamental goal is to enable the observation of fascinating quantum effects, such as entanglement, with distant material systems and to explore the limits of quantum coherence in complex material systems.

Selected publications

- Rakonjac JV, Grandi S, Wengerowsky S, Lago-Rivera D, Appas F & **de Riedmatten H** 2023, '
Transmission of light–matter entanglement over a metropolitan network',
Optica Quantum, 1, 2, 94-102.
- Deshmukh C, Beattie E, Casabone B, Grandi S, Serrano D, Ferrier A, Goldner P, Hunger D & **De Riedmatten H** 2023 'Detection of single ions in a nanoparticle coupled to a fiber cavity', *Optica*, 10 - 10 - 1339 - 1344.
- Zhou ZQ, Liu C, Li CF, Guo GC, Oblak D, Lei M, Faraon A, Mazzera M & de **Riedmatten H** 2023, 'Photonic Integrated Quantum Memory in Rare-Earth Doped Solids', *Laser & Photonic Reviews,* 17, 2300257.

- Lago-Rivera D, Rakonjac JV, Grandi S & **de Riedmatten H** 2023, 'Long distance multiplexed quantum teleportation from a telecom photon to a solid-state qubit', *Nature Communications*, 14, 1, 1889.
- Alqedra MK, Deshmukh C, Shuping L, et al. 2023, 'Optical coherence properties of Kramers' rare-earth ions at the nanoscale for quantum applications', *Physical Review B*, 108, 7, 075107.

Selected research activities

Selected invited talks

- "Quantum Networking with rare-earth based quantum nodes," European Quantum Technology Conference 2023, Hannover, Germany
- "Quantum memories for Quantum repeaters" Keynote talk at the INSQT workshop on Space Quantum Internet, Berlin, Germany, August 30th 2023
- *Quantum networking with solid-state based quantum repeater nodes,* invited talk at Quantum Matter 2023, Madrid, May 25th 2023.
- *Quantum Networking with rare-earth-based quantum nodes,* invited talk at Bristol Quantum Information Technology workshop, Bristol, UK, April 27th 2023
- *Prospects for a quantum repeater,* Keynote talk at Inside Quantum Technology Europe, The Hague, NL, March 14th 2023

Other responsibilities (selected):

- Associate editor of the journal Optica
- Co-Program chair of the Optica conference Quantum 2.0
- Work-package leader Quantum Internet Alliance, European Quantum Flagship
- Member of the strategic research and innovation agenda working group of the European Quantum Flagship

ICREA**MEMOIR2023**

Davide Debortoli
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Davide Debortoli is ICREA Research Professor at Universitat Pompeu Fabra, a Research Professor at the Barcelona School of Economics, an Associate Researcher at CREi, and a Research Fellow of the CEPR. He is also an Associate Editor at the Journal of Monetary Economics. He previously worked as Assistant Professor at the University of California San Diego, and held visiting positions at Bocconi University, the Norges Bank and at De Nederlansche Bank. He was awarded an International Incoming Marie Curie Fellowship from the European Research Council (2015) and the Wim Duisenberg Fellowship from the European Central Bank (2022). He has published articles in the Quarterly Journal of Economics, the Journal of Political Economy, the Review of Economics Studies, the NBER Macroeconomics Annual, and other leading economic journals. He received his Ph.D. in Economics from Universitat Pompeu Fabra in 2008.

Research interests

Davide Debortoli main research interests are in the area of macroeconomics, with a special focus on business cycles, fiscal policies and monetary policies. One of his line of research has focused on the implications of (lack of) government credibility for the design of optimal fiscal and monetary policies, and for public debt management. In a different line of research he studies the role of heterogeneity and inequality among households for the propagation of aggregate shocks, and the associated policy implications.

Selected publications

– **Debortoli D**, Forni M, Gambetti L & Sala L 2023, 'Asymmetric Monetary Policy Tradeoffs', *CEPR Discussion Paper,* 18438.

Selected research activities

-12 invited talks in conferences, workshops and seminars
-6 PhD or Master Thesis Supervised (3 as director)
-Associate Editor of the Journal of Monetary Economics
-Scientific Committee Member of the 2023 Annual Meeting of the European Economic Association and of the Econometric Society
-Co-organizer of the Barcelona School of Economics Summer School Workshop "Monetary Policy and Central Banking"

ICREA**MEMOIR2023**

Gustavo Deco
Universitat Pompeu Fabra (UPF)
Engineering Sciences

Gustavo Deco is Research Professor at ICREA and Professor (Catedrático) at the Pompeu Fabra University where he leads the Computational Neuroscience group. He is Director of the Center of Brain and Cognition (UPF). In 1987 he received his PhD in Physics for his thesis on Relativistic Atomic Collisions. In 1987, he was a postdoc at the University of Bordeaux in France. From 1988 to 1990, he was postdoc of the Alexander von Humboldt Foundation at the University of Giessen in Germany. From 1990 to 2003, he lead the Computational Neuroscience Group at Siemens Corporate Research Center in Munich, Germany. He obtained in 1997 his Habilitation (maximal academical degree in Germany) in Computer Science (Dr. rer. nat. habil.) at the Technical University of Munich for his thesis on Neural Learning. In 2001, he received his PhD in Psychology at the Ludwig-Maximilians-University of Munich. He was awarded an ERC Advanced Grant and recently with a second ERC Synergy

Research interests

Perceptions, memories, emotions, and everything that makes us human, demand the flexible integration of information represented and computed in a distributed manner. Normal brain functions require the integration of functionally specialized but widely distributed brain areas. The main aim of my research is to elucidate precisely the computational principles underlying higher brain functions and their breakdown in brain diseases. My research allows us to comprehend the mechanisms underlying brain functions by complementing structural and activation based analyses with dynamics. We integrate different levels of experimental investigation in cognitive neuroscience (from the operation of single neurons and neuroanatomy, neurophysiology, neuroimaging and neuropsychology to behaviour) via a unifying theoretical framework that captures the neural dynamics inherent in the computation of cognitive processes.

Selected publications

- Kringelbach ML, Perl YS, Tagliazucchi E & **Deco G** 2023, 'Toward naturalistic neuroscience: Mechanisms underlying the flattening of brain hierarchy in movie-watching compared to rest and task', *Science Advances*, 9, 2, eade6049.
- **Deco G**, Sanz Perl Y, Ponce-Alvarez A, et al. 2023, 'One ring to rule them all: The unifying role of prefrontal cortex in steering task-related brain dynamics', *Progress In Neurobiology*, 227, 102468.
- Ponce-Alvarez A, Kringelbach ML & **Deco G** 2023, 'Critical scaling of whole-brain resting-state dynamics', *Communications Biology*, 6, 1, 627.
- **Deco G**, Liebana Garcia S, Sanz Perl Y, et al. 2023, 'The effect of turbulence in brain dynamics information transfer measured with magnetoencephalography', *Communications Physics*, 6, 1, 74.
- **Deco G**, et al. 2023, 'The arrow of time of brain signals in cognition: Potential intriguing role of parts of the default mode network', *Network Neuroscience*, 7, 3, 966 - 998.
- Schirner M, **Deco G** & Ritter P 2023, 'Learning how network structure shapes decision-making for bio-inspired computing', *Nature Communications*, 14, 1.

ICREA**MEMOIR2023**

Dan Dediu
Universitat de Barcelona (UB)
Humanities

I always liked computers, so I first studied Mathematics and Computer Science (1993-1997) and I worked as a software engineer (1997-2004). But humans also fascinate me, so I started studying Psychology (1996-1998) and I hold an MSc in Neurobiology and Behaviour (2000-2002). In 2007 I obtained a PhD in Linguistics from the University of Edinburgh (2004-2007), followed by a series of postdoctoral positions in Edinburgh (ESRC UK, 2007-2008) and at the Max Planck Institute for Psycholinguistics in Nijmegen (2008-2017), the latter including an NWO VIDI grant (2012-2017). In 2017 I moved to Lyon, first as EURIAS Fellow of the Collegium de Lyon (2017-2018) and then as an IDEXLyon Fellow with the Laboratoire Dynamique du Langage, Université Lyon 2 (2018-2021), where I obtained my Habilitation (2021). In October 2021 I became ICREA Research Professor with the University of Barcelona.

Research interests

My research is quite diverse, including the processes that shape linguistic diversity, the origins and evolution of language in the context of human evolution, and the application of quantitative and computational methods to the language sciences. In particular, I have been focusing on studying the influence of non-linguistic factors on linguistic diversity, such as the effect of vocal tract anatomy on phonetics and phonology, the effect of the bio-physical environment on language spread and on the color vocabulary, and of population genetics on linguistic tone, using statistics and computer modelling. I have been arguing that language and speech are an old feature of our evolutionary lineage, being shared, in some form, with our cousins, the Neanderthals and the Denisovans.

Selected publications

– Anselme R, Pellegrino F & **Dediu D** 2023, 'What's in the r? A review of the usage of the r symbol in the Illustrations of the IPA'. *Journal of the International Phonetic Association,* 53, 3, 1003-1032.
– **Dediu D** 2023, 'Ultraviolet light affects the color vocabulary: Evidence from 834 languages', *Frontiers in Psychology*, vol. 14, 1143283.
– Gisladottir RS, Helgason A, Halldorsson BV, Helgason H, Borsky M, Chien Y-R, Gudnason J, Gudjonsson SA, Moisik S, **Dediu D**, Thorleifsson G, Tragante V, Bustamante M, Jonsdottir GA, Stefansdottir L, Rutsdottir G, Magnusson SH, Hardarson M, Ferkingstad E, Halldorsson GH, Rognvaldsson S, Skuladottir A, Ivarsdottir EV, Norddahl G, Thorgeirsson G, Jonsdottir I, Ulfarsson MO, Holm H, Stefansson H, Thorsteinsdottir U, Gudbjartsson DF, Sulem P, Stefansson K 2023, 'Sequence variants affecting voice pitch in humans', *Science Advances*, vol. 9, no. 23, pp eabq2969.
– **Dediu D**, Lin J, Moisik SR & Moran S 2023, 'Dental fricatives: Patterning, evolution, and factors affecting a rare class of speech sounds'. In Karakostis, FA & Jäger, G (Eds) *Biocultural Evolution: An Agenda for Integrative Approaches*, 143–178. Tübingen: Kerns Verlag.

Selected research activities

On the one hand, 2023 represented the effective end of my highly successful IDEXLyon project in Lyon (France), with the defense of Mathilde Josserand's PhD thesis in December. On the other, 2023 also marked, in a symbolic way, my "full" integration in the Spanish and Catalan academic system, with the supervision of my first Master's Theses, the acquisition of my first grant (a "Proyecto de generación de conocimiento") that includes a PhD position (due to start in March 2024), and the beginning of another PhD co-supervision, all of these here, at the University of Barcelona.

ICREAMEMOIR2023

Hernando A. del Portillo Obando
Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol (IGTP) & Institut de Salut Global Barcelona (ISGlobal)
Life & Medical Sciences

I studied at the University of Georgia where I received my PhD in 1985 followed by two WHO-postdoctoral trainings at the New York University Medical Centre and the Institut Pasteur where I specialized in molecular biology of malaria. Next, I consolidated an interdisciplinary malaria research group at the University of Sao Paulo, Brazil. In 1990, I did a sabattical year at the Center for Molecular Biology (ZMBH), University of Heidelberg. In 2007, I became an ICREA Research Professor and joined the Barcelona Institute for Global Health, and in 2016 co-joined the Institut d'Investigació Germans Trias i Pujol. Cornerstones of this research activity are the discovery of the largest multigene virulent family of human malaria parasites and the discovery that reticulocyte-derived exosomes from infections act as intercellular communicators and can be used as vaccines and biomarkers.

Research interests

My main research area is the biology of Plasmodium vivax, a neglected human malaria parasite responsible for millions of yearly clinical cases. We are presently looking for mechanistic insights of the role of reticulocyte-derived exosomes, nanovesicles of endocytic origin, in signalling the spleen and the bone marrow to estabish cryptic erythrocytic infections. To pursue bone marrow and spleen studies, we are implementing the usage of humanized mouse models and organs-on-chip. To use this information in novel control strategies, we are exploring the use of reticulocyte-derived exosomes as a novel vaccine against P. vivax as well as novel biomarkers of asymptomatic infections. Last, to rapidly move this field to translation, we are pursuing the development of exosome-based vaccines against infectious diseases of veterinary importance.

Selected publications

– Fernandez-Becerra C, Xander P, et al. 2023, 'Guidelines for the purification and characterization of extracellular vesicles of parasites', *Journal of Extracellular biology*, 2, 10.

Selected research activities

- **MOVE Award** to recognize the resercher who made a great contribution to push forward the MOVE ProjectFirst MOVE symposium to foster Mobility for Vesicles research in Europe held in Malaga
- **Invited talk** – Joint International Tropical Medicine Meeting (JITMM2023) at Eastin Grand Hotel Phayathai, Bangkok Thailand
- **Invited talk** – Extracellular Vesicles: friends and foes II Conference at the Weizmann Institute of Science, Rehovot, Israel.

ICREA**MEMOIR2023**

Luciano Di Croce
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Di Croce obtained his PhD from the University of Rome, followed by postdoctoral research in Marburg (Germany) started in 1996, where he explored the link between transcription and chromatin structure. Subsequently, he joined the European Institute for Oncology in Milan where he unveiled a crucial link between genetic and epigenetic changes in cancer progression. In 2003, he established his laboratory at CRG (Barcelona) as an ICREA Professor. Since its formation, Di Croce's group has been at the forefront of unravelling the impact of epigenetic alterations and carcinogenesis processes in Leukemia and Pediatric brain tumors. His groundbreaking findings have been featured in prestigious journals like Science, Nature, and Cell. In recognition of his contributions, Di Croce was elected as an EMBO member in 2013 and has been a prominent figure in the international scientific community.

Research interests

Epigenetic changes, such as histone modifications and DNA methylation, are common alterations in cancer cells. Our laboratory is addressing the molecular basis of epigenetic alterations during the early phase of the tumorigenesis process. The expression of onco-proteins in hematopoietic precursor cells provides a unique model system to follow the molecular step from a normal to a transformed cell on the level of gene transcription, nuclear structure and chromatin. More recently, Di Croce lab is interested in understanding how variations in the assembly of the Polycomb complexes occur and influence mES cell differentiation and animal development, and the role of 'oncohistone' in pediatric cancers.

Selected publications

- Llorente A, Blasco M T, Espuny I, Guiu M, Ballare C, Blanco E, [.....] I Avgustinova A, **Di Croce L**, & Gomis R R (2023). 'MAF amplification licenses ERα through epigenetic remodelling to drive breast cancer metastasis - PubMed (nih.gov) *Nat Cell Biol 25*(12) 1833-1847.
- Aranda S, Alcaine-Colet A, Ballaré C, et al. 2023, 'Thymine DNA glycosylase regulates cell-cycle-driven p53 transcriptional control in pluripotent cells', *Molecular Cell*, 83, 15, 2673 -2691.
- Basu, S., Shukron, O., [....] L., Blanco, E., Bartke, T., Di Croce, L., Berger, I., Schaffitzel, C., Lee, S. F., Stevens, T. J., Klenerman, D., Hendrich, B. D., Holcman, D., & Laue, E. D. (2023). Live-cell three-dimensional single-molecule tracking reveals modulation of enhancer dynamics by NuRD. *Nat Struct Mol Biol*, *30*(11), 1628-1639
- Sola P, Mereu E, Bonjoch J et al. 2023, 'Targeting lymphoid-derived IL-17 signaling to delay skin aging', *Nature Aging*, 3, 688-704.
- González-Ramírez M, Blanco E & **Di Croce L** 2023, 'A computational pipeline to learn gene expression predictive models from epigenetic information at enhancers or promoters', *STAR Protoc,* 4(1):101948.
- Aranda S & **Di Croce L** 2023, 'Isolation of Chromatin Proteins by Genome Capture', *Methods Mol Biol*, *2655*, 91-99.
- Blanco E, Ballare C, **Di Croce L** & Aranda S 2023, 'Quantitative Comparison of Multiple Chromatin Immunoprecipitation-Sequencing (ChIP-seq) Experiments with spikChIP'. *Methods Mol Biol*, *2624*, 55-72

Selected research activities

• Organized the Keystone Symposium on "Chromatin and Epigenetics" Colorado, USA

• Chair of the Italian National Committee for the Evaluation of Research (CNVR)

•
ERC Panel Member for the Starting Grant (StG)Since 2020 Coordinator of the 'Genome Biology' Programme

• EMBO Member (since 2013)

ICREA**MEMOIR2023**

Margarita Díaz-Andreu García
Universitat de Barcelona (UB)
Humanities

Margarita Díaz-Andreu has worked as an ICREA Research Professor since 2012, when she left Durham University and moved to the UB. Her academic career is characterized by a high number of publications (8 books and special issues in the last 5 years, and many articles), the organization of many conferences or sessions in connection to the projects she has led. In 2023 she has led four projects: the ERC Artsoundscapes; the JPI-JHEP Deep Cities, the R+D+i ArqueólogAs and the Palarq Baja California projects. She has also tutored 4 personal grants

In 2023 all the grants sustained a total of 12 positions. Her students from Barcelona now work in prestigious heritage places (Casa Batlló), have permanent jobs in universities (Durham) or have continued their academic careers (Bordeaux, Verona, PUC Chile). As a researcher Margarita Díaz-Andreu has contributed to fostering knowledge by organising and participating in conferences and engaging in outreach (blogs, podcasts, radio and newspapers).

Research interests

The three main research areas in which Díaz-Andreu has been active and has led research groups in the last few years are still in place. Her work in rock art and archaeoacoustics is highly innovative and she leads an ERC interdisciplinary group of archaeologists, acoustic engineers, ethnomusicologists and psychologists. For this project, in 2023 fieldwork was undertaken in Baja California and Ibiza. Publications for the ERC project (11 and 1 special issue) have dealt with fieldwork in Russia and Spain. Much effort has also gone into including raw data into the CORA Repositori (9). She has also published on the history of archaeology (4). The running of the ArqueólogAs project has continued with now about 193 biographies of women pioneers on the project's webpage. She is leading investigator in all her three research groups of academics and students (ArqueólogAs, Artsoundscapes and GAPP/Deep Cities).

Selected publications

- **Díaz-Andreu M** & Santos da Rosa N 2023, '[Special Issue] Past Sounds: New Perspectives in the Field of Archaeoacoustics'. *Open Archaeology*, 9, 1.
- Santos da Rosa N, Alvarez L, Martorell X, Fernández L & **Díaz-Andreu M** 2023, 'The Acoustics of Aggregation Sites: Listening to the Rock Art Landscape of Cuevas de la Araña (Spain)', *Journal of Field Archaeology* 48(2), 130-143.
- Alvarez-Morales, L, Santos da Rosa, N, Benítez-Aragón, D, Fernández Macías, L, Lazarich, M & **Díaz-Andreu, M** 2023. 'The Bacinete main shelter: a prehistoric theatre?' *Acoustics* 5, 299-319.
- **Díaz-Andreu M**, Rozwadowski A, Pasalodos RJ, da Rosa NS, Benítez-Aragón D & Alvarez-Morales L 2023 'Music and Storytelling at Rock Art Sites? The Archaeoacoustics of the Urkosh Area (Russian Altai)', *Open archaeology*, 9 - 1.
- López-Mochales, S, Aparicio-Terrés, R, **Díaz-Andreu, M** & Escera, C 2023. 'Acoustic perception and emotion evocation by rock art soundscapes of Altai (Russia)'. *Frontiers in Psychology,* 14, 1188567.
- **Díaz-Andreu M** et al. 2023. 'The soundscapes of the Lower Chuya River area, Russian Altai. Ethnographic sources, indigenous ontologies and the archaeoacoustics of rock art sites', *Journal of Archaeological Method and Theory,* 30, 335-362.
- **Díaz-Andreu, M** 2023. 'Visigothic Archaeology. An example the influence of National Socialism in Spain?'. In Eickhoff, M, Modl, D, Meheux, K & Nuijten, E (eds.) *National Socialist Archaeology in Europe and its Legacies*, 463-484. Springer, Cham.
- Alarcón-Jiménez, AM, Jiménez Pasalodos, R & **Díaz-Andreu, M** 2023. 'A Glimpse Behind Closed Doors. Alfred L. Kroeber and the Representation of Native Californian Music'. *History and Anthropology,* 34(3), 521-539.
- **Díaz-Andreu M** 2023, 'Women's Pathways in the History of Spanish Archaeology (19th and 20th Centuries)'. In López, SL (ed.) *Women in Archaeology: Intersectionalities in Practice Worldwide* Women in Engineering and Science, 221-242. Springer, Cham.

Selected research activities

• Organizer of the conference: "ArqueólogAs de Sudamérica. Historias de Resiliencia". (with Carito Tavera). 28 October 2023.

• 23 papers at national and international meetings in Czeck Rep., France, Ghana, Italy, Ireland, Mexico and UK.

• Leadership and Management Skills Course 17-19/10/2023.

• Leading the ICREA Leadership Discussion group. From 10/2023. Bi-monthly.

• Outreach: 17/3/2023. ETV. "Conversa Arqueologia Feminista". Fet a Mida programme by La Xarxa de Comunicació Local; 12/4/2023 talk on women in archaeology, Internat. Women's Club. Centre Cívic Casa Orlandai, BCN

ICREA**MEMOIR2023**

Francisco Javier Doblas Reyes

Barcelona Supercomputing Center - Centro Nacional de
Supercomputación (BSC - CNS)

Experimental Sciences & Mathematics

I started to work on climate variability at the Universidad Complutense de Madrid (Spain) in 1992, where I did my PhD. I worked as a postdoc in Météo-France (Toulouse), at the Instituto Nacional de Técnica Aerospacial (Torrejón, Spain) and for ten years at the European Centre for Medium-Range Weather Forecasts (Reading, UK). I was group leader at the Institut Català de Ciències del Clima from 2010 to 2015. I now lead the Department of Earth Sciences of the Barcelona Supercomputing Center (BSC), which hosts more than 170 engineers, physicists, mathematicians and social scientists working on supercomputing and data analysis to provide the best information and services on climate and air quality. I am author of more than 200 peer-reviewed papers (h index 74, Google Scholar), lead author of the Fifth and Sixth Assessment Reports of the IPCC, member of several international scientific committees and advisory boards, and direct supervisor of around 30 postdocs, engineers and PhD students.

Research interests

Global climate is highly variable, which implies that there is much more to understand than just climate change. Climate prediction aims at predicting the variations of climate at different time scales, ranging from one month to several years beyond the start of the forecast. I use an Earth system model based on differential equations to explore the limits of the forecast quality over different parts of the globe, in particular over Africa, South America, the Arctic and Southern Europe. I develop this model to explore the advantages of increasing its resolution to better reproduce the physical processes at the origin of climate variability. I also use statistical techniques to adapt the resulting climate information to specific user needs. Improving the application of this climate information to different socioeconomic sectors, with a special focus on energy and disaster risk management, is one of my main targets to try to make a change in both society and the economy.

Selected publications

- Bauer P, Dueben P, Chantry M, **Doblas-Reyes F**, Hoefler T, McGovern A & Stevens B 2023, 'Deep learning and a changing economy in weather and climate prediction', *Nature Reviews Earth & Environment*, 4, 507-509.
- Donat MG, Delgado-Torres C, De Luca P, Mahmood R, Ortega P & **Doblas-Reyes FJ** 2023, 'How Credibly Do CMIP6 Simulations Capture Historical Mean and Extreme Precipitation Changes?', *Geophysical Research Letters*, 50, 14, e2022GL102466.
- Manrique-Sunen A, Palma L, Gonzalez-Reviriego N, **Doblas-Reyes FJ** & Soret A 2023, 'Subseasonal predictions for climate services, a recipe for operational implementation', *Climate Services*, 30, 100359.
- Delgado-Torres C, **Donat MG**, Soret A et al. 2023, 'Multi-annual predictions of the frequency and intensity of daily temperature and precipitation extremes', *Environmental Research Letters*, 18, 3, 034031.
- O'Kane TJ et al. 2023, 'Recent applications and potential of near-term (interannual to decadal) climate predictions' Frontiers in Climate, 5.

ICREA**MEMOIR2023**

Inés Domingo Sanz
Universitat de Barcelona (UB)
Humanities

ICREA Res. prof. at UB since 2010, and Vice-president of the World Archaeological Congress (2017-2025). Through current and previous positions (Univ.. of Flinders, Australia & Valencia) she explores the 'Archaeologies' of rock art from a multidisciplinary approach. Her performance in the field has earned her various academic distinctions: Blaze O'Connor Memorial Award (2013), Honorary appointments at Flinders Univ. (since 2009), Inner Mongolia Rock Art Protection and Research Association, and Rock Art Research Academy (2010), and a PhD Award (2006). She's curated two major exhibitions on rock art: *Art Rupestre a la Terra d'Arnhem, Austràlia (Museu de Prehistòria de València 2023-24) (*http://mupreva.org/exposiciones/?q=va&id=78) and *Art Primer, Artistes de la Prehistòria (MAC-Barcelona, 2020-21; Museu de Lleida 2021-22),* awarded the "Youniversal Award" of the 7th Annual Global Fine Art Awards 2021 (https://artprimer.mac.cat/es/) and still touring around Catalonia through arqueoxarxa.

Research interests

My current research projects aim at bridging the gap between scientific and heritage approaches to one of Europe's most extraordinary bodies of rock art, awarded UNESCO World Heritage Status in 1998: Levantine rock art. This research is funded with an ERC CoG (2019-2024). My aim is to achieve an holistic view of this art by combining a multidisciplinary (Archaeology, Heritage Science, IT and Ethnoarchaeology) and a multi-scale approach (from microanalysis to landscape perspectives) to: a. Redefine LRA through new dating techniques and analytical methods to understand the creative process. b. Use this rock art tradition as a proxy to raise new questions of global interest on the evolution of creative thinking and human cognition. c. Define best practices and protocols for open air rock art conservation and management.

Selected publications

- **Domingo I**, Roman D, Lerma J L, Rodríguez I, Zalbidea Muñoz M A, Vendrell M 2023, 'Multidisciplinary and Integral Approaches to Rock Art as a Strategy for Rock Art Conservation'. In Fernandes A B, Marshall M & **Domingo I** (eds) *Global Perspectives for the Conservation and Management of Open-Air Rock Art Sites*. Routledge, London, pp. 55-75.
- Rodríguez I & **Domingo I** 2023, 'Evaluating Thermal-Hygrometric Dynamics at a Levantine Rock Art Site La Covatina (Vilafranca, Castelló)'. In Fernandes A B, Marshall M & **Domingo I** (eds) *Global Perspectives for the Conservation and Management of Open-Air Rock Art Sites*. Routledge, London, pp. 214-233.
- Fernandes AB Marshall M & **Domingo I** (eds) 2023, *Global Perspectives for the Conservation and Management of Open-Air Rock Art Sites. Routledge. Taylor and Francis Group. London.*

- **Domingo I** & Barreda-Uso G 2023, 'Knowledge-building in open-air rock art conservation: sharing the history and experiences with Levantine rock art', *Studies in Conservation*, 68 (2): 258-282.
- **Domingo I,** et al. 2023, 'Nuevo hallazgo de arte mueble de estilo Paleolítico en el Noreste peninsular: la plaqueta grabada de les Coves del Fem (Ulldemolins, Tarragona)'. *Munibe, Antropologia-Arkeologia,* 74, 5-22.
- Bea M, **Domingo I**, Angás J & Román D 2023, 'Nuevo estudio de los conjuntos rupestres del Barranco de Gibert I y II (Mosqueruela, Teruel) y su contextualización arqueológica en el Maestrazgo'. *Saguntum*, 55, 69-90.
- Román D, **Domingo I,** Bergadà M M, Lloveras Ll & Nadal J 2023, 'La Balma del Barranc de la Fontanella (Vilafranca, Castelló) y sus implicaciones en el conocimiento del Mesolítico Geométrico del Mediterráneo ibérico y el Valle del Ebro', *Complutum* 34, 1, 9-30.

Selected research activities

Exhibition *Art rupestre a la Terra d'Arnhem, Austràlia.* MUPREVA.

ICREA**MEMOIR2023**

Markus G. Donat

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)

Experimental Sciences & Mathematics

I am a Meteorologist by training, and obtained my PhD in Meteorology and Climatology at the Freie Universität Berlin in June 2010. Between 2011 and 2018 I held postdoctoral positions and fellowships at the University of New South Wales in Sydney, Australia, where I focused my research on developing a robust understanding of how different types of climatic extremes are changing in observations and climate model simulations. In 2018 I moved to the Barcelona Supercomputing Center, where I am co-leading the Climate Prediction Group and have been a Ramón y Cajal Fellow since 2019. I have been appointed as ICREA Research Professor in February 2022. Recognitions of my scientific achievements include being awarded the World Climate Research Program and Global Climate Observing System International Data Prize in 2017, and the AXA Climate Award in 2021.

Research interests

My research aims to understand and predict how different types of climate extremes, such as heatwaves, intense precipitation or storms, are changing in the context of climate variability and long-term climate change related to global warming. This involves studying weather and climate processes that cause or amplify such extreme events, and how they respond to different climate drivers. My work involves the development and analysis of high-quality observational datasets of climate extremes, and different types of climate model simulations aiming to predict climate in the near-term (e.g. next years and decade) and more distant future. A key focus is to reduce the uncertainty related to climate variability in these climate predictions. I also explore the efficacy of land-based approaches to mitigate climate change by removing and storing carbon dioxide from the atmosphere, and how these mitigation approaches may be put at risk through exposure to extreme weather and climate events.

Selected publications

- **Donat MG**, Delgado-Torres C, De Luca P, Mahmood R, Ortega P & Doblas-Reyes FJ 2023, 'How Credibly Do CMIP6 Simulations Capture Historical Mean and Extreme Precipitation Changes?', *Geophysical Research Letters*, 50, 14, e2022GL102466.
- Liu Y, **Donat MG,** England MH, Alexander LV, Hirsch AL, Delgado-Torres C 2023, 'Enhanced multi-year predictability after El Niño and La Niña events', *Nature Communications*, 14, 1, 6387.
- De Luca P, Delgado-Torres C, Mahmood R, Samso-Cabre M & **Donat MG** 2023, 'Constraining decadal variability regionally improves near-term projections of hot, cold and dry extremes', *Environmental Research Letters*, 18, 9, 094054.

Selected research activities

I spent the first 3.5 months of the year coordinating a consortium for a Horizon Europe call. The proposal has been successful, and the project "EXPECT" will start in 2024 under my coordination.

I have been identified as highly cited researcher by Clarivate.

I was invited lecturer at the European Centre for Medium-Range Weather Forecasts (ECMWF) Annual Seminar

ICREA**MEMOIR2023**

Ruben Durante
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Full Professor in Economics at Universitat Pompeu Fabra (UPF). Affiliated Faculty of the BSE and IPEG, Research Affiliate at CEPR, and Research Fellow at CESifo, IZA and Gallup. Prior to joining UPF, I was post-doctoral fellow at Yale University, and assistant and then associate professor of economics at Sciences Po. My work has been published in top reviews in economics, management, and political science including the Journal of Political Economy, the American Economic Review, Management Science, the American Journal of Political Science, the American Economic Journal: Applied, the Economic Journal, and the Journal of the European Economic Association. I have received several grants and awards including from the European Research Council (Starting Grant), the Fundación La Caixa, and the BBVA Foundation. I have served as associated editor for the Journal of the European Economic Association and the European Economic Review.

Research interests

My fields of research are political economy, media economics, and economic development. My research focuses primarily on the functioning and impact of traditional and new media in both mature and consolidating democracies. Specifically, I examine various aspects of the multi-faceted relationship between media, voters, policy-makers and special interests, with particular regard to the ability of an independent press to keep both policy-makers and private interests accountable. Some of the questions tackled in my work include: i) the impact of entertainment television on viewers' socio-political preferences, ii) the strategies used by policy-makers to minimize public scrutiny of their actions, iii) the impact of the Internet on political participation, iv) the influence of corporate interests on the policymaking process, v) the determinants of beliefs about fairness and preferences for redistribution, vi) the imapct of nation-building policies on interethnic tensions in Africa.

Selected publications

- Ajzenman N & **Durante R** 2023, 'Salience and Accountability: School Infrastructure and Last-Minute Electoral Punishment', *The Economic Journal*, vol. 133, n. 649, pp. 460–476.

ICREA**MEMOIR2023**

Turgut Durduran
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

November 2015 – ICREA Research Professor; February 2009 – Group Leader – Medical Optics. Dr. Turgut Durduran is a group leader at ICFO. He moved to ICFO from University of Pennsylvania (USA) to found the ICFO-Medical Optics group in 2009, received tenure in 2014 and became an ICREA processor in 2015. Over the years, the group has grown exponentially, currently, with a large number of PhD students, post-docs and engineers collaborating with many hospitals and biomedical institutes world-wide. He has coordinated projects funded by the European Commission, Spanish National Ministries and the National Institutes of Health. He is active in bench-to-bedside translation of diffuse optical technologies including spin-off generation and medical device approvals.

Research interests

My work focuses on medical applications of diffuse light through the use of the phys ical models of photon propagation in tissues, including the speckle statistics of diffuse light. In a nutshell, I take advantage of the fact that light could travel many centimeters in living tissues and carry clinically and physiologically relevant information from "deep" (>1 cm) tissue volumes. This enables us to combine advanced physical models, instrumentation and algorithms to explore clinical and basic biomedical applications.

We mostly focus on quantifying local, microvascular blood oxygenation, blood volume and blood flow that are three quantities critical to sustaining cellular oyxgen metabolism. Their quantification and the derivation of additional parameters from combination with other physiological parameters and also through their dynamic patterns is very relevant in understanding development, normal tis sue tissues and their impairments.

Selected publications

- Tagliabue S, Lindner C, Chochron da Prat I, Sanchez-Guerrero A, Serra I, Kacprzak M, Maruccia F, Martinez Silva O, Weigel UM, de Nadal M, Poca MA & **Durduran T** 2023, 'Comparison of cerebral metabolic rate of oxygen, blood flow, and bispectral index under general anesthesia', *Neurophotonics*, 10(1), 015006.

- Gregori-Pla C, Zirak P, Cotta G, et al. 2023, 'How does obstructive sleep apnea alter cerebral hemodynamics?', *Sleep*, 46, 8.

- Tagliabue S, Kacprzak M, Serra I, Maruccia F, Fischer JB, Riveiro M, Rey-Perez A, Exposito L, Lindner C, Báguena M, **Durduran T** & Poca MA, 2023 'Transcranial, noninvasive evaluation of the potential misery perfusion during hyperventilation therapy of traumatic brain injury patients', *Journal of Neurotrauma*, 40, 19-20.

- Parfentyeva V, Colombo L, Lanka P, Pagliazzi M, Brodu A, Noordzij N, Kolarczik M, Dalla MA, Re R, Contini D, Torricelli A, **Durduran T** & Pifferi A 2023, 'Fast time-domain diffuse correlation spectroscopy with superconducting nanowire single-photon detector: system validation and in vivo results', *Sci Rep* 13, 11982.

- Passera S, De Carli A, Fumagalli M, et al. 2023, 'Cerebrovascular reactivity to carbon dioxide tension in newborns: data from combined time-resolved near-infrared spectroscopy and diffuse correlation spectroscopy', *Neurophotonics*, 10, 4, 045003.

- Harvey-Jones K, Lange F, Verma V, Bale G, Meehan C, Avdic-Belltheus A, Hristova M, Sokolska M, Torrealdea F, Golay X, Parfentyeva V, **Durduran T**, et al. 2023, 'Early assessment of injury with optical markers in a piglet model of neonatal encephalopathy', *Pediatric Research*, 94, 1675–1683.

- Lin CHP, Orukari I, Tracy C, Kobayashi Frisk L, Verma M, Chetia S, **Durduran T**, Trobaugh JW & Culver JP 2023, 'Multi-mode fiber-based speckle contrast optical spectroscopy: analysis of speckle statistics', *Opt Lett,* 48, 1427-1430.

ICREA**MEMOIR2023**

Konstantin Dyakonov
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Born on 30 May 1964 in Leningrad, USSR (=St. Petersburg, Russia). Graduated from Leningrad State University in 1986. PhD in Mathematics from St. Petersburg State University, 1991. Previous long-term positions: – Institute of Analysing Devices, Leningrad, USSR (1986-1989), researcher; – St. Petersburg University of Electrical Engineering, St. Petersburg, Russia, assistant professor (1989-1992) and then associate professor (1992-1998) in the Department of Mathematics; – Universidad de La Laguna, Tenerife, Spain (1996-1997), visiting professor; – Universitat de Barcelona, Spain (1999-2001), visiting research fellow; – Steklov Institute of Mathematics, St. Petersburg Branch (POMI), St. Petersburg, Russia (1998-2007), senior researcher; – Universitat de Barcelona, Spain (2003-2006), Ramón y Cajal researcher. Prizes: Young Scientist Award in the area of Mathematics from Academia Europaea (for fSU researchers), 1998.

Research interests

Most of my research is devoted to spaces of analytic functions of a complex variable. Typically, the functions live on the unit disk and are well-behaved, in a sense, near/on its boundary, the unit circle. Various specific interpretations of "well-behaved", such as a natural growth restriction or some kind of boundary smoothness, give rise to important function spaces with nice properties, and I have studied some of these. I am also concerned with certain types of linear operators (e.g., the so-called Toeplitz and Hankel operators) acting on such spaces.

Selected publications

- **Dyakonov KM** 2023, 'Questions about extreme points', *Integral Equations and Operator Theory*, vol. 95, no. 2, Article 14, 11 pp.
- **Dyakonov KM** 2023, 'Functions with small and large spectra as (non)extreme points in subspaces of H∞', *St. Petersburg Mathematical Journal*, vol. 34, no. 3, pp. 453–462.
- **Dyakonov KM** 2023, 'Inner functions as strongly extreme points: stability properties', *Annales Fennici Mathematici*, vol. 48, no. 2, pp. 681–690.

Selected research activities

* Editorial boards: Journal of Function Spaces, Proceedings of the Institute of Applied Mathematics and Mechanics (NAS of Ukraine)

* Courses taught: Integral calculus in several variables (problem solving), Universitat de Barcelona

* Supervision of a TFG, Universitat de Barcelona

* A number of talks at various conferences and seminars in France, Morocco and Germany

* Served as referee for a number of mathematical journals, such as Annals of Functional Analysis, Analysis and Mathematical Physics, Annales Fennici Mathematici, etc.

ICREA**MEMOIR2023**

Majid Ebrahim-Zadeh
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Majid Ebrahim-Zadeh received his PhD degree from St Andrews University, UK, in 1989. He was a Royal Society Research Fellow at St Andrews from 1993 to 2001 and joined ICFO as ICREA Professor in 2003. He has >620 peer-reviewed publications, including 220 journal papers (5 invited), 120 invited talks, 18 monographs and reviews, and has edited 2 books. He has served as advisory and topical editor of Optics Letters, guest editor of J. Opt. Soc. Am. B, associate editor of IEEE Photonics Journal, associate editor of Optica, and on advisory board and expert evaluation panel of various scientific councils including ERC Advanced Grants (2014-2020). He has chaired 9 international conferences in photonics. He is a founder, director and chief scientist of Radiantis, a Fellow of Optica and SPIE, recipient of two Royal Society Merit Awards (UK: 1995, 1999), recipient of Innova Prize (Spain: 2004), Berthold Leibinger Innovation Prize (Germany: 2010), and David Richardson Medal of Optica (USA: 2021).

Research interests

His research is focused on the development of novel technologies for the generation and manipulation of coherent light in new spectral and temporal domains inaccessible to conventional lasers. The main goal is the exploitation of nonlinear optics, in particular parametric processes, to produce laser radiation with unique spectral and temporal flexibility, and applications of this technology to biomedicine, frequency synthesis, spectroscopy, optical microscopy and imaging. Another important focus of his research is commercial enterprise and technology transfer to the industrial sector, where he has successfully transformed his reserach results into cutting-edge photonic products through Radiantis, the first spin-off company from ICFO founded in Barcelona in 2005. Today, Radiantis is a leading manufacturer of state-of-the-art frequency conversion technology in the world, and a certified supplier to one of the major laser companies in the world.

Selected publications

– Kaushik G, Aadhi A, Ghosh A, Singh RP, Dutta Gupta S, **Ebrahim-Zadeh M** & Samanta GK 2023, APL Photonics, vol. 8, 116110.

– Sukeert, Pizzurro S, Esteban-Martín A, Gotti R, Carrà L, Piccinno G, Agnesi A, Pirzio F, Chaitanya Kumar S & **Ebrahim-Zadeh M** 2023, *Optics Letters,* vol. 48, 22, 6008-6011.

– Terms H, Mansour A & **Ebrahim-Zadeh M** 2023, *Sensors,* vol. 23, 9, 4380, 1-20.

– Devi K & **Ebrahim-Zadeh M** 2023, *Journal of the Optical Society of America B,* vol. 40, no. 8, 1960-1967.

– **Ebrahim-Zadeh M**, Helmy AS, Leo G & Schunemann PG 2023, *Journal of the Optical Society of America B,* vol. 40, no. 1, MIC1-MIC1.

– Sukeert, Chaitanya Kumar S, Schunemann PG, de Valcárcel GJ, **Ebrahim-Zadeh M** & Esteban-Martín A 2023, *Optics Express,* vol. 31, no. 10, 16939-16951.

– Sanchez AD, Chaitanya Kumar S & **Ebrahim-Zadeh M** 2023, *IEEE J. Sel. Top. Quantum Electronics*, vol. 29, no. 1, 5100308, pp. 1-8.

Selected research activities

Selected Invited Talks (International Conferences):

– *Autumn School on Ultrafast Lasers*, San Carlos de Bariloche, Argentina

– *Xth Ultrafast Dynamics and Ultrafast Bandgap Photonics*, Crete, Greece – **Keynote**

– *CLEO/Europe*, Munich, Germany – **Short Course**

– *Advanced Solid-State Laser (ASSL) Conference*, Tacoma, Washington, USA – **Short Course**

– *TIFR International School on the Frontiers of Light*, Hyderabad, India

International Committees:

– Selection Committee, *Optica Foundation Challenge Program*, Optica, USA

– Selection Committee: *Laser Instrumentation Award*, IEEE Photonics Society, USA

– Expert Panel, *Research Council of Lithuania, Comparative Expert Assessment (CEA) of research performance of Lithuanian universities and research institutes, Lithuania*

– Expert Evaluation Committee: *Tenure Track Promotions,* Aalto University, Finland

– Advisory Committee: *Advanced Fiber Laser Conference (AFL 2023)*, China

ICREA**MEMOIR2023**

Jan Eeckhout
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Jan Eeckhout is ICREA research professor of Economics at UPF Barcelona. He studies the macroeconomic implications of market power, and the economics of labor markets and cities. His research has been published in the leading economics journals and he is the author of the book "The Profit Paradox." His work has featured in the media, including The Economist, The Wall Street Journal, FT, New York Times and Bloomberg. Jan Eeckhout has been a tenured professor at the University of Pennsylvania and at University College London. He has also been the Louis A. Simpson Visiting Professor at Princeton University, and has held visiting positions at NYU and MIT. He has supervised over 50 PhD students. He is a fellow of the Econometric Society, of the European Economic Association and is a member of the Academia Europaea. He received his Ph.D. in Economics from the LSE in 1998.

Research interests

Jan Eeckhout has research interests in macroeconomics, with a special emphasis on the labor market and market power. He studies wage inequality, unemployment, labor market dynamism and technological change.

ICREA**MEMOIR2023**

Roberto Emparan García de Salazar
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

I'm originally from Bilbao. I got both my BSc (in June 1990) and my PhD (in November 1995) in Physics from the University of the Basque Country. In January 1996 I went to the University of California, Santa Barbara, for my first postdoc. Two years later, I moved to Durham University, in northern England, for a second postdoc. Near the end of 1999 I took up a junior lecturer position back in Bilbao. I took leave from there in January 2001 to move to a Fellow position at CERN (the European Lab for Particle Physics, outside Geneva). Since January 2003 I am ICREA Research Professor at the Department of Quantum Physics and Astrophysics, Institute of Cosmos Sciences, at Universitat de Barcelona. In 2016 I was awarded an Advanced Grant from the European Research Council. In 2022 I was awarded the Medalla Monturiol and elected Fellow of the ISGRG.

Research interests

I aim to understand the physical nature of space and time at the most fundamental level. Einstein taught us that gravity makes spacetime a dynamic entity. So I study gravity's classical and quantum aspects and its most basic and fascinating objects: the **black holes**. The natural starting point is the theory of General Relativity and the theories that naturally incorporate the ideas of **quantum holographic spacetime**, namely, String and M-Theory and the AdS/CFT correspondence.

Selected publications

- **Emparan R**, Luna R, Suzuki R, Tomasevic M & Way B 2023, 'Holographic duals of evaporating black holes', *Journal of High Energy Physics*, 5, 182.
- Ceplak N, **Emparan R,** Puhm A & Tomasevic M 2023 'The correspondence between rotating black holes and fundamental strings' *Journal of High Energy Physics* 11, 226.
- **Emparan R**, Barakovic E, Dekhil R & Rescic F 2023, 'Black holes in the classical and quantum world', *Proceedings of Science*, 440, 0004.

Selected research activities

Plenary and invited conference talks at Harvard *Celestial Holography*; INI Cambridge *Black Holes*; YITP Kyoto *Quantum Gravity*; Iberian Strings 2023

Invited seminar talks at ICTP Trieste; Würzburg University; Niels Bohr Institute Copenhagen; SNS Pisa; Brandeis University; IFAE; ICFO Colloquium

Dissemination: Outreach talks at RACAB, Ateneu Llibertari Gràcia, Eurostrings 2023, Benasque, UEB

Organizer of Benasque Gravity Workshop 2023; Eurostrings 2023: QIMG2023 Workshop Kyoto-YITP

Research stays (> 1 week) at École Polytechnique Paris; YITP Kyoto; INI Cambridge; Benasque Center of Sciences

Guarantor of ICCUB for María de Maeztu Award

Managing Team Member of *Gravitational Wave Probes of Fundamental Physics* APPEC, ECFA and NuPECC; Centro Nacional de Física de Partículas, Astropartículas y Nuclear (CPAN)

Editorial Board Member of Journal of High Energy Physics; Living Reviews in Relativity; Advances in Theoretical and Mathematical Physics

Evaluation Panel Member for FWO (Belgium); Academy of Finland; RyC program (Spain); European String Theory Postdoc Network

Academic Promotion Adviser for UC Santa Barbara; Johns Hopkins University; Durham University; Trinity College Dublin; Nagoya University

Project Reviewer for ERC SyG CoG; FWO (Belgium); Israel SF; Fondecyt (Chile); European SF; Serbia Science Fund

Nominating Committe Member for International Society of General Relativity and Gravitation (ISGRG)

PhD Examiner of Y. Zigdon (Ben-Gurion); G. Lingetti (Sapienza)

MSc thesis supervisor of D. Vertemati

ICREA**MEMOIR2023**

Ruben Enikolopov
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Ruben Enikolopov received his PhD from Harvard University in 2008. Before moving to Universitat Pompeu Fabra he worked in the New Economic School in Moscow and spent 2012-2013 academic year as a Member at the Institute of Advanced Study, Princeton. His research interests include political economy, mass media, and economic development. He has published his research in leading academic journals such as American Economic Review, Quarterly Journal of Economics, Review of Economic Studies, Econometrica, Proceedings of National Academy of Science, American Political Science Review, American Economic Journal: Applied Economics. His research was supported from the International Growth Center, Canadian International Development Agency, USAID, the UN's World Food program and the World Bank among others.

Research interests

My research interests are in political economy, development economics, and economics of mass media. In my work I use state of the art empirical approach to understand the effect of political institutions and information provision in mass media, and social media in particular, on various aspects of economic and political development. One of the main questions that I address in my work is how information affects political, economic, and financial outcomes. In a series of papers I investigate the causal effect of mass media on voting behavior in Russia, expressions of nationalism in Croatia, dictatorial support in Nazi Germany, as well as the impact of social media on political participation and corruption. In a series of field experiments conducted in Afghanistan I examine the effect of large-scale development program on the status of women, success of counterinsurgency efforts, etc. My most recent research focuses on the effect of social media on various aspects of human behavior.

ICREA**MEMOIR2023**

María Escudero Escribano
Institut Català de Nanociència i Nanotecnologia (ICN2)
Experimental Sciences & Mathematics

María Escudero-Escribano (Cáceres, 1983) graduated in Chemical Engineering from the University of Extremadura and obtained her Ph.D. in Electrochemistry from the CSIC and the Autonomous University of Madrid in 2011. She was then a postdoctoral researcher at the Technical University of Denmark and Stanford University. In 2017, María joined the University of Copenhagen as an Assistant Professor and Group Leader and was promoted to Associate Professor in 2021. Since September 2022, she has been an ICREA Research Professor and Group Leader at ICN2. She has received numerous awards, including the European Young Chemist Award (Gold Medal) 2016, the Princess of Girona Scientific Research Award 2018, the ECS Energy Technology Division Young Investigator Award 2018, the RSEQ Young Researchers Award 2019, the Clara Immerwahr Award 2019 and the Journal of Materials Chemistry Lectureship 2021. She is a Member of the Young Academy of Spain and the recipient of an ERC Consolidator Grant (2023-2028).

Research interests

María's research combines electrochemistry, materials engineering, and in situ characterisation to elucidate the design principles for the discovery of tailored catalysts for renewable energy conversion and the production of green fuels and chemicals. The main research areas of the NanoElectrocatalysis and Sustainable Chemistry Group, led by María, include: (i) novel nanomaterials for sustainable energy conversion and storage; (ii) electrochemical conversion of carbon dioxide into renewable fuels and chemicals; (iii) sustainable electrosynthesis of value-added chemicals; (iv) surface nanostructuring, active site, and atomic ensemble engineering; (v) multimetallic and multifunctional materials for electrocatalysis; (vi) electrochemical activation and partial oxidation of methane. The latter research line has been financed by an ERC Consolidator Grant in 2022, to investigate atomic-scale tailored materials for the electrochemical conversion of methane into valuable chemicals.

Selected publications

- Petersen AS, Jensen KD, Wan H, Bagger A, Chorkendorff I, Stephens IEL, Rossmeisl J, **Escudero-Escribano M** 2023, 'Modeling Anion Poisoning during Oxygen Reduction on Pt Near-Surface Alloys', *ACS Catalysis,* 13, 4, 2735-2743.
- Holde FB, Sebastián-Pascual P, Dalby KN, Gómez E, **Escudero-Escribano M** 2023, 'Nanostructured Ir-based electrocatalysts for oxygen evolution prepared by galvanic displacement of Co and Ni', *Electrochimica Acta,* 467, 143058.
- Quinson J, Aalling-Frederiksen O, Dacayan WL, Bjerregaard JD, ..., Johnson MS, **Escudero-Escribano M**, Simonsen SB, Jensen KMO 2023, 'Surfactant-Free Colloidal Syntheses of Gold-Based Nanomaterials in Alkaline Water and Mono-alcohol Mixtures', *Chemistry of Materials*, 35, 5, 2173-2190.

Selected research activities

-Keynote lecture, 16th International Conference on Materials Chemistry (MC16), Royal Society of Chemistry, Dublin (Ireland), July 2023.

-Received the Journal of Materials Chemistry Lectureship Award 2021 during the MC16 Conference in Dublin.

-Keynote lecture, Annual Meeting of the Division of Electrochemistry of the Italian Chemical Society, Cefalù (Italy), September 2023.

-Invited outreach talk "Referentes Fundación Princesa de Girona", "Espacio Joven" of the Ibercaja Foundation, Zaragoza (Spain), February 2023.

-Six invited talks and seminars at international conferences and universities.

-Coordinator, 74th Annual Meeting of the International Society of Electrochemistry (ISE), Symposium "Operando and In Situ Characterisation of Electrochemical Interfaces". Lyon (France), September 2023.

-Co-organiser, Materials Research Society (MRS) Fall Meeting, Symposium EN07 "Emerging Electrocatalytic Materials and Devices for Clean Energy and Environmental Applications". Boston (US), November 2023.

-International Society of Electrochemistry (ISE) Regional Representative for Spain.

-Received the 'Extremeños de Hoy' Award 2023.

-Associate Editor of PRX Energy (American Physical Society, APS).

ICREA**MEMOIR2023**

Manel Esteller Badosa

Institut de Recerca contra la Leucèmia Josep Carreras (IJC)
Life & Medical Sciences

Manel Esteller (Sant Boi de Llobregat, Barcelona, Catalonia, Spain, 1968) graduated in Medicine with Honours from the Universitat de Barcelona in 1992, where he also obtained his PhD degree in molecular genetics in 1996. He was an Invited Researcher at the School of Biological and Medical Sciences at the University of St. Andrews (Scotland, UK). From 1997 to 2001, He was a researcher at the Johns Hopkins University and School of Medicine (Baltimore, USA) where he established promoter hypermethylation of tumour suppressor genes as a hallmark of all human tumours. From Oct. 2001 to Sept. 2008 he was CNIO Cancer Epigenetics Laboratory's leader. Since Oct. 2008 until May 2019, he was the Director of the Cancer Epigenetics and Biology Program (PEBC) at the Bellvitge biomedical campus. He is currently Director of the Josep Carreras Leukaemia Research Institute (IJC) and Chairman of Genetics in the School of Medicine of the UB.

Research interests

-Definition of the Epigenome and Epitranscriptome of Cancer Cells: Profile of DNA methylation and histone modifications in tumor suppressor genes and repetitive sequences in cancer. Global and gene-specific definition of aberrant epigenetic changes and functional consequences in transcription regulation, DNA repair and chromosome instability. -Study of the Epigenetics and Epitranscriptomics Machinery and Mechanisms: Role and function of DNA and RNA methyltransferases, specificity of methyl-CpG binding domain proteins (the nuclear factors that recognize DNA methylation), analysis of biological properties of histone deacetylases and methyltransferases (enzymes that modify histones). -Study of Mutations in the Epigenetic Machinery: The mechanisms underlying the disruption of the epigenetic landscape in transformed cells are unknown. -Study of the Epigenetic and Genetic Disruption of Non-Coding RNAs in Human Cancer. -Characterization of the Epitranscriptome in Human Diseases.

Selected publications

- Ortiz-Barahona V, Soler M, Davalos V, García-Prieto CA, Janin M, Setien F, Fernández-Rebollo I, Bech-Serra JJ, De La Torre C, Guil S, Villanueva A, Zhang PH, Yang L, Guarnacci M, Schumann U, Preiss T, Balaseviciute U, Montal R, Llovet JM, **Esteller M** 2023, 'Epigenetic inactivation of the 5-methylcytosine RNA methyltransferase NSUN7 is associated with clinical outcome and therapeutic vulnerability in liver cancer', *Molecular Cancer* 22, 1, 83.
- Davalos V, Lovell C, Von Itter R, Dolgalev I, Agrawal P, Baptiste G, Kahler D, Sokolova E, Moran S, Pique L, Vega-Sáenz de Miera EC, Fontanals B, Karz A, Tsirigos A, Yun C, Darvishian F, Etchevers H, Osman I, Schober M, **Esteller M,** Hernando-Monge E 2023, 'An epigenetic switch controls the expression of an alternative NR2F2 isoform that unleashes a pro-metastatic program in melanoma', *Nature Communications*, 14, 1, 1867.
- Salz L, Seitz A, Schaefer D, Franzen J, Holzer T, Garcia-Prieto CA, Bürger I, Hardt O, **Esteller M,** Wagner W 2023, 'Culture expansion of CAR T cells results in aberrant DNA methylation that is associated with adverse clinical outcome', *Leukemia* 37, 9, 1868-1878.
- Pham VN, Bruemmer KJ, Toh JDW, Ge EJ, Tenney L, Ward CC, Dingler FA, Millington CL, Garcia-Prieto CA, Pulos-Holmes MC, Ingolia NT, Pontel LB, **Esteller M**, Patel KJ, Nomura DK & Chang CJ 2023, 'Formaldehyde regulates S-adenosylmethionine biosynthesis and one-carbon metabolism', *Science*, 382,6670.
- Solá P, Mereu E, Bonjoch J, Casado-Peláez M, Prats N, Aguilera M, Reina O, Blanco E, **Esteller M**, Di Croce L, Heyn H, Solanas G, Benitah SA 2023, 'Targeting lymphoid-derived IL-17 signaling to delay skin aging', *Nature Aging* 3, 688-704.

Selected research activities

Admirable Award in Research by Diario Medico;
Elected Member Royal European Academy of Doctors;
"Jané Mateu Foundation" Award;
Prize "Rafael Hervada" for Biomedical Research

ICREA**MEMOIR2023**

Alberto Fernandez-Nieves
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

I was born in Granada (Spain) in 1973. I studied physics and graduated with a PhD from the University in my hometown city in the year 2000. My post-doctoral work was under the supervision of Prof. David A. Weitz in the Department of Physics and DEAS at Harvard University. I subsequently held a lecturer position at the University of Almeria and an INEST Visiting Professor position at Harvard University. In 2008, I became Assistant Professor of Physics at the Georgia Institute of Technology. I obtained tenure and was promoted to Associate Professor in 2014. My research is in soft matter physics. For my pHD work, I was awarded the prize for young researchers in experimental physics of the Spanish Royal Society of Physics and the doctoral thesis prize from the University of Granada. I became Fellow of the American Physical Society in 2023.

Research interests

My research interests are in experimental soft condensed matter. We study a variety of classical many-body systems that have characteristic energy scales accessible at room temperature and that are internally characterized by mesoscopic length scales. As a result, these soft materials are easily deformable by external stresses and fields, or even by thermal fluctuations, and have microscopic dynamics and structural features that can be directly imaged using optical-microscopy techniques and probed using light scattering; this enables addressing many open questions in equilibrium and non-equilibrium physics. Recent research involves partially ordered fluids, colloidal crystals and glasses, and active matter. A recurring theme is the presence of defects in the order and how they sense and respond to the local geometry, the local environment and the system's inherent activity. We also do work in fluid mechanics and granular matter.

Selected publications

– Anderson C, Goldsztein G, **Fernandez-Nieves A** 2023, 'Ant waves-Spontaneous activity waves in fire-ant columns', *Science Advances*, 9, 3, eadd0635.

– Zhou B, Gasser U & **Fernandez-Nieves A** 2023, 'Measuring the counterion cloud of soft microgels using SANS with contrast variation', *Nature Communications*, 14, 3827.

– Golden M, Grigoriev RO, Nambisan J & **Fernandez-Nieves A** 2023, 'Physically informed data-driven modeling of active nematics', *Science Advances*, 9, 27, eabq6120.

Selected research activities

-Honors: APS Fellow
-Invited talks at conferences/workshops: XVIII Encuentro Interbienal del Grupo Especializado de Termodinamica de la RSEF y RSEQ, Sevilla (Spain)
-Invited colloquia/seminars: (i) U Barcelona (Spain), (ii) U Texas at Austin (USA), (iii) UPENN (USA), (iv) Harvard U (USA)
-Undergraduate students advised (UB): Bernat Argelich Evangelio (tfg), Aina Gaya Avila (tfg), Marta Gil Fraca (practicas de empresa)
-Refereeing: (i) Proceedings of the National Academy of Sciences, Phys Rev Lett, Phys Rev X, Phys Rev B, Phys Rev E, J Chem Phys, Soft Matter, Langmuir, Chemistry of Materials; (ii) Book proposal, Elsevier
-Panel Review Member, NASA (Physical Sciences Informatics program)
-International Programme Committee, 12th Liquid Matter Conference
-Conference organization: (i) Focus Session: "Driven and Active Granular Matter". 2023 American Physical Society March Meeting (Las Vegas, NV, USA); (ii) 1st Spanish Soft Matter 1 1/2 Day (Benasque, Spain)
-Grants: (i) AGAUR, Beatriu de Pinos; (ii) MINECO, FPI
-Research projects: Agrobio SL (Almeria, Spain)

ICREA**MEMOIR2023**

Alexander Fidora Riera
Universitat Autònoma de Barcelona (UAB)
Humanities

Alexander Fidora, born 1975 in Offenbach (Germany), studied philosophy at the University of Frankfurt. He obtained his PhD in 2003 at Frankfurt University, where he has been co-director of a DFG-research project. In 2006 he accepted a position at ICREA in the Department of Ancient and Medieval Studies of the Universitat Autònoma de Barcelona, where he has been Executive Director of the Institute of Medieval Studies (until 2019). He has been a Visiting Professor at Saint Louis University, Universidad Panamericana in Mexico, University of Erlangen-Nuremberg, Goethe University Frankfurt and University of Pennsylvania. His work has been distinguished with the "Premi Internacional Catalònia" (2011), the "Samuel Toledano Prize" (2012) and the "Alexander von Humboldt Research Award" (2022). Co-editor of the journals "Revista Española de Filosofía Medieval" and "Historical Interactions of Religious Cultures"; Secretary of "Arxiu de Textos Catalans Antics". Member of Academia Europaea.

Research interests

Fidora studies the intercultural dimensions of medieval thought and, in particular, the cultural contacts between Judaism, Christianity and Islam. He focuses on medieval epistemology and the relations between philosophy and theology. His research interests include: Reception, interpretation and transformation of philosophical and theological translations from Arabic in medieval Europe; Latin philosophy into Hebrew; Polemics, controversial theology and interreligious dialogue in the Middle Ages; Consequences of the encounters between the three religions of the Book for the formation of European cultural identity (ERC-Research Projects "Latin Philosophy into Hebrew" (2008-2012) and "The Latin Talmud" (2014-2019), now continued with funding from the Spanish Ministry of Science and Innovation).

Selected publications

- **Fidora A** 2023, 'John Wyclif's *Principium Biblicum* Revisited...', *Vivarium* 61, 288-317.
- **Fidora A** & Rivera Luque JLA 2023 (2022), 'The Multiplicity of Translating Communities...', in S Brentjes (ed.), *Routledge Handbook on the Sciences in Islamicate Societies*, London, 705-19.
- **Fidora A** 2023 (2022), '*Cognitio de Deo.* Philosophy and Theology...', *Medievalia* 41, 287-98.
- **Fidora A** 2023, '«Mahumetani sinenses velint... disserere». Una nota sobre... Carlo de Castorano', *Mediterranea* 8, 463-9.
- Gayà J, Mensa J & **Fidora A** 2023, 'Presentació del CTFMC', in J. Mensa et al. (eds.), *La recepció de l'obra d'Arnau de Vilanova*, Barcelona, 17-20.

Selected research activities

Visiting professor at Frankfurt University, as part of the A. v. Humboldt Research Award (summer term).

Teaching a course on Advanced Medieval Studies in Frankfurt, with M. Lutz-Bachmann (winter term).

Acquisition of a substantial part of H. Daiber's Islamic studies library for the Universitat Autònoma de Barcelona, with M. Tischler.

Co-organizer of the Congress "Religionsdialoge und Wissensordnungen...", Forschungskolleg Humanwissenschaften (Bad Homburg, Dec. 2023).

Founding member of the new journal "Historical Interactions of Religious Cultures" (Mohr-Siebeck).

Invited lectures in Erlangen, Frankfurt and London.

ICREA**MEMOIR2023**

Maria Carolina Florian
Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)
Life & Medical Sciences

M. Carolina Florian received her PhD in 2008 from the University of Milan (Italy) where she trained in neuroendocrinology investigating mechanisms of neuroblastoma migration and invasion. Afterwards, she moved to the University of Ulm (Germany) for her postdoctoral training (2009-2015) on hematopoiesis and hematopoietic stem cell biology. During the postdoc, she also trained as visiting scientist (2011-2012) at the Experimental Hematology Department of Cincinnati Children's Hospital (Cincinnati, USA).

In 2016, Dr. Florian was awarded an Emmy Noether grant (DFG) to lead her independent research group on Epigenetics of Stem Cell Aging at the Institute of Molecular Medicine, University of Ulm (Germany). In 2018, she was appointed by the Program for the Clinical Translation of Regenerative Medicine in Catalonia (P-CMRC) and the Program of Regenerative Medicine at IDIBELL (Barcelona, Spain) as group leader. In 2023, she became ICREA Research Professor (ICREA).

Research interests

Dr. Florian's research in the past years strongly challenged the concept that aging is an irreversible process. Since 2016, in her team they investigate the role of epigenetics and of the stem cell microenvironment in driving aging of somatic stem cells. Dr. Florian's lab focuses on understanding cellular and molecular mechanisms of somatic stem cell aging, supporting the development of new therapeutic strategies to preserve the regenerative capacity of stem cells over time and to limit or prevent the development of age-related disorders and extend lifespan.

Selected publications

-Montserrat-Vazquez S, Ali NJ, Matteini F, et al. 2023, 'Transplanting rejuvenated blood stem cells extends lifespan of aged immunocompromised mice', *Experimental Hematology*, 124, S21 – S21.

ICREA**MEMOIR2023**

Toni Gabaldón Estevan

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS) & Institut de Recerca Biomèdica (IRB Barcelona)

Life & Medical Sciences

I'm a biochemist and molecular biologist by training. I obtained a PhD in Medical Sciences in 2005 (Radbout University Nijmegen). I was an EMBO postodoctoral fellow at the CIPF (Valencia) before starting my own group at the Bioinformatics and Genomics Department at the CRG (Barcelona, 2008-2019). In 2019 I joined as a Senior group leader the IRB and the BSC (Barcelona). I am ICREA Research professor since 2013 and EMBO member since 2021. I have been awardee of the ERC starting and consolidator grants and received awards such as the Margaret Dayhoff mid-career award (2017), correspondent membership of the Spanish Royal National Academy of Pharmacy, and membership of the Spanish Young Academy. I have co-authored over 250 articles, and founded one spin-off company. I have always used an evolutionary perspective to address different biological questions. I am not only interested in understanding how complex biological systems work, but also how they have come to be as they are.

Research interests

My main research interest is to understand the complex relationships between genome sequences and phenotypes and how these two features evolve within and across species. I generally use large-scale phylogenetics and molecular evolution approaches that allow looking at the evolution of genomes from the perspective of all of their genes, and apply these analyses to a variety of biological questions related to the evolution and function of biological communities, organisms, organelles, pathways, and families of protein-coding and non-coding genes. I have a special interest in understanding processes related to human pathogenesis. Through collaborations with experimental groups, I apply comparative genomics to discover new mechanisms and genes involved in interesting processes, especially those of clinical relevance. Given our exposure to new types and scales of data, my group has had the need to develop novel bioinformatics tools to fill in existing gaps.

Selected publications

– Marlétaz F, de la Calle-Mustienes E, Acemel RD, Paliou C, Naranjo S, Martínez-García PM, Cases I, Sleight VA, Hirschberger C, Marcet-Houben M, Navon D, Andrescavage A, Skvortsova K, Duckett PE, González-Rajal Á, Bogdanovic O, Gibcus JH, Yang L, Gallardo-Fuentes L, Sospedra I, Lopez-Rios J, Darbellay F, Visel A, Dekker J, Shubin N, **Gabaldón T**, Nakamura T, Tena JJ, Lupiáñez DG, Rokhsar DS & Gómez-Skarmeta JL 2023. 'The little skate genome and the evolutionary emergence of wing-like fins'. Nature, 616(7957):495-503.

– Del Olmo V, Mixão V, Fotedar R, Saus E, Al Malki A, Księżopolska E, Nunez-Rodriguez JC, Boekhout T & **Gabaldón T** 2023, 'Origin of fungal hybrids with pathogenic potential from warm seawater environments'. *Nat Commun*. 14(1):6919.

– **Gabaldon T** 2023, 'Nothing makes sense in drug resistance except in the light of evolution', *Current Opinion In Microbiology*, 75, 102350.

– Khannous-Lleiffe O, Willis JR, Saus E, Moreno V, Castellvi-Bel S & **Gabaldon T** 2023, 'Microbiome Profiling from Fecal Immunochemical Test Reveals Microbial Signatures with Potential for Colorectal Cancer Screening', *Cancers*, 15, 1, 120.

– Marcet-Houben M, Collado-Cala I, Fuentes-Palacios D, et al. 2023, 'EvolClustDB: Exploring Eukaryotic Gene Clusters with Evolutionarily Conserved Genomic Neighbourhoods', *Journal Of Molecular Biology*, 435, 14, 168013.

– Julca I, Vargas P & **Gabaldón T** 2023, 'Phylogenomics of the Olea europaea complex using 15 whole genomes supports recurrent genetic admixture together with differentiation into seven subspecies', *Bmc Biology*, 21, 1, 85.

– Mixão V, Nunez-Rodriguez JC, Del Olmo V, et al. 2023, 'Evolution of loss of heterozygosity patterns in hybrid genomes of Candida yeast pathogens', *Bmc Biology*, 21, 1, 105.

ICREA**MEMOIR2023**

José Ramón Galán-Mascarós

Institut Català d'Investigació Química (ICIQ)

Experimental Sciences & Mathematics

J.R. Galan-Mascaros received a PhD from University of Valencia under the supervision of Prof. E. Coronado (1999). Between 1999 and 2002 JR was post-doctoral researcher at Texas A&M University working with Prof. Kim R. Dunbar. In 2002 joined ICMOL (U. de Valencia) as Ramón y Cajal Fellow. In 2009, Galan-Mascaros took a position at ICIQ, where currently leads a research group focused on future applications of inorganic materials for Renewable Energies and sustainable chemistry. Galan-Mascaros has received several awards, including the Excellence in Research Award by the RSEQ (2019). JR coordinated the collaborative project H2020 A-LEAF (2017-2021): a major European public investment for the realization of a viable artificial photosynthesis platform. And now coordinates the Horizon Europe project SUPERVAL (2023-2026), with the aim of bringing circularity and sustainability to flue gas emissions.

Research interests

Our research team is devoted to the development of alternative inorganic materials with the desired chemical and physical properties for applications in the fields of renewable energy and circular economy. In Renewable Energies, we are working in the development of stable, efficient and low-cost new catalysts and platforms for the production of solar fuels. In Materials Sciences, we are designing new materials and processess for viable carbon capture and utilization.

Selected publications

- Moneo-Corcuera A, Nieto-Castro D, Cirera J, et al. 2023, 'Molecular memory near room temperature in an iron polyanionic complex', *Chem*, 9, 377-393.
- Yu J, Giancola S, Bahareh Khezri B et al., 2023 'A survey of Earth-abundant metal oxides as oxygen evolution electrocatalysts in acidic media (pH < 1)', *EES Catal.,* 1, 765-773.
- Nieto-Castro D, Graf AW, Gispert-Guirado F & Galan-Mascaros JR 2023, 'Magnetic and electrical bistability in hybrid composites of conducting organic polymers with [Fe(NH2-trz)3][SO4]', J. Mater. Chem. C , 11, 11325-11332.
- Chalil Oglou R, Ulusoy Ghobadi TG, Hegner FS, et al. 2023, 'Manipulating Intermetallic Charge Transfer for Switchable External Stimulus-Enhanced Water Oxidation Electrocatalysis', *Angew. Chem. Int. Ed., 26,* e202308647
- Nunez-Rico JL, Cabezas-Gimenez J, Lillo V, et al. 2023, 'TAMOF-1 as a Versatile and Predictable Chiral Stationary Phase for the Resolution of Racemic Mixtures', *ACS Appl. Mater. Interfaces*, 15, 39594-39605.
- Burzurí E, Martínez-Pérez MJ, Martí-Gastaldo C, Evangelisti M, Mañas-Valero S, Coronado E, Martínez JI, **Galan-Mascaros JR &** Luis F 2023, 'A quantum spin liquid candidate isolated in a two-dimensional CoIIRhIII bimetallic oxalate network', *Chem. Sci.* 14, 3899-3906.

ICREA**MEMOIR2023**

Elena Galea
Universitat Autònoma de Barcelona (UAB)
Life & Medical Sciences

1985: BS Biology, Universidad Autónoma de Madrid (UAM). 1990: PhD Biology, Department of Physiology, School of Medicine, UAM. 1991-1994: Postdoc/Research Associate, Department of Neuroscience, Cornell University Medical College, New York. 1995-1997: Instructor, Department of Neuroscience, Cornell University Medical College, New York. 1998-2003: Assistant Professor, Department of Anesthesiology, University of Illinois, Chicago. 2004-present: ICREA Research Professor, Institute of Neurosciences, Universitat Autònoma de Barcelona (UAB). 2008-2010: Vice Director, Institute of Neurosciences, UAB. 2012-2013: Visiting scholar, Massachusetts General Institute for Neurodegenerative disease, Harvard Medical School, Boston.
Elena passed in January 23rd, 2023.

Research interests

I seek to unravel the mechanisms whereby a brain cell called 'astrocyte' contributes to higher-brain functions —cognition, memory, emotion— and to establish the pathological consequences of astrocyte dysfunction. Three core ideas guide my research. First, astrocytes not only carry out homeostatic functions in support of neurons, but they also compute, i.e., they process information intelligently, plausibly by way of calcium transients. Second, astrocytes are superior therapeutic targets: increasing their resilience or restoring their malfunction in acute or chronic neurological diseases will have a beneficial impact on multiple pathological processes at once. Three, mathematics and systems biology —which has lately included artificial intelligence— are indispensable tools to clarify astrocyte (dys)function, identify astrocyte-based molecular signatures in human fluids, and develop astrocyte-targeted therapies.

Selected publications

- Fernández-González I & **Galea E** 2023, 'Astrocyte strategies in the energy-efficient brain', *Essays In Biochemistry*, 67, 1, 3 - 16.
- **Galea E** & Graeber MB 2023, 'Neuroinflammation: The Abused Concept', *Asn Neuro*, 15, 17590914231197523.
- González IF, Pichot AE, Joée M, Otin MP, Wood L, Giralt M, Hidalgo JM, Pardo L, Golbano A, Masgrau R & **Galea E** 2023, 'Astrocytic CREB neuroprotection in experimental traumatic brain injury is associated with regulation with energetics and lipid metabolism: role of lactate', *Glia*, 71 - - E373 - E373.

ICREA**MEMOIR2023**

Patrick Gámez Enamorado
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Patrick Gamez received his PhD at the University of Lyon and was awarded the French Chemical Society Prize for his PhD research. After postdoctoral stays at the MPI für Kohlenforschung and at the University of Strasbourg, he became research associate at Leiden University. Since October 2010, he is ICREA Research Professor in bioinorganic chemistry at the Universitat de Barcelona. He is currently coordinating the nanoBIC research group, which is financed by the MICINN and recognized by the Catalan Government. He is the (co-)author of over 256 publications. He is member of the Spanish Bioinorganic Chemical Society (AEBIN), the Society of Biological Inorganic Chemistry (SBIC), the RSC and the RSEQ. He is member of the Advisory Board of Inorganic Chemistry Frontiers and has been Associate Editor of RSC Advances (2015-2017). In June 2016, he became Fellow of the RSC and, since June 2022, he is the elected president of the AEBIN.

Research interests

Cancer and Alzheimer's disease (AD) represent two major chronic diseases that are in the top ten leading causes of mortality worldwide and their incidence will increase exponentially in the coming decades, as the result of population ageing. His current research interests are aimed at applying novel photochemical and nanotechnological strategies for the development of efficient diagnostic and therapeutic tools (for theranostic, drug delivery, photochemotherapeutic applications) against these two important public health issues (www.nanobic.eu).

Selected publications

- Herrera-Ramírez P, Berger SA, Josa D, Aguilà D, Caballero AB, Fontova P, Soto-Cerrato V, Martínez M & **Gamez P** 2023, 'Steric hindrance, ligand ejection and associated photocytotoxic properties of ruthenium(II) polypyridyl complexes', *Journal of Biological Inorganic Chemistry*, 28, 4, 403 - 420, s00775-023-01998-z.
- Palmeira-Mello MV, Caballero AB, Herrera-Ramírez P, et al. 2023, 'Cobalt(III)-py$_2$en systems as potential carriers of β-ketoester-based ligands', *Journal Of Inorganic Biochemistry*, 248, 112345.
- Josa D, Aguila D, Fontova P, Soto-Cerrato V, Herrera-Ramirez P, Rafols L, Grabulosa A & **Gamez P**, 2023, 'Cytotoxicity of osmium(ii) and cycloosmated half-sandwich complexes from 1-pyrenyl-containing phosphane ligands', *Dalton Transactions*, 52, 8391-8401.

Selected research activities

- Member of the organizing committees of two symposia in Biological Chemistry.
- Three invited lectures.

ICREA**MEMOIR2023**

Francisco Javier García de Abajo
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Javier García de Abajo obtained his PhD in condensed matter theory from the University of the Basque Country (Spain) in 1993. After spending three years at Berkeley National Lab., he became a staff scientist at CSIC (Spain) and was promoted to Research Professor in 2008. He is currently an ICREA Research Professor and leader of the Nanophotonics Theory Group at ICFO. His interests include electron microscopy, light-matter interactions, quantum optics, condensed matter physics, surface science, ultrafast phenomena, plasmonics, and nanophotonics. He has co-authored 400+ papers that have accumulated 60,000+ citations and an h index of 118 (Google Scholar, Feb. 2024). He is a Fellow of both the American Physical Society and the Optical Society of America.

Research interests

Javier García de Abajo's research program on the theory of nanoscale photonics ranges from optical characterization free-electron microscope spectroscopies and ultrafast microscopy to studies of ultrasensitive single-molecule detection, quantum aspects of light-matter interaction, excitation and characterization of plasmons by electron beams, plasmonic metamaterials, quantum friction, radiative transfer and coherent control, two-dimensional materials, and ultrafast free-electron processes. These topics cover a broad spectrum of research in nanophotonics. This theoretical effort encompasses classical and quantum methods, both analytical and numerical, which are the basis to understand and propose new phenomena with application to biosensing as well as quantum optics and metrology.

Selected publications

- Di Giulio V & **García de Abajo FJ** 2023, 'Nanophotonics for pair production'. *Nature Communications* 14, 8189.
- García de Abajo FJ & Ropers C 2023, 'Spatiotemporal Electron Beam Focusing through Parallel Interactions with Shaped Optical Fields', *Physical Review Letters*, 130, 24, 246901.
- H. Hu, N. Chen, H. Teng, R. Yu, M. Xue, K. Chen, Y. Xiao, Y. Qu, D. Hu, J. Chen, Z. Sun, P. Li, F. J. García de Abajo, and Q. Dai, 2023, 'Gate-tunable negative refraction of mid-infrared polaritons', *Science*, 379, 6632, 558-561.
- Goncalves PAD & García de Abajo, FJ 2023, 'Interrogating Quantum Nonlocal Effects in Nanoplasmonics through Electron-Beam Spectroscopy', *Nano Letters*, 23, 10, 4242 - 4249.
- Manjavacas A & Garcia de Abajo, FJ 2023, 'Highly directional single-photon source', *Nanophotonics*, 12, 16, 3351 - 3358.
- Y. Auad, E. J. C. Dias, M. Tencé, J.-D. Blazit, X. Li, L. F. Zagonel, O. Stéphan, L. H. G. Tizei, F. J. García de Abajo, and M. Kociak, 2023, 'μeV electron spectromicroscopy using free-space light', *Nature Communications*, 14, 4442.
- Goncalves PAD & García de Abajo, FJ 2023, 'Multi-plasmon effects and plasmon satellites in photoemission from nanostructures', *Nanoscale*, 15, 11852-11859.
- Echarri AR, Iyikanat F, Boroviks S, Mortensen NA, Cox JD & García de Abajo, FJ 2023, 'Nonlinear Photoluminescence in Gold Thin Films', *ACS Photonics*, 10, 8, 2918-2929.
- L. Wang, S. Papadopoulos, F. Iyikanat, J. Zhang, J. Huang, T. Taniguchi, K. Watanabe, M. Calame, M. L. Perrin, F. J. García de Abajo, and L. Novotny, 2023, 'Exciton-assisted electron tunnelling in van der Waals heterostructures', *Nature Materials*, 2023.
- Dias EJC, Madan I, Gargiulo S, Barantani F, Yannai M, Vanacore GM, Kaminer I, Carbone F & **García de Abajo FJ** 2023. 'Generation and control of localized terahertz fields in photoemitted electron plasmas'. *Nanoscale Advances* 5, 3634-3645.

ICREA**MEMOIR2023**

Maria F. García Parajo
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Maria Garcia-Parajo received her PhD in Physical Electronics in 1993 at Imperial College, London, UK. After postdocs at the L2M-CNRS, Bagneux, FR and U. Twente, NL, she became permanent staff member at the OT group of U. Twente in 1998. In 2005 se moved to Barcelona as ICREA Research Professor, first hosted at the IBEC – Institute for Bioengineering of Catalonia and since July 2011 at ICFO-Institute of Photonic Sciences, leading the Single Molecule Biophotonics group. She coordinates several international research projects and has been a member of the executive board of the Spanish Biophysical Society and the International Fluorescence Society. She has received several prestigious awards, including the Advanced grant of the HFSP (2012), Bruker National Prize in Biophysics (2017), Advanced ERC grant 2017 and Emmy Noether Laurate, European Physical Society (2020). Maria is actively involved in (inter)national actions to promote gender equity in Science.

Research interests

Our research focuses on the development of advanced optical techniques to the study of biological processes at the single molecular level on living cells. We focus on the development and application of different forms of super-resolution microscopy as well as nanophotonic-based approaches to reach spatial resolutions around 10nm on intact cells. Fluorescence correlation spectroscopy in ultraconfined volumes, and multi-color single particle tracking are exploited to gain access to dynamic processes down to the microsecond time resolution. Using these combined approaches, we aim at understanding how spatiotemporal compartmentalization of biomolecules inside cells regulates and control cell function. This fundamental question has important implications for health and disease, touching the fields of cell biology and immunology. Most recent research focuses on the fields of nano-mechanobiology at the level of the cell membrane and liquid-liquid phase separation in living nuclei.

Selected publications

- Gutiérrez-Martínez E, Benet Garrabé S, Mateos N, et al. 2023, 'Actin-regulated Siglec-1 nanoclustering influences HIV-1 capture and virus-containing compartment formation in dendritic cells', *Elife*, 12, e78836.
- Sanz-Paz M, van Zanten TS, Manzo C, Mivelle M & **Garcia-Parajo MF** 2023, 'Broadband Plasmonic Nanoantennas for Multi-Color Nanoscale Dynamics in Living Cells', *Small*, 19, 28, 2207977.
- Herkert EK, Alvaro DRB, Recchia M, Langbein W, Borri P & **Garcia-Parajo MF** 2023, 'Hybrid Plasmonic Nanostructures for Enhanced Single-Molecule Detection Sensitivity', *Acs Nano*, 17, 8453–8464.
- Lujan P, Garcia-Cabau C, Wakana Y, Lillo JV, Rodilla-Ramirez C, Malhotra V, Salvatella X, **Garcia-Parajo MF** & Campelo F. 2023, 'Sorting of secretory proteins at the trans-Golgi network by TGN46', *eLife,* 12, RP91708.

Selected research activities

- Scientific Advisory Board LabEx Cell(n)Scale – Institut Curie, France.
- Member of Evaluation Panel ERC- Life Sciences, Advanced Grants, European Research Council.
- Coordinator of the Advanced Optical Microscopy Program at BIST-Barcelona Institute of Science & Technology, Barcelona, Spain.
- Coordinator of the Winter School and BIST International Symposium in Advanced Microscopy – Master in Research and Experimental Sciences at BIST.
- Member of the scientific steering committee for the H2020-MSCA-ITN-MUSIQ consortium.
- Editorial Board of Biophysical Journal since 2021 & Associate Editor Advances in Optics and Photonics, Optica publishing group (2021-date).
- Nine invited talks at different (inter)national Conferences and Workshops.
- Participation in general talks, debates and dissemination activities to promote the active participation of Women in Science.

ICREA**MEMOIR2023**

Marcos García Suero
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

Marcos was born in Noreña (Asturias) in 1981 and graduated in Chemistry from the Universidad de Oviedo in 2003. In February 2009, he obtained a PhD degree in the Institute of Organometallic Chemistry Enrique Moles of the Universidad de Oviedo, where he worked under the direction of Prof. José Barluenga and Prof. Josefa Flórez on Fischer carbene chemistry. During the summer of 2005 he joined the laboratory of Prof. Andrew Myers at Harvard University working on the synthesis of novel tetracycline antibiotics as a PhD visiting student. In May 2010 he moved to the University of Cambridge to work with Professor Matthew Gaunt on copper(III) catalysis and methionine bioconjugation as a Postdoctoral Marie Curie Fellow and in October 2014 he started his independent research career at the Institute of Chemical Research of Catalonia (ICIQ) within the CELLEX-ICIQ starting career programme. In December 2023, Marcos was appointed ICREA Research Professor.

Research interests

Marcos uncovered the innovative nature of monovalent carbynes by using the following approach: the conceptual decoration of free carbynes with different masking (leaving) groups that provides stable sources. Selective activations (metal catalysts, light or/and electrons) remove one mask and form reactive equivalents that unveils dual reactivities of the free carbyne species and control the sequence of the different bond-forming processes. The combined radical, carbene and carbocation reactivity is a privileged platform that has allowed me to discover and develop new concepts for molecular editing, using peripheral carbon-hydrogen bonds and skeletal carbon-carbon bonds in chemical feedstocks, drug molecules or materials. The synthetic advantages of the new methods have been exploited in the synthesis or modification of complex molecules.

ICREA**MEMOIR2023**

Jose A. Garrido Ariza
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Jose A. Garrido is an ICREA Research Professor at the Catalan Institute of Nanosciences and Nanotechnology-ICN2 in Barcelona, and head of the Advanced Electronic Materials and Devices group. He received a Master and PhD degree in Telecommunication Engineering from the Technical University of Madrid, in 1996 and 2000, respectively. From 2001 to 2004, he worked as a postdoc at the Walter Schottky Institute, Technische Universität München, where he obtained his habilitation in experimental physics in 2010. From 2011 to 2015, Jose A. Garrido held a lecturer (privatdozent) position at the department of physics of the Technische Universität München. In September 2015, Jose A. Garrido joined ICN2 as ICREA Professor, where he is also serving as Vicedirector. In Dec 2019, Jose A Garrido founded INBRAIN Neuroelectronics, a spin-off of ICN2 and ICREA that develops medical solutions based on innovative graphene technologies; he is Chief Scientific Officer at INBRAIN.

Research interests

Jose A. Garrido leads the Advanced Electronic Materials and Devices group at ICN2. The activities of the team focus on technology and material science of novel electronic materials, with a strong emphasis on graphene and other 2D materials. In addition, the team works towards the development of technological applications of these materials in electronics, neural interfaces and bioelectronics. The activities cut across different scientific aspects, from fundamentals (physics of devices and semiconductors) to materials (growth of graphene and 2D materials, surface functionalization, advanced characterization), through devices (fabrication technology, nanofabrication), and to applications (neural implants and biomedical technologies, biosensors, energy storage, etc).

Selected publications

- Mavredakis N, et al. 2023, 'Physics-based bias-dependent compact modeling of 1/f noise in single- to few- layer 2D-FETs VL', *Nanoscale*
, 15, 6853-6863.
- Cunquero M, Marsal M, Castro-Olvera G, et al. 2023, 'Calcium Imaging In Electrically Stimulated Flat-Mounted Retinas', *Jove Journal of Visualized Experiments*, 198, e65705.

ICREA**MEMOIR2023**

Hector Geffner
Universitat Pompeu Fabra (UPF)
Engineering Sciences

Hector was born in Buenos Aires in 1959, did his BS in Caracas, Venezuela, and got his PhD in Computer Science at UCLA. He is a fellow of the American and European Associations for Artificial Intelligence (AAAI, ECCAI), former associate editor of the Journal of Artificial Intelligence Research (JAIR) and the Artificial Intelligence Journal (AIJ), and former member of the European AI Board (EurAI). He taught at the Universidad Simón Bolívar in Caracas, Aachen University of Technology, Linkoping University, Stanford University, Université Paul Sabatier, and King's College, among other places. He joined ICREA and the UPF in 2001, where he is a Professor in the Department of Information and Communication Technologies (DTIC). He teaches courses on logic, artificial intelligence, and more recently, on social and technological change, and is currently leading an Advanced ERC Project on representation learning for acting and planning (2020-2025).

Research interests

Hector works on planning in intelligent systems, developing methods for generating and recognizing autonomous behavior automatically using model-based methods. In these methods, agents are not programmed by hand but derive their behavior automatically by solving a model of the interaction between the agent, their goals, and the environment. The challenge is mainly computational as the formulation of methods for deriving the right behavior effectively when the models are large is computationally intractable. The work involves theory based on logic, probabilities, heuristics, and algorithms, and computational experiments. More recently Hector has been interested in learning moodels for acting and planning in languages that allow for generalization. This involves learning first-order symbolic representations from unstructured data.

ICREA**MEMOIR2023**

Wolfgang Gernjak
Institut Català de Recerca de l'Aigua (ICRA)
Engineering Sciences

2002 MSc in Analytical and Physical Chemistry from Vienna University of Technology, Austria. 2006 PhD in Land and Water Management from BOKU Vienna, Austria. 2000-2008 External Research Staff & post-doc, Plataforma Solar de Almería, Spain – Solar advanced oxidation & desalination. 2008-2014 Senior research fellow, The University of Queensland, Australia – Group leader: Drinking and Recycled Water. 2014-2015 Ramon & Cajal research fellow, Catalan Institute for Water Research (ICRA) – Group leader: Water Supply and Advanced Treatment. 2015- ICREA Research Professor at Catalan Institute for Water Research (ICRA) – Group leader: Water Supply and Advanced Treatment.

Research interests

I strife to to realize a vision for smart and water sensitive cities and societies by innovating the ways we treat reclaimed and drinking water. My research focuses on technology innovation. Specifically, I research novel advanced oxidation and reduction as well as membrane filtration. PhD projects I currently supervise e.g. investigate vacuum UV driven water treatment, membrane distillation, catalytic ozonation, and plasma treatment. My research on water treatment technology is typically strongly connected to controlling water quality hazards to end-users, including trace organic contaminants, disinfection byproducts, and also pathogens. I also expand my research in aspects of integrated water management and industrial water treatment, for example in the projects reclaimONEwater, iWAYS, RECREATE and intoDBP. I combine my broad expert knowledge on technology and water quality to find tailored solutions enjoying working in multidisciplinary teams.

Selected publications

- Velo-Gala I, Farré MJ, Radjenovic J & **Gernjak W** 2023, 'Influence of water matrix components on the UV/chlorine process and its reactions mechanism', *Environmental Research*, 218, 114945.
- Kumar A, Škoro N, **Gernjak W**, et al. 2023, 'Degradation of diclofenac and 4-chlorobenzoic acid in aqueous solution by cold atmospheric plasma source', *Science Of The Total Environment*, 864, 161194.
- Abily M, Acuna V, Corominas L, Rodriguez-Roda I & **Gernjak W** 2023, 'Strategic routes for wastewater treatment plant upgrades to reduce micropollutants in European surface water bodies', *Journal Of Cleaner Production*, 415, 137867.
- Boyer TH & **Gernjak W** 2023, 'Why stories matter in water research: A case for narrative style paper writing', *Water Research X*, 21, 100198 - 100198.

Selected research activities

In 2023, we completed the MSCA program Nowelties in which Amit Kumar finished his PhD on atmospheric plasma systems for wastewater treatment. In my close collaboration with Wetsus, Nimmy Kovoor will finalize her PhD in 2024 on vacuum UV treatment processes and Yicheng Wang continues her PhD research on applying vacuum UV for degrading perfluorinated substances. Atefeh Tizchang is progressing well on her industrial PhD in the iWAYS project, focusing on membrane distillation for industrial water reclamation. This year we welcomed visiting PhD student Julia Wolters from RWTH Aachen, and Nour Slama, a former visitor, defended her PhD with interesting results from ICRA. Congrats!

New projects like reclaimONEwater and HE intoDBP started in 2022, with Nikolaus Klamerth and Tomàs Lock joining our team, the latter also beginning a PhD. More water reclamation projects, including the HE project RECREATE and the construction and operation at the Costa Brava of a pilot plant for reclaimed water suitable for drinking, start in 2024 under my scientific direction.

ICREA**MEMOIR2023**

Mario Giampietro
Universitat Autònoma de Barcelona (UAB)
Engineering Sciences

Mario Giampietro was born in Italy in 1953. He graduated in Chemical Engineering (1978) and Biological Sciences (1981) at Universitá La Sapienza, Rome. He has a MS degree in Food System Economics (CEFAS/Universitá La Tuscia) and a PhD in Social Sciences (Wageningen University, NL). Mario was a researcher at Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN) from 1985 to 2007, but pursued most of his research as visiting scientist at leading universities, such as Cornell University (1987-1989 and 1992-1995), Wageningen University (1997), Universitat Autònoma de Barcelona (1998-2000), University of Wisconsin, Madison (2002), Penn State University (2005-2006), and Arizona State University (2006-2007). He joined ICREA and UAB in 2007. He has more than 150 scientific publications and is author of several books. He was the coordinator of the Horizon2020 project "Moving Towards Adaptive Governance in Complexity: Informing Nexus Security" (MAGIC) (1996-2020).

Research interests

Mario works on integrated assessment of sustainability issues. Using concepts from complex systems theory, he has developed an innovative scientific approach: Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism (MuSIASEM). MuSIASEM integrates biophysical and socioeconomic variables across multiple hierarchical scales, thus establishing a link between the metabolism of socio-economic systems and potential constraints of the natural environment. MuSIASEM allows the use of integrated sets of indicators that can be chosen "à la carte" by social actors in relation to multiple criteria of performance. Recent research has focused on the analysis of energy systems and energy scenarios and directives (projects EUFORIE, NETEP, PARTICIPIA), food systems (GLAMUR), the nexus between energy, food, and water in relation to sustainable development goals (MAGIC), post-normal science, and biosemiotics.

Selected publications

- **Giampietro M** 2023, 'Reflections on the popularity of the circular bioeconomy concept: the ontological crisis of sustainability science', *Sustainability Science*, vol. 18, pp. 749–754.
- Blackstock KL, Waylen KA, Matthews KB, Juarez-Bourke A, Miller DG, Hague A, Wardell-Johnson DH & **Giampietro M** (2023), 'Implementing post-normal science with or for EU policy actors: using quantitative story-telling', *Sustainability Science*, 18, 1235–1250.
- Waylen KA, Blackstock KL, Matthews KB, Juarez-Bourke A, Hague A, Wardell-Johnson D, Miller D, Kovacic Z, Völker T, Guimarães Pereira Â & **Giampietro M** (2023), 'Post-normal science in practice: Reflections from scientific experts working on the European agri-food policy nexus', *Environmental Science & Policy*, vol. 141, pp. 158-167.
- **Giampietro M** (2023), 'Multi-scale integrated analysis of societal and ecosystem metabolism', in: Villamayor-Tomas S and Muradian R (Eds), 'The Barcelona School of Ecological Economics and Political Ecology', *Studies in Ecological Economics*, vol 8, Springer, Cham.

Selected research activities

Discussion panelist at the European Bioeconomy Scientific Forum 2023, 6-8 September 2023, Vienna (Austria), https://european-bioeconomy-university.eu/ebu-scientific-forum/sessions/

ICREA**MEMOIR2023**

Mark Gieles
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Mark Gieles obtained his PhD from Utrecht University in 2006, supervised by Henny Lamers and Simon Portegies Zwart. He then moved to the European Southern Observatory (ESO) in Chile as a research fellow and support astronomer on the Very Large Telescope (VLT). As part of the fellowship he spent a few month in Edinburgh working with Douglas Heggie. In 2009, he won a Royal Society University Research Fellowship (URF) which he took up at the Institute of Astronomy of the University of Cambridge and in 2013 he moved his URF to the University of Surrey, where he started a new astrophysics research group. From 2013 to 2019 he was PI of a Starting Grant of the European Research Council (ERC) and since 2017 he is a member of the editorial board of Monthly Notices of the Royal Astronomical Society (MNRAS), one of the leading peer-reviewed journals in astronomy and astrophysics. In 2018 he started as ICREA Professor at ICCUB, where he now leads the Virgo gravitational wave group.

Research interests

Most of my research focusses on trying to understand the formation and dynamical evolution of star clusters to shed light on the stellar initial mass function, black holes, gravitational waves, the globular cluster multiple population problem and the dark matter distribution in galaxies. The Milky Way contains approximately 150 globular clusters, for which we have exquisite observations. To interpret these, I use both star-by-star *N*-body simulations, fast approximate models for cluster evolution and dynamical mass models. I developed a new family of mass models for star clusters (LIMEPY) to search for stellar-mass black holes in star clusters and to probe dark matter in the Milky Way using data from the ESA-*Gaia* satellite and related surveys. In 2019, I joined the Virgo Collaboration and I make predictions for binary black hole mergers that formed dynamically in star clusters.

Selected publications

- Torniamenti S, **Gieles M**, Penoyre Z, et al. 2023, 'Stellar-mass black holes in the Hyades star cluster?', *Monthly Notices Of The Royal Astronomical Society*, 524, 2, 1965 - 1986.
- Antonini F, **Gieles M**, Dosopoulou F, et al. 2023, 'Coalescing black hole binaries from globular clusters: mass distributions and comparison to gravitational wave data from GWTC-3', *Monthly Notices Of The Royal Astronomical Society*, 522, 1, 466 - 476.
- Dickson N, Henault-Brunet V, Baumgardt H, **Gieles M &** Smith PJ 2023, 'Multimass modelling of Milky Way globular clusters - I. Implications on their stellar initial mass function above 1 M-?', *Monthly Notices Of The Royal Astronomical Society*, 522, 4, 5320 - 5339.
- Charbonnel C, Schaerer D, Prantzos N, et al. 2023, 'N-enhancement in GN-z11: First evidence for supermassive stars nucleosynthesis in proto-globular clusters-like conditions at high redshift?', *Astronomy & Astrophysics*, 673, L7.
- **Gieles M** & Gnedin OY 2023, 'The mass-loss rates of star clusters with stellar-mass black holes: implications for the globular cluster mass function', *Monthly Notices Of The Royal Astronomical Society*, 522, 4, 5340 - 5357.
- Saracino S, Kamann S, Bastian N**, Gieles M**, Shenar T, Reindl N, Müller-Horn J, Usher C, Dreizler S & Hénault-Brunet V 2023, 'A closer look at the binary content of NGC 1850', *Monthly notices of the royal astronomical society*, 299 - 322.
- Saracino S, Shenar T, Kamann S, Bastian N, **Gieles M**, Usher C, Bodensteiner J, Kochoska A, Orosz J A, & Sana H 2023, 'Updated radial velocities and new constraints on the nature of the unseen source in NGC1850 BH1', *Monthly notices of the royal astronomical society*, 521, 3162-3171.

ICREA**MEMOIR2023**

Roger Gomis
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Dr. Roger Gomis is an ICREA Research Professor and a member of the Cancer Science Program at the Institute for Research in Biomedicine, Barcelona. He received his PhD in biochemistry from the University of Barcelona in 2002, and was a postdoctoral fellow at Memorial Sloan-Kettering Cancer Center in Prof. Joan Massagué's laboratory. In 2007, he assumed his current position. Since 2018 he is an associate professor at the University of Barcelona. Dr. Roger Gomis is interested in how growth factors, signaling pathways, and gene expression programs control normal cell behavior and cancer cell metastasis. Driven by the problem of metastasis, which is the cause of 90% of cancer deaths, his laboratory is pursuing the molecular and genetic mechanisms of metastasis. In particular, identifying genes that enable cancer to metastasize clinically relevant sites. In 2012 Roger founded Inbiomotion as an ICREA and IRB Barcelona spin-off company.

Research interests

Although metastasis is the leading cause of cancer death, we are still ill-prepared to fight it. Chemotherapy targets high-proliferating rather than the low-proliferating metastatic cells—allowing these to spread from the primary tumor to distant sites, where they resist conventional treatments, proliferate, and cause vital organ failure. We and others have helped to simplify our understanding of metastasis as an orderly sequence of basic steps, which allows us to rationalize the biological properties required for metastatic disease. We know that cancer cells must orchestrate diverse cellular functions to overcome the difficulties of transiting into the metastatic cascade; these functions are highly dependent on the interactions between the metastatic cell, the tumor, and host stroma. We now need a better understanding of steps of the kinetics and mechanisms that regulate tissue-specific metastasis progression, as a prerequisite for developing effective therapies in the future.

Selected publications

- Llorente A, Blasco MT, Espuny I, Guiu M, Ballaré C, Blanco E, Caballé A, Bellmunt A, Salvador F, Morales A, Nuñez M, Loren G, Imbastari F, Fidalgo M, Figueras-Puig C, Gibler P, Graupera M, Monteiro F, Riera A, Holen I, Avgustinova A, Di Croce L & **Gomis RR** 2023, 'MAF amplification licenses ERα through epigenetic remodelling to drive breast cancer metastasis'. *Nature Cell Biology*, 25, 1833-1847.
- Linares J, Sallent-Aragay A, Badia-Ramentol J, et al. 2023, 'Long-term platinum-based drug accumulation in cancer-associated fibroblasts promotes colorectal cancer progression and resistance to therapy', *Nature Communications*, 14, 1, 746.

ICREA**MEMOIR2023**

Alejandro Goñi
Institut de Ciència de Materials de Barcelona (CSIC - ICMAB)
Engineering Sciences

I graduated in physics in 1985 at the Balseiro Institute, Argentina. In 1989 I finished my PhD at the Max-Planck Institute FKF in Stuttgart with Prof. M. Cardona. It followed a two-years postdoc at AT&T Bell Labs in Murray Hill, USA, and back at MPI-FKF Stuttgart for three years. In 1996 I moved to the Technical University of Berlin for an appointment as Research & Teaching Associate, where in 1998 I completed my Habilitation. In 1999 I received the Karl-Scheel Prize from the Physical Society of Berlin for my contributions to the field of high-pressure semiconductor physics. I joined the Optoelectronic Properties of Nanostructured Materials (NANOPTO) group at ICMAB-CSIC in November 2003 as ICREA. At ICMAB I created a facility for optical spectroscopy with micro and nanometer-scale resolution and set up a laboratory for high-pressure physics.

Research interests

I am an experimental physicist with broad interests and experience in solid-state physics, optical spectroscopy (Raman scattering, photoluminescence, etc.), nanoscience and technology, energy materials, physics of low-dimensional materials (superlattices, quantum wires and dots), highly correlated electron systems, and high-pressure techniques. Essentially, I use light as a probe of the physical properties of all kinds of molecular materials and organic and/or inorganic nanomaterials, looking for new behaviors or phenomena that arise as a direct consequence of the reduced dimensionality and/or size of the material system under study. Although I dedicate myself to basic research, I always have a clear application in mind, such as improving the performance of optoelectronic devices, enhancing thermoelectric and/or photovoltaic properties, boosting solar energy conversion efficiency, develop ultra-sensitive spectroscopic techniques, etc. I currently lead group activities on high pressure physics, hybrid metal-halide perovskites, plasmon-assisted hot-electron emitters and the development of a spectrum-on-demand light source.

Selected publications

- Gibert-Roca M, Casademont-Viñas M, Liu Q, Vandewal K, **Goñi AR** & Campoy-Quiles M 2023, 'RAINBOW organic solar cells: Implementing spectral splitting in lateral multi-junction architectures', *Adv. Mater.* 2212226/1-16.
- Casademont-Viñas M, Gibert-Roca M, Campoy-Quiles M & **Goñi AR** 2023, 'Spectrum on Demand Light Source (SOLS) for Advanced Photovoltaic Characterization', *Rev. Sci. Instrum.,* 94, 103907.
- Xu K, Pérez-Fidalgo L, Charles BL, Weller MT, Alonso MI & **Goñi AR** 2023, 'Using Pressure to Unravel the Structure-Dynamic-Disorder Relationship in Metal Halide Perovskites', *Sci. Rep.* 13, 9300/1-12.
- Pérez-Fidalgo L, Xu K, Charles BL, Henry PF, Weller MT, Alonso MI & **Goñi AR** 2023, 'Anomalous Electron-Phonon Coupling in Cesium-Substituted Methylammonium Lead Iodide Perovskites', *J Phys Chem C,* 127, 22817−22826.
- González-Pato N, Rodriguez Rodriguez X, Pellizzi N, Fasolato C, Guasch J, Postorino P, Veciana J, **Goñi AR**, Ratera I 2023, 'Electroactive substrates for surface-enhanced Raman spectroscopy based on overgrown gold-nanoparticle arrays by electrodeposition on indium tin oxide', *Mater. Adv.* **4**, 1378-1388.
- Xu K, Guo J, Raciti G, **Goñi AR**, Alonso MI, Borrisé X, Zardo I, Campoy-Quiles M & Reparaz JS 2023, 'In-Plane Thermal Diffusivity Determination using Beam-Offset Frequency-Domain Thermoreflectance with a One-Dimensional Optical Heat Source', *Int. J. Heat Mass Transf.* 214, 124376/1-11.
- Testa-Anta M, Majcherkiewicz JN, Xu K, **Goñi AR** & Salgueiriño V 2023, 'Room Temperature Spin-Phonon Coupling in Cr_2O_3 Nanocrystals', *Adv. Funct. Mater.* 2301973/1-9', *Adv. Funct. Mater.*, 33, 2301973.

Selected research activities

Awards: SOLS-Acelerador de Technologias Fotovoltaicas Emergentes, Goñi, Campoy, Pujades & Casademont. a)EmErgEnt'23 Prize, categoria Llavor, Clùster de l'Energia Eficient de Catalunya (CEEC), 10a Ed. La Nit de Eficiència NITEE2023, Barcelona, 2023. b)Top 10 finalist, 6th ed. "Premio Ideas Innovadoras, Isabel P. Trabal", Foundation Caja de Ingenieros.

ICREAMEMOIR2023

Miguel A. González Ballester

Universitat Pompeu Fabra (UPF)
Engineering Sciences

Degree in Computer Science from Universitat Jaume I (1996), and doctorate from the University of Oxford (2000). I was a senior researcher at Toshiba Medical Systems (Japan), INRIA (France), and the University of Bern (Switzerland), where I was leading the Surgical Technology Division at the MEM Research Center, Faculty of Medicine. From 2008 until September 2013 I was in charge of the Research Department of the company Alma IT Systems in Barcelona. In October 2013 I was appointed ICREA Research Professor, and joined the Department of Information and Communication Technologies at Universitat Pompeu Fabra in Barcelona, where I founded the Barcelona Centre for New Medical Technologies (BCN Medtech). I have more than 400 publications in peer-reviewed scientific journals and conferences, and have supervised 22 PhD theses. I was awarded Fellowships from Toshiba and the Japan Society for the Promotion of Science.

Research interests

My research focus is on computerised medical image analysis and computer-assisted surgery, including: image processing and computer vision, image-based diagnosis through machine learning, deep learning, medical imaging physics, computational modelling and simulation of virtual organs and surgical interventions, navigation in computer-assisted surgery, surgical devices and implants, and applied clinical research. In addition to basic research with solid mathematical foundations, all my projects have a marked translational character, focusing on concrete clinical and industrial applications.

Selected publications

- Cetin I, Stephens M, Camara O & **González Ballester MA** 2023, 'Attri-VAE: Attribute-based interpretable representations of medical images with variational autoencoders', *Computerized Medical Imaging and Graphics*, vol. 104, no. 102158, pp 1-13.
- Perera-Bel E, Aycock KN, Salameh Z, Gómez-Barea M, Davalos RV, Ivorra A & **González Ballester MA** 2023, 'PIRET - A platform for treatment planning in electroporation-based therapies', *IEEE Transactions on Biomedical Engineering*, 70, 6, 1902-1910.
- Jiménez-Sánchez A, Tardy M, **González Ballester MA**, Mateus D & Piella G 2023, 'Memory-aware curriculum federated learning for breast cancer classification', *Computer Methods and Programs in Biomedicine*, vol. 229, no. 107318, pp 1-10.
- Bernardino G, Sepúlveda-Martínez A, Rodríguez-López M, Prat-Gonzalez S, Pajuelo C, Perea RJ, Caralt MT, Crovetto F, **González Ballester MA**, Sitges M, Gratacós E, **Bijnens B** & Crispi F 2023, 'Association of central obesity with unique cardiac remodeling in young adults born small for gestational age', *European Heart Journal: Cardiovascular Imaging*, vol. 24, no. 7, pp 930-937.
- Urru A, Nakaki A, Benkarim O, Crovetto F, Segales L, Comte V, Hahner N, Eixarch E, Gratacós E, Crispi F, Piella G & **González Ballester MA** 2023, 'An automatic pipeline for atlas-based fetal and neonatal brain segmentation and analysis.', *Computer Methods and Programs in Biomedicine*, vol. 230, no. 107334, pp 1-14.
- Galdran A, Verjans J, Carneiro G & **González Ballester MA** 2023, 'Multi-head multi-loss model calibration', *Lecture Notes in Computer Science*, 14222. Medical Image Computing and Computer Aided Interventions - MICCAI 2023, Vancouver, Canada, 108-117.

ICREA**MEMOIR2023**

Maria Concepción González García

Universitat de Barcelona (UB)

Experimental Sciences & Mathematics

Prof M.C. Gonzalez-Garcia got her PhD in Theoretical Particle Physics at the University of Valencia in 1991. She held postdoctoral positions at University of Wisconsin-Madison and as a fellow of the CERN Theory Division. As early as 1993 she obtained a tenured scientist position at the CSIC of which she took residency in 1996 at IFIC (a joint CSIC-University of Valencia institute) where eventually she was promoted to full Research Professor. In 2003 she joined the Yang Institute for Theoretical Physics at Stony Brook University as Associate Professor. She joined ICREA in the fall of 2006. She has written over 100 research papers on particle physics phenomenology, as well as some review articles. She is regularly invited to international meetings and conferences and she has given plenary talks at the most important conferences in her area.

Research interests

I am a theoretical particle physicist. I study the fundamental laws that govern the behaviour of the smallest components of Nature: the elementary particles. I do it by comparing the predictions from different theories with measurements performed at accelerators, where high energy beams of matter are made to collide, as well as in experiments which detect the elementary particles arriving to us from outer space, and which were produced in the burning of the stars or during the reactions occurring in the early Universe. The ultimate goal is two-fold: understand the physical laws of the microcosms as well as how they determine the Universe we live in.

Selected publications

- Blas D, Esteban I, **Gonzalez-Garcia MC** & Salvado J 2023, 'On neutrino-mediated potentials in a neutrino background', *Journal Of High Energy Physics*, 2023, 39.
- Coloma P, **Gonzalez-Garcia MC**, Maltoni M, et al. 2023, 'Global constraints on non-standard neutrino interactions with quarks and electrons', *Journal Of High Energy Physics*, 32.
- Corbett T, Desai J, Eboli OJP, **Gonzalez-Garcia MC**, Martines M & Reimitz P 2023, 'Impact of dimension-eight SMEFT operators in the electroweak precision observables and triple gauge couplings analysis in universal SMEFT', *Physical Review D*, 107, 11, 115013.

ICREA**MEMOIR2023**

Cayetano González Hernández

Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

After completing a PhD on fly genetics in the laboratory of Pedro Ripoll at the Centre for Molecular Biology (CBM, Madrid, Spain), Cayetano González moved to David Glover's lab in the UK, first as a postdoc at Imperial College in London and later as a CRC Joint Principal Investigator at University of Dundee. In 1994, he took his first independent position, as a Group Leader at EMBL (Heidelberg, Germany). After the customary nine-year period at EMBL, he moved to the Centro Nacional de Investigaciones Oncológicas (CNIO, Madrid, Spain). In 2004 he moved to his present post at the Institute for Research in Biomedicine (IRB Barcelona) where he leads the Cell Division Group. In 2007 he was elected to full membership of the European Molecular Biology Organisation (EMBO).

Research interests

We use Drosophila to investigate the molecular and cell biological mechanisms that drive cell proliferation and malignant growth.
Ongoing research lines include the following.

(1) Drosophila models of paediatric cancer.
(2) The molecular basis of sex-linked differences in cancer.
(3)The role of cancer-testis (a.k.a. cancer-germline) genes in somatic malignant growth.

ICREA**MEMOIR2023**

Pau Gorostiza Langa
Institut de Bioenginyeria de Catalunya (IBEC)
Life & Medical Sciences

Pau Gorostiza graduated in physics at the University of Barcelona (UB), where he obtained his PhD (European Doctorate) in the field of semiconductor electrochemistry. He worked at the UB microscopy facility in AFM and STM of biological samples, and in nanotechnology for materials science. He visited the CNRS – Université Pierre et Marie Curie (France), and the University of California at Berkeley (USA). He is currently ICREA Research Professor at the Institute for Bioengineering of Catalonia (Barcelona Institute of Science and Technology), where he develops photoswitchable ligands of neuronal proteins and studies charge transport in redox proteins and photosynthetic complexes using electrochemical tunneling microscopy and spectroscopy and force microscopy. He has published more than 140 articles (7000 citations, h-index 46) and holds 9 patents (5 licensed). He has supervised 14 postdoctoral fellows and 15 PhD students (6 ongoing).

Research interests

Research in the laboratory focuses on developing nanoscale tools to study biological systems. These tools include instrumentation based on proximity probes, such as electrochemical tunnelling microscopy and spectroscopy, that we apply to investigate electron transfer in individual redox proteins, and other biophysical and biochemical interactions. These studies are relevant to the development of biosensors and molecular electronics devices, and have led to the discovery of long-distance electrochemically gated electron transport between partner proteins of the respiratory and photosynthetic chains. Another set of nanotools that we are developing is based on engineered molecular actuators that can be switched with light, such as azobenzene, which can be chemically attached to biomolecules in order to remotely control their activity (photopharmacology). They include peptide inhibitors of protein-protein interactions, small molecule enzymatic inhibitors, and photoswitchable ligands of a diversity of other proteins. Among several applications, these compounds have enabled photoactivated chemotherapy, photocontrol of cellular signaling mediated by ion channels and G protein-coupled receptors, photocontrol of cardiac activity and locomotion, pupillary reflex, sensory restoration, and photocontrol of brain waves. Based on these tools, we have also developed two-photon pharmacology to manipulate and study the activity of neurons and glia in intact brain tissue with pharmacological selectivity and sub-cellular three-dimensional resolution.

Selected publications

- Sortino R, Cunquero M, Castro-Olvera G, Gelabert R, Moreno M, Riefolo F, Matera C, Fernàndez-Castillo N, Agnetta L, Decker M, Lluch JM, Hernando J, Loza-Alvarez P, **Gorostiza P.** 2023, 'Three-Photon Infrared Stimulation of Endogenous Neuroreceptors in Vivo', *Angewandte Chemie-international Edition*, 62, 51, e202311181.

- López-Ortiz M Zamora RA Giannotti MI **Gorostiza P**, 2023 'The Protein Matrix of Plastocyanin Supports Long-Distance Charge Transport with Photosystem I and the Copper Ion Regulates Its Spatial Span and Conductance', *ACS Nano,* 17:20334-20344.

- Prischich D, Camarero N, Encinar Del Dedo J, Cambra-Pellejà M, Prat J, Nevola L, Martín-Quirós A, Rebollo E, Pastor L, Giralt E, Geli MI, **Gorostiza P.** 2023, 'Light-dependent inhibition of clathrin-mediated endocytosis in yeast unveils conserved functions of the AP2 complex', i*Science*, 26, 10, 107899.

- Blasi D, Gonzalez-Pato N, Rodriguez Rodriguez X, Diez-Zabala I, Srinivasan SY, Camarero N, Esquivias O, Roldán M, Guasch J, Laromaine A, **Gorostiza P**, Veciana J, Ratera I. 2023, 'Ratiometric Nanothermometer Based on a Radical Excimer for In Vivo Sensing', *Small*, 19, 32, e2207806.

Selected research activities

Presentations at the Laboratory of Molecular Biology, Cambridge; Neurofrance meeting, Lyon; Medicinal Chemistry and Chemical Biology Strategies for Drug Discovery, University of Lisbon; Neuroscience course, University Pablo de Olavide, Seville; Spanish society of chemistry, Saragossa.

ICREA**MEMOIR2023**

Mariona Graupera Garcia-Mila
Institut de Recerca contra la Leucèmia Josep Carreras (IJC)
Life & Medical Sciences

Dr. Mariona Graupera is an ICREA Research Professor at the Josep Carreras Leukaemia Research Institute. She received her training as a PhD working with Prof. Jaume Bosch at the Hospital Clinic of Barcelona and as a postdoc with Prof. Bart Vanhaesebroeck at the Ludwig Institute for Cancer Research and at the Bart's Cancer Institute in London. In 2009, she established her laboratory as an independent investigator at the Institut d'Investigació Biomèdica de Bellvitge funded by the Ramon y Cajal program. From that moment, she embraced the opportunity to create a multidisciplinary laboratory devoted to study the mechanisms that regulate the vasculature in development, homeostasis, and disease. In February 2021, she joined the Josep Carreras Leukaemia Research Institute as Group leader with an interest to study the ties between the hematopoietic and endothelial cell linages. In June 2022, she was appointed president of the European Vascular Biology Organization.

Research interests

The Graupera lab studies how signaling events regulate vessel morphogenesis, and how this knowledge can be translated into therapeutic opportunities for diseases characterized by aberrant vessel growth. Current topics of interest are (i) How the endothelium instructs organ function in an organotypic fashion, (ii) How mural cell plasticity can be targeted to prevent disease pathogenesis and progression, and (iii) Why there is distinct endothelial spatio-temporal sensitivity to oncogenic mutations. Her research combines zebrafish and mouse models, patient derived samples, high-throughput analysis (NGS, single cell RNA sequencing, (phospho)proteomics) and high-resolution imaging.

Selected publications

– Kobialka P, Llena J, Deleyto-Seldas N, Munar M, Dengra JA, Villacampa P, Albinyà A, Muixi L, Andrade J, van Splunder H, Angulo-Urarte A, Potente M, Grego-Bessa J, Castillo SD, Vanhaesebroeck B, Efeyan A & **Graupera M** 2023, '*PI3K-C2b limits mTORC1 signaling and angiogenic growth*', *Sci Signal* 16(813):eadg1913.

– Petkova M, Kraft M, Stritt S, et al. 2023, 'Immune-interacting lymphatic endothelial subtype at capillary terminals drives lymphatic malformation', *Journal Of Experimental Medicine*, 220, 4, e20220741.

– Llorente A, Blasco MT, Espuny I, Guiu M, Ballaré C, Blanco E, Caballé A, Bellmunt A, Salvador F, Morales A, Nuñez M, Loren G, Imbastari F, Fidalgo M, Figueras Puig C, Gibler P, **Graupera M,** Monteiro F, Riera A, Holen I, Avgustinova A, **Croce LD** & **Gomis RR** 2023, '*MAF amplification licenses ERα through epigenetic remodelling to drive breast cancer metastasis*', *Nat Cell Bio,* 25, pages 1833–1847.

ICREA**MEMOIR2023**

Sebastian Grinstein
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

I completed my MSc at the University of Buenos Aires in 1998 working on the measurement of the production cross section of direct photons at the D0 experiment (Fermilab, USA). I worked in Sweden as a member of the Astroparticle Group of the Royal Institute of Technology studying cosmic rays before starting my PhD (2003, University of Buenos Aires) measuring the properties of quarks and gluons in high energy collisions at D0. In 2003 I became a postdoctoral Fellow at Harvard University where I worked mainly at the CDF experiment (Fermilab) on top-quark physics and detector operations. In 2008 I joined the IFAE (Institut de Física d'Altes Energies) LHC-ATLAS experiment group as an ICREA Researcher. In 2012 I became an ICREA Research Professor. I am currently leading the ATLAS Detector upgrade effort at IFAE.

Research interests

My research has been focused on high-energy experimental particle physics: understanding which are the fundamental constituents of nature and how they interact. At the Fermilab Tevatron accelerator I have performed studies of QCD and the properties of the top quark. At the LHC accelerator at CERN I conducted searches for new physics in the top sector. I am now leading a coordinated project to develop semiconductor tracking and timing detectors for the ATLAS experiment. During the first stage of this project, 3D pixel silicon sensors designed and produced at Barcelona were included in the innermost detector layer of ATLAS. Currently, we are fabricating 3D pixel module prototypes for the coming high luminosity LHC era. I am also the deputy Project Leader of the ATLAS High Granularity Timing Detector. My group aims to produce about 10% of the modules for this detector in-house. I am also co-leading a project investigating silicon sensors for medical applications.

Selected publications

- Agapopoulou C., et al. 2023, 'Performance of a front-end prototype ASIC for the ATLAS High Granularity timing detector', *Journal Of Instrumentation*, 18, 8, P08019.
- Yan, Z.; et. al. 2023, 'Readout electronics for the CEPC vertex detector prototype and beam telescope', *Journal Of Instrumentation*, 18, 7, P07036.
- Wang W, et al. 2023, 'Characterization of a CMOS Pixel Sensor prototype for the CEPC vertex detector', *Nuclear Instruments & Methods In Physics Research Section A-accelerators Spectrometers Detectors And Associated Equipment*, 1056, 168601.
- Ali S,. et al. 2023, 'Performance in beam tests of carbon-enriched irradiated Low Gain Avalanche Detectors for the ATLAS High Granularity Timing Detector', *Journal Of Instrumentation*, 18, 5, P05005.

Selected research activities

- Principal investigator of the ATLAS-Upgrade group at IFAE (MICINN, Spain).
- Coordinator of the AIDAInnova activities at IFAE and WP5 co-coordinator (H2020, EU).
- Deputy Project Leader of the ATLAS High Granularity Timing Detector (since 2021).
- HGTD Module Assembly co-convener (since 2018).
- Member of the Project Management Office sub-committee for the ATLAS Muon System (since 2021).
- Member of the Institutional Boards of AFP, HGTD, ITk (all ATLAS projects) and RD50 (CERN).
- Referee for publications in Nuclear Instruments and Methods in Physics Research, A, Proceedings of Science (PoS), JINST and Frontiers.
- Referee for funding programs in Spain (ANEP), UK (STFC) and Argentina (ANPCYT).
- Currently directing five PhD students.

ICREAMEMOIR2023

Víctor Guallar Tasies

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)

Life & Medical Sciences

Professor Guallar performed his undergraduate at the Autonomous University of Barcelona (Spain), with a major in Chemistry, followed by a joined PhD in physical chemistry at UC Berkeley and Autonomous University of Barcelona. Afterwards, he moved for a postdoctoral research position (2000-2003) to Columbia University in New York City. In 2003 he got a teanured position as an assistant Professor at the Biochemistry and Molecular Biophysics department at the School of Medicine in Washington University in St. Louis. In 2006 he was appointed ICREA Research Professor in the Life Science Department at the Barcelona Supercomputing Center (BSC), were he has been developing his research group. In 2016 he co-founded Nostrum Biodiscovery, the first spin-off from the BSC.

He is the recipient of numerous prestigious grants, such as an advanced ERC, having trained 20 PhD students and published more than 200 papers.

Research interests

In the EAPM lab at BSC we are devoted to the development and application of computational algorithms in molecular modeling. Using techniques such as Monte Carlo simulations, bioinformatics, machine learning and mixed quantum mechanics/molecular mechanics methods, we face different biophysical and biochemical challenges, including characterization, bioprospecting and engineering of enzymes for industrial and biomedical applications, software development for more efficient early stages of drug discovery and immunology. Along 2023, particular interest has focused on: i) engineering PluriZymes (enzymes with artificially added active sites) for plastic degradation and cascade reactions, ii) developing a modeling platform for designing molecular glues (including ligase selection), iii) designing efficient protein language models, and iv) initial efforts towards synthetic biology with enzyme engineering

Selected publications

- Robles-Martin A, Amigot-Sanchez R, Fernandez-Lopez L, et al. 2023, 'Sub-micro- and nano-sized polyethylene terephthalate deconstruction with engineered protein nanopores', *Nature Catalysis*, .
- Avila-Nieto, C et al. 2023, 'Novel Spike-stabilized trimers with improved production protect K18-hACE2 mice and golden Syrian hamsters from the highly pathogenic SARS-CoV-2 Beta variant', *Frontiers in immunology*, 14.
- Díaz-Rovira AM, Martín H, Beuming T, Díaz L, **Guallar V** & Ray SS 2023, 'Are Deep Learning Structural Models Sufficiently Accurate for Virtual Screening? Application of Docking Algorithms to AlphaFold2 Predicted Structures', *Journal Of Chemical Information And Modeling*, 63, 6, 1668-1674.
- Perez-Lopez C, Molina A, Lozoya E, Segarra V, Municoy M & **Guallar V** 2023, 'Combining machine-learning and molecular-modeling methods for drug-target affinity predictions', *Wiley Interdisciplinary Reviews-computational Molecular Science*, 13, 4, e1653.
- Xu X, van Hengst JMA, Mao Y, et al. 2023, 'Peroxygenase-Catalysed Selective Oxidation of Silanes to Silanols', *Angewandte Chemie-international Edition*, 62(24):e202302844.

Selected research activities

Prof. Guallar has been awarded with the *Sustainability Accesit* in the Zendal 2023 prizes.

ICREA**MEMOIR2023**

Marc Güell Cargol
Universitat Pompeu Fabra (UPF)
Engineering Sciences

Marc Güell is an ICREA Research Professor, working at Pompeu Fabra University. His work includes several synthetic biology breakthroughs (radically recoded genome, PERVs-free pigs, gene writing, skin microbiome engineering) that have produced important impact (>18,000 citations, 3 companies developing therapies, patents licensed to leading companies) and he is currently developing new principles for biological engineering and synthetic evolution. He is an EMBO YI and member of Academia Joven de España. He has been recognized as 'Highly Cited Researcher' (2019); and with the National Research Award to the young talent (2018), the August Pi i Sunyer Award (2021) and the National Research Award Ángela Ruiz Robles (2022).

Research interests

My goal is to leverage biology to create new scientific principles and technologies to engineer genomes and metagenomes, and push biological engineering to the next level. Read and write technologies have been advancing at breathtaking pace. This has enabled us to understand and engineer life using its genuine language: DNA.

Very recently, a great ally came to provide intelligence to this unique molecular hardware. AI is approaching a very remarkable understanding of life language and can produce new synthetic proteins. Directed evolution is capable of fast generation of genotypes and fast selection of phenotypes. However, current methods have no software to orient evolutionary trajectories. Coupling this biological hardware with AI massively accelerates the evolution rate of protein function. Not only we can read and write DNA, but we are starting to design synthetic parts de novo. This has been a transformative development for my research goals.

ICREA**MEMOIR2023**

Josep Guerrero
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences

Josep M. Guerrero received the B.Sc. degree in telecom engineering, M.Sc. degree in electronics engineering, and PhD degree from the Technical University of Catalonia, Barcelona.

Since 2011, he has been a Full Professor with AAU Energy, Aalborg University, Denmark. In 2020, he initiated neuroscience studies and research. As a result, in 2022 he received the M.Sc. degree in Psychobiology and Cognitive Neuroscience from the Institute of Neuroscience (INc) at the Autonomous University of Barcelona. In 2023, he received the M.Sc. degree in Sleep: Physiology and Medicine at the University of Murcia, Spain. In 2023, he joined the Technical University of Catalonia as an ICREA Research Professor.

He has published more than 1,000 journal papers in the fields of microgrids and renewable energy systems, which are cited more than 100,000 times. During nine consecutive years, from 2014 to 2022, he was awarded by Clarivate Analytics as Highly Cited Researcher.

Research interests

His research interests are oriented to different microgrid frameworks like energy microgrids, hydrogen and biomass, water micronets, biological systems, seaport microgrids and electrical ships, airport microgrids and more electrical aircrafts, space microgrids and smart medical systems.

Research threats:
- **Digital Twins**
- **Cybersecurity and Resiliency**
- **Artificial Intelligence**
- **Quantum Computation**

Applications:
- **Maritime**: The research done on microgrids in ships and seaports became fundamental in the state of the art.
- **Aeronautics**: The pioneering research developed was on aircraft microgrid control and energy management.
- **Astronautics**: First and very timely results on this space microgrids and electrical power systems for satellites, space stations and lunar/Mars bases and life-support eco-systems.

ICREAMEMOIR2023

Roger Guimerà Manrique
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics

Roger Guimerà (Barcelona, 1976) graduated in Physics at Universitat de Barcelona in 1998, and obtained a PhD in Chemical Engineering from Universitat Rovira i Virgili in 2003. He then moved to Northwestern University where he worked as a postdoctoral fellow and, later, as a Fulbright Scholar. In 2008 he became a Research Assistant Professor at Northwestern's Department of Chemical and Biological Engineering, before accepting his current position at ICREA in 2010. He has been awarded the Premi Nacional de Recerca al Talent Jove (2010), the Erdös-Rényi Prize in Network Science (2012), and the Young Scientist Award for Socio- and Econophysics (2014).

Research interests

Cells and economies are examples of complex systems. In complex systems, individual components interact with each other giving rise to complex networks of interactions that are neither totally regular nor totally random. Partly because of the interactions themselves and partly because of the interaction's topology, complex systems cannot be properly understood by analyzing their constituent parts in isolation. This feature of complex systems poses important challenges from both a fundamental perspective and an engineering perspective. Roger's research is devoted to the study of complex systems, using probabilistic approaches taken from statistical physics.

During the last years, Roger's work has turned to exploring the intersection between these probabilistic approaches, Bayesian inference and machine learning. In this area, he has contributed novel methods for interpretable machine learning, and uncovered some fundamental limitations in model-learning.

Selected publications

- Fajardo-Fontiveros O, Reichardt I, De Los Ríos HR, Duch J, Sales-Pardo M & **Guimerà R** 2023, 'Fundamental limits to learning closed-form mathematical models from data', *Nature Communications*, 14, 1, 1043.
- Font-Pomarol L, Piga A, Garcia-Teruel RM, Nasarre-Aznar S, Sales-Pardo M & **Guimera R** 2023, 'Socially disruptive periods and topics from information-theoretical analysis of judicial decisions', *Epj Data Science*, 12, 2.
- Danús L, Muntaner C, Krauss A,Sales-Pardo M, **Guimerà R**. 2023, 'Differences in collaboration structures and impact among prominent researchers in Europe and North America', *Epj Data Science*, 12, 1, 12.
- Sales-Pardo M, Mariné-Tena A & **Guimerà R**, 2023, 'Hyperedge prediction and the statistical mechanisms of higher-order and lower-order interactions in complex networks',
Proceedings of the National Academy of Sciences of the United States of America, 120, 50, e2303887120.

Selected research activities

Active grants:

- Statistical physics of network inference for interpretable machine learning, MINECO (Spain)
- Física estadística de selección y validación de modelos para datos complejos, MINECO (Spain)

Editorship:

- PLoS ONE

Technology transfer agreements:

- GREENh2PIPES, Enagás (Spain)

ICREA**MEMOIR2023**

Nezih Guner
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

Nezih Guner is ICREA Research Professor at Universitat Autonoma de Barcelona and BSE Research Professor. He is a Research Fellow of the Center for Economic Policy Research (CEPR), the Institute for Study of Labor (IZA), and a member of the Europen Economic Association Women in Economics (WinE) committee. Between 2013 and 2016, Prof. Guner served as the BSE Deputy Director for Research, and between 2012 and 2016, he was the Director of the BSE Master Program in Economics of Public Policy. He was the President of the Spanish Economic Association in 2018, a member of the European Economic Association Council Member between 2016 and 2020, and a member of the European Economic Association Executive Council Member between 2017 and 2019. Prof. Guner was a co-editor of Economic Inquiry (2009-2012), the editor of the Spanish Economic Association (2015-2017), and a managing editor of the Economic Journal (2017-2021).

Research interests

Prof. Guner's research interests are macroeconomics, labor economics, and public economics. He has focused on changing household and family structures in industrialized countries and the consequences of these changes on public policy. Besides his work on family economics, he has examined how the misallocation of resources across firms affects the size distribution of firms and aggregate productivity. He has also been working on the interaction between labor market frictions and firm dynamics and how this interaction affects the outcomes of globalization.

ICREA**MEMOIR2023**

Wolfram Hinzen
Universitat Pompeu Fabra (UPF)
Humanities

I obtained a Magister (Freiburg, 1993), an MA (King's College London, 1994), and a PhD (philosophy, Bern, 1996), before becoming a Swiss-government funded postdoctoral researcher in Stuttgart (1996-7) and New York (1997-9). I was first employed in an academic position as Assistant Professor in Regensburg (1999), then as Lecturer at the Universitat van Amsterdam (2003-2006), before becoming a full professor at Durham University (2006-2014) and an ICREA Research Professor in Barcelona in April 2013. I also was a guest professor at Hong Kong University (2010) and at Universitat Autonoma de Barcelona (2011).

Research interests

I study the structural organization and cognitive function of language in the human mind/brain. My current research largely focuses on how major mental disorders illuminate this issue. The theoretical basis of this research is laid down in a series of monographs (Mind Design, 2006), An Essay on Names and Truth, 2007), and The Philosophy of Universal Grammar, 2013), all from Oxford University Press. In Barcelona I have founded and direct the Grammar & Cognition lab (https://www.upf.edu/web/grac), which pursues the project of a typology of linguistic diversity across clinical populations, using a range of methods from behavioural linguistic analysis to MRI to EEG to machine learning.The mental disorders my group studies was psychosis at first, after which we included autism, dementia, aphasia, and syndromic developmental disorders. I have previously directed three international projects (NWO, 2006-2011; AHRC/DFG, 2009-2012; AHRC, 2014-2017), and three Spanish national ones.

Selected publications

- **Hinzen W** & Wiltschko M 2023, 'The grammar of truth', *Inquiry-an Interdisciplinary Journal Of Philosophy*, 66, 3, 299 - 331.
- Zhang H, Parola A, Zhou Y, H. Wang, V. Bliksted, R. Fusaroli, W. **Hinzen** 2023, 'Linguistic markers of psychosis in Mandarin Chinese: Relations to theory of mind', *Psychiatry Research*, 325, 115253.
- He R, Chapin K, Al-Tamimi J, et al. 2023, 'Automated Classification of Cognitive Decline and Probable Alzheimer's Dementia Across Multiple Speech and Language Domains', *American Journal of Speech-Language Pathology,* 32, 5, 2075-2086.
- Palominos-Flores C, Figueroa-Barra A & **Hinzen W** 2023. 'Coreference delays in psychotic discourse: widening the temporal window'. *Schizophrenia Bulletin,* 22;49(Suppl_2):S153-S162.
- Slušná D, Kohli JS, Hau J, Álvarez-Linera Prado J, Linke AC & **Hinzen W** 2023, 'Functional dysregulation of the auditory cortex in bilateral perisylvian polymicrogyria: Multiparametric case analysis of the absent speech phenotype', *Cortex,* 171, 423-434.
- He R, Yuan X & **Hinzen W** 2023, 'Episodic thinking in Alzheimer's disease through the lens of language: Linguistic analysis and transformer-based classification', *American journal of speech-language pathology*, 1–9.
- Schroeder K, Rosselló J, Torrades TR & **Hinzen W** 2023, 'Linguistic markers of autism spectrum conditions in narratives: A comprehensive analysis', *Autism & Developmental Language Impairments*, 8:15.
- Lofgren M & **Hinzen W** 2023, 'Breaking the flow of thought: Increase of empty pauses in the connected speech of people with mild and moderate Alzheimer's disease', *Journal Of Communication Disorders*, 101, 106299.

Selected research activities

PI on the grant 'A TRUSTworthy speech-based AI monitorING system for the prediction of relapse in individuals with schizophrenia', acronym TRUSTING. HORIZON-HLTH-2022-STAYHLTH-01-two-stage. Funding volume: ca. 8.600.000 EUR, 2023-2029, https://trusting-project.eu/.

ICREA**MEMOIR2023**

Carl Hoefer
Universitat de Barcelona (UB)
Humanities

I did my PhD in Philosophy at Stanford University with Peter Galison and Nancy Cartwright. My first academic position was at the University of California, Riverside. In 1998 I moved to the London School of Economics to join the department of Philosophy, Logic and Scientific Method. From 2002-2013 I was an ICREA at the UAB philosophy department. From 2005-2013 I was coordinator of the research group GRECC at the UAB. From 2009 – 2017 I was the founding Editor in Chief of the European Journal for Philosophy of Science, published by Springer. After a two-year sojourn in Canada (2013-2015) I returned to ICREA and joined the University of Barcelona and the LOGOS research group in July 2015. I am currently Director of the Barcelona Institute of Analytic Philosophy (BIAP), and IP of a *María de Maeztu Unit of Excellence* award, providing the BIAP funding for 2023-2026. By invitation, I will be the Senior Visiting Fellow at the Pittsburgh Center for Philosophy of Science in 2024-2025.

Research interests

My research has mostly addressed age-old metaphysical questions by examining the metaphysics of nature that flows from our best scientific theories. In particular, I work on the nature of space, time and motion as revealed by physics (especially, Einstein's theories of relativity); and on the nature of objective probability as revealed by its uses in many branches of science and other human activities. My active research interests include these topics: scientific realism (i.e., should we take our best scientific theories to be giving us objective truth about the world?); how to understand quantum non-locality; and the connection between the descriptions of the world given in physics and the descriptions familiar from higher-level sciences and everyday experience. More recently, thanks to the Covid-19 pandemic responses, I have begun working on the objectivity of medical and epidemiological research and causal efficacy claims in medicine.

Selected publications

- Gomori M & **Hoefer C** 2023, 'Classicality and Bell's theorem', *European Journal For Philosophy Of Science*, 13, 3, 45.

Selected research activities

Talks:

- ""Freedom from the inside out" – revisited", invited talk at conference *The Arrow(s) of Time: From Local Systems to the Whole Universe*, Buenos Aires, Argentina, February 2023.
- "Classicality and Bell's Theorem" (joint work with Márton Gömöri), invited talk at *1st Geneva-Barcelona Workshop,* Geneva, Switzerland, April 2023.
- "Anscombe's influence on Nancy Cartwright's views on causation", invited talk in workshop *Cartwright and Anscombe on Causation,* University of Durham, Durham UK.
- "Water's essence and the laws of nature", invited lecture at NoMoS conference *Laws and Powers in the Metaphysics of Science,* University of Athens, Athens, Greece.
- "Are some general causal questions unanswerable? The case of face-mask mandates", plenary keynote talk, *EPSA '23*, Belgrade, Serbia.

Research Projects:

- Director of BIAP and IP of MICIN/AEI *María de Maeztu Unit of Excellence* grant CEX2021-001169-M.
- IP1 of "Reassessing Scientific Objectivity", MICIN grant PID2020-115114GB-I00.

ICREA**MEMOIR2023**

Seth M. Holmes
Universitat de Barcelona (UB)
Social & Behavioural Sciences

Holmes completed a BS in Biology and Spanish at the U. of Washington followed by a PhD in anthropology joint between UC Berkeley and UC San Francisco and an MD in the School of Medicine at UC San Francisco. He was part of the Physician Scientist Program in the Internal Medicine Residency at the U. of Pennsylvania and then Robert Wood Johnson Health & Society Scholar at Columbia U. He taught in the Department of Global Health and Social Medicine at Harvard U. He joined the faculty at UC Berkeley where he founded the Berkeley Center for Social Medicine, co-directed the MD/PhD Track in Medical Anthropology and was promoted to Chancellor's Professor. His research has been funded by multiple organizations, including the European Research Council and the National Science Foundation, and has received national and international awards from the fields of anthropology, sociology, geography, Latin American Studies and documentary film.

Research interests

A sociocultural anthropologist and medical doctor, Holmes conducts interdisciplinary research on social hierarchies, health inequities, and the ways in which such asymmetries are naturalized, normalized, and resisted in the contexts of transnational im/migration, health care, and agricultural and food systems. He is Principal Investigator of the ERC Project "FOODCIRCUITS: Hidden Connections between Migrants and Societies" (2023 – 2028). He has received national and international awards from the fields of anthropology, sociology, geography, and Latin American Studies, including the Margaret Mead Award, the Robert Textor Prize, and the New Millennium Book Award. Beyond scholarly writing, he has written for popular media such as *The Huffington Post* and *The Guardian,* spoken on multiple National Public Radio, Public Radio International, and Radio Bilingüe radio programs, and produced an ethnographic documentary film that received multiple film awards.

Selected publications

– **Holmes SM** 2023, 'Acidentes e lesões de trabalhadores agrícolas migrantes:
temporalidade, representaçao, estatística, acontecimentos' *Sociologia Revista da Faculdade de Letras da Universidade do Porto.* XLV, 155-182.

– Bendixsen CG, Ramos AK & **Holmes SM** 2023, 'Structural Competency and Agricultural Health and Safety: An Opportunity to Foster Equity within Agriculture', *Journal of Agromedicine,* 28, 1, 45-52.

– Piñones-Rivera C, Martínez-Hernáez Á, Morse ME, Nambiar K, Ferrall J & **Holmes SM** 2023, 'Global Social Medicine for an Equitable and Just Future', *Health and human rights*, *25,* 1, 1–8.

– **Holmes MS** & Queirós J 2023, 'Para que possamos comer a fruta e os legumes que nos tornam saudáveis, os corpos dos trabalhadores agrícolas migrantes são danificados e a sua saúde é-lhes retirada', *Sociologia: Revista da Faculdade de Letras da Universidade do Porto, 45*.

– **Holmes SM** 2023, *Fresh Fruit, Broken Bodies: Migrant Farmworkers in the United States, Updated with a New Preface and Epilogue,* 27, Univ of California Press.

– Lawrence H 2023, *Migration, Stigma, and Lived Experiences: A Conceptual Framework for Centering Lived Experiences. In: Migration Stigma: Understanding Prejudice, Discrimination, and Exclusion,* Strüngmann Forum Reports, 32, series editor, Julia R, Lupp. Cambridge, MA, The MIT Press.

– Lawrence H, et al. 2023, *The Lived Experience of Stigma among Immigrant Youth. In: Migration Stigma: Understanding Prejudice, Discrimination, and Exclusion,*
Link. Strüngmann Forum Reports, 32, Julia R, Lupp. Cambridge, MA, The MIT Press.

Selected research activities

Prof. Holmes is PI of Global Social Medicine Cases Series in The Lancet and developing Barcelona's new Hub for Global Social Medicine.

ICREA**MEMOIR2023**

Manuel Irimia
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

Manuel Irimia obtained his PhD in 2010 at University of Barcelona investigating the origin of vertebrates at a genomic level. After two postdocs at Stanford University and University of Toronto, he joined the Centre for Genomic Regulation (CRG) in June 2014. He has been elected EMBO Young Investigator (2018) and obtained ERC Starting (2014) and Consolidator (2020) Grants.

Research interests

Manuel Irimia's research is centered on two major questions: How does a single genome sequence encode the information to build the enormous complexity of cell types and structures of an adult organism? How are changes in this sequence translated into morphological novelties during evolution? In his lab, they approach these topics focusing on **cell and tissue type specific transcriptomes**: How are they encoded in the genome? How are they generated during embryogenesis? How do they impact cell function in adult organisms? How do they evolve and how they impact evolution? To answer these questions, they not only study transcriptional regulation, but also other mechanisms that expand transcriptomic diversity, such as alternative splicing and gene duplication, combining computational and experimental approaches using *in vitro* and *in vivo* systems (zebrafish, mouse and fruitfly)

Selected publications

- Juan-Mateu J, Bajew S, Miret-Cuesta M, et al. 2023, 'Pancreatic microexons regulate islet function and glucose homeostasis', *Nature Metabolism*, 5, 2, 219-236
- Gohr A, Iñiguez LP, Torres-Méndez A, Bonnal S & **Irimia M** 2023, 'Insplico: effective computational tool for studying splicing order of adjacent introns genome-wide with short and long RNA-seq reads', *Nucleic Acids Research*, 51, 10, e56.
- Wucher V, Sodaei R, Amador R, **Irimia M** & Guigó R 2023, 'Day-night and seasonal variation of human gene expression across tissues', *Plos Biology*, 21, 2, e3001986.

Selected research activities

Grants and awards:
- FFB Individual Investigator Research Grant.
- Beca Leonardo a Investigadores y Creadores Culturales BBVA.
- V Research Award "Fundación Jesús Serra".

Thesis defended:

- Ludovica Ciampi (co-supervised with Luis Serrano).
- Federica Mantica.

ICREA**MEMOIR2023**

David R. M. Irving
Institució Milà i Fontanals (CSIC - IMF)
Humanities

David R. M. Irving studied at Griffith University, the University of Queensland, and the University of Cambridge. He held post-doctoral positions at Christ's College, Cambridge, and King's College London, then taught at the University of Nottingham, the Australian National University, and the University of Melbourne. Since 2019 he has been an ICREA Research Professor at the Institució Milà i Fontanals de Recerca en Humanitats, CSIC. His research interests include the role of music in early modern intercultural contact, global histories of music, and historical performance practice. He is co-editor of the journal *Eighteenth-Century Music* (Cambridge University Press) and co-general editor of the six-volume series *A Cultural History of Western Music* (Bloomsbury Academic), published in November 2023. Awards include the Jerome Roche Prize (Royal Musical Association) and the McCredie Musicological Award (Australian Academy of the Humanities).

Research interests

My research stands at the nexus of historical musicology, ethnomusicology, and global history, examining the role of music in intercultural contact during the early modern period. I have worked on the musical repercussions of Spanish, Portuguese, French, Dutch, and British colonialism in Southeast Asia, and the role of music in various early modern Catholic missions. I aim to develop new conceptual frameworks for global histories of music, and to explore the impact of colonialism on musical thought and practice in early modern Europe. A new book, *The Making of European Music in the Long Eighteenth Century*, is to be published by Oxford University Press in 2024; I am also working on a monograph entitled *Transitory Sounds: Early Music, Global History, and Decolonial Praxis*, which is under contract to University of Michigan Press. I have deep interests in early music and serve on the Steering Committee of the International Musicological Society's Study Group "Global History of Music".

Selected publications

- **Irving DRM** & Rehding A 2023, *A Cultural History of Western Music*, 6 volumes, London: Bloomsbury Academic.
- **Irving DRM** 2023, 'Rediscovering Arnold Dolmetsch: Going Back to the Sources of the Early Music Revival', *Early Music* 51, 2, 275–291.
- **Irving DRM** 2023. "Transplanted Musics in a Plantation Society: Performing Arts on the Cocos (Keeling) Islands, 1826-1955." In *Sounding the Indian Ocean: Musical Circulations in the Afro-Asiatic Seascape*, edited by Julia Byl and Jim Sykes, 251–273. Berkeley: University of California Press.

Selected research activities

A major milestone in 2023 was the publication of the six-volume series *A Cultural History of Western Music* (Bloomsbury Academic), for which I was co-General Editor with Alexander Rehding (Harvard University). Within this set I was also co-editor with Estelle Joubert (Dalhousie University) of its fourth volume, *A Cultural History of Western Music in the Age of Enlightenment*, and authored a chapter on intercultural exchange. The series involved six years of work and more than fifty contributors.

My book *The Making of European Music in the Long Eighteenth Century* went into production with Oxford University Press, for release in 2024. A new article on Arnold Dolmetsch was published in *Early Music*, and this research was mentioned on BBC Radio 3. Work progressed on the AEI I+D+i project PyRCEM, for which I am co-PI, and we held an annual workshop at the Universitat de Barcelona.

I delivered a keynote lecture in Taiwan for the International Musicological Society Regional Association for East Asia (IMSEA), and gave conference papers in Spain, Switzerland, and the United Kingdom. I also co-organised with Maria Alexandra Iñigo Chua (University of Santo Tomas) a conference in Manila, the Philippines, for the International Musicological Society Study Group 'Global History of Music' and served on the programme committees for the Biennial International Baroque Conference and the Annual Meeting of the American Musicological Society.

ICREA**MEMOIR2023**

Kazushi Iwasawa
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Born and educated in Japan. After obtaining PhD in astrophysics at Nagoya University, Nagoya, Japan, in 1995, I moved to Europe, working at the Institute of Astronomy, Cambridge in UK (1995-2005), at the Max Planck Institut für Extraterrestrische Physik in Germany (2005-2008), and at INAF-Osservatorio Astronomico di Bologna in Italy (2008-2009). In 2010, I joined ICREA, to work as an ICREA Research Professor at the Institut de Ciències del Cosmos of Universitat de Barcelona (ICCUB).

Research interests

My research is an observational study of star-forming galaxies and supermassive black holes that power active galactic nuclei (AGN), mainly at X-ray wavelengths as well as at other wavelengths in cosmic survey projects. The X-ray study is aimed to understand the physics in high-energy phenomena observed in galaxies undergoing intense star formation and the vicinity of central black holes in AGN. The multi-wavelength survey projects aim at understanding the formation and evolution of supermassive black holes. Presently, I am an active member of the multiwavelength projects of GOALS (Great Observatories All-sky LIRGs Survey) for local luminous infrared galaxies, SHELLQs (Subaru High-z Exploration for Low-Luminosity Quasars) for the most distant quasars, and eROSITA-Subaru/HSC collaborations for new X-ray selected AGN.

Selected publications

- Matsuoka Y, Onoue M, **Iwasawa K**, et al. 2023, 'Quasar Luminosity Function at z=7', *Astrophysical Journal Letters*, 949, 2, L42.
- Ding X, Onoue M, Silverman JD, et al. 2023, 'Detection of stellar light from quasar host galaxies at redshifts above 6', *Nature*, 621, 7977, 51-55.
- Arita J, Kashikawa N, Matsuoka Y, et al. 2023, 'Subaru High-z Exploration of Low-luminosity Quasars (SHELLQs). XVIII. The Dark Matter Halo Mass of Quasars at $z \sim 6$', *Astrophysical Journal*, 954, 2, 210.
- **Iwasawa K**, Norman C, Gilli R, Gandhi P & Perez-Torres MA 2023, 'Origin of the diffuse 4-8 keV emission in M 82', *Astronomy & Astrophysics*, 674, A77.

Selected research activities

We organised the "Barcelona High-redshift Quasar Workshop" at ICCUB in May 2023.

Press releases

1) "Dark matter halos measured around ancient quasars"
12/09/2023, Univ. Tokyo

Paper: Arita et al. (2023)

2) "
Starlight and the first black holes: researchers detect the host galaxies of quasars in the early universe"

28/06/2023, ICCUB, Univ. Tokyo, W.M. Keck Observatory

Paper: Ding et al. (2023)

Telescope observing times for the James Webb Space Telescope Cycle-2, ALMA Cycle-10, Subaru S23B and S24A, and Gran Telescopio Canarias 24A

Research funding awarded with the MICN Plan Nacional PID2022

TFG tribunal

ICREA**MEMOIR2023**

Gerardo Jiménez Cañero
Institut de Biologia Molecular de Barcelona (CSIC - IBMB)
Life & Medical Sciences

Gerardo Jiménez graduated in biology from Universitat de Barcelona in 1988. He performed his doctoral studies at the Leukaemia Research Fund in London and at the Department of Biochemistry of Universitat de Barcelona, working on the structure and regulation of mammalian globin gene loci. After receiving his PhD degree in 1993, he worked as a postdoctoral fellow at Cancer Research UK, both in Oxford and in London. Since then, his research interests have focused on the transcriptional and cell signaling mechanisms controlling gene expression during animal development, mainly using Drosophila as a model system. After his postdoctoral training, he moved to the Institut de Biologia Molecular de Barcelona-CSIC, where he is head of the Gene Expression and Signaling laboratory since 2002. He joined ICREA in 2003.

Research interests

During animal development, the differentiation of cells, tissues and organs is tightly regulated through specific gene expression programs. Our research addresses the transcriptional and cell signaling mechanisms responsible for this control. Most of our work uses the fruit fly, *Drosophila*, which allows us to combine classical genetic, cell biological and biochemical approaches with genome-editing technologies such as CRISPR-Cas9. One main line of research focuses on Ras-Erk signaling and its downstream effector Capicua (Cic), an evolutionarily conserved transcriptional repressor with key roles in normal development and human diseases. We discovered this factor in *Drosophila* and are studying its function from different perspectives, including the analysis of its basic mechanism of repression and its interaction with Erk signaling and other signal transduction pathways. In addition, we have a long-term interest in transcriptional corepressors such as the conserved Groucho/TLE and Atrophin proteins, which we are analyzing from a functional and mechanistic point of view. Ultimately, our studies are aimed at defining basic cell biological mechanisms that are relevant to human disorders.

Selected research activities

-Principal investigator of research project "Transcriptional repression in *Drosophila* development" funded by MICINN (2021-2024).

-Referee for Canadian Research Chair nomination by University of Alberta (Canada).

ICREA**MEMOIR2023**

Raúl Jiménez Tellado
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Raúl Jiménez (Madrid, 1967) obtained his PhD at the Niels Bohr Institute in 1995, then moved to the Royal Observatory in Edinburgh were he held a PPARC Advanced Fellowship. He then went to the US where he joined the faculty of the Physics & Astronomy departments of Rutgers and the University of Pennsylvania. He joined ICREA in Sept 2007. He was a Radcliffe fellow at Harvard in 2015-2016. Among his main contributions to our understanding of the Universe: the first evidence of dark energy from the ages of high redshift galaxies and globular clusters, the origin of dark galaxies, the first clue of how galaxies are assembled as a function of time, the first determination of the expansion history of the Universe, the role of cosmic explosions in the survival of exolife, the role of symmetries in the universe, a lower bound to the cosmological constant and a new model of the universe based on quantum information theory and gravity.

Research interests

I am a theoretical physicist interested in cosmology and astrophysics. My research ranges from the physics of stars to the early universe. The main objective is to understand the fundamental laws of nature using cosmological and astronomical observations. Topics of research include: cosmological parameters, the age of the universe, stellar evolution, stellar populations, high-redshift galaxies, dark energy, the early universe, large scale structure, the cosmic microwave background, galaxy formation and evolution, and star formation. I am interested in analysing large datasets and the development of rigorous statistical algorithms. I have focussed on developing methods and techniques that are independent of the assumptions of the cosmology model to explore the fundamental laws of nature. I am active in science and public policy and have written on the role that Bayesian statistics, large data, machine and deep learning and robotization can have on our societies.

Selected publications

- **Jimenez R** 2023, 'Black holes as "time capsules": A cosmological graviton background and the Hubble tension',
Astronomische Nachrichten, 344, 1-2, e230033.
- Gomez C & **Jimenez R** 2023, 'The quantum origin of quasi de Sitter: a model independent quantum cosmological tilt', *Journal Of Cosmology And Astroparticle Physics*, 1, 036.
- **Jimenez R**, et al. 2023, 'Why is zero spatial curvature special?', Journal of Cosmology and Astroparticle Physics, 007.

- **Jimenez R**, Moresco M, Verde L, Wandelt BD 2023, 'Cosmic chronometers with photometry: a new path to H(z)', *Journal of Cosmology and Astroparticle Physics, 047.*

ICREA**MEMOIR2023**

Aurelio Juste
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

Born in 1970 in Terrassa (Barcelona). Graduated in physics in 1993 at the Univ. Autònoma de Barcelona (UAB). Obtained PhD in experimental particle physics in 1998 at the Institut de Física d'Altes Energies (IFAE) at the UAB, studying electron-positron collisions in the ALEPH experiment at the LEP Collider at CERN. Moved to Chicago (USA) in 1998, to study proton-antiproton collisions at the energy frontier in the D0 experiment at the Fermilab Tevatron Collider, first as a Research Associate (1998-2002), then as a Wilson Fellow (tenure-track position, 2002-2006) and eventually as staff scientist (2006-2009). At D0 held a number of leadership positions in physics (convener of Top and Higgs groups), algorithms (convener of Jet Energy Scale and Jet Energy Resolution groups) and upper management (physics coordinator). Since November 2009, ICREA Research Professor at IFAE, studying proton-proton collisions with the ATLAS experiment at CERN's Large Hadron Collider (LHC).

Research interests

My research is focused on accelerator-based experimental particle physics, aiming at achieving an understanding on how Nature operates at the most fundamental level. At the LHC I am carrying out studies on the heaviest known elementary particle, the top quark, as well as on the Higgs boson, seeking connections in the dynamics that govern both particles. I am also searching for new phenomena, such as supersymmetric partners of Standard Model particles, exotic heavy quarks appearing in composite Higgs models or models with extra spatial dimensions, or additional Higgs bosons revealing an extended Higgs sector. Since 2016, I lead a team of over 20 scientists from IFAE that analyzes the data from the ATLAS experiment. Between October 2020 and September 2022 I was convener of the ATLAS Exotics working group, leading a team of about 600 scientists pursuing a broad program of new phenomena searches at the energy frontier.

Selected publications

- ATLAS Collab, et al. 2023, 'Search for ttH/A→tttt production in the multilepton final state in proton-proton collisions at √s=13 TeV with the ATLAS detector', *Journal of High Energy Physics*, 2023, 203.
- ATLAS Collab, et al. 2023, 'Search for supersymmetry in final states with missing transverse momentum and three or more b-jets in 139 fb^{-1} of proton-proton collisions at √s=13 TeV with the ATLAS detector', *The European Physical Journal C*, 83, 561.
- ATLAS Collab, et al. 2023, 'Search for a new scalar resonance in flavour-changing neutral-current top-quark decays t→qX (q=u,c), with X→bb, in proton-proton collisions at √s=13 TeV with the ATLAS detector', *Journal of High Energy Physics*, 07, 199.
- ATLAS Collab, et al. 2023, 'Search for single production of vector-like T quarks decaying into Ht or Zt in pp collisions at √s=13 TeV with the ATLAS detector', *Journal of High Energy Physics*, 08, 153.
- ATLAS Collab, et al. 2023, 'Search for a light charged Higgs boson in t→H±b decays, with H±→cb, in the lepton+jets final state in proton-proton collisions at √s=13 TeV with the ATLAS detector', *Journal of High Energy Physics*, 09, 004.

Selected research activities

- Principal investigator of the ATLAS group at IFAE (22 members).

- Chair of the ATLAS Publication Committee.

- External expert for the RGC (Hong Kong) and CFMA/FONCyT (República Argentina).

- Supervisor of 1 PhD thesis and 5 Master theses.

- Lectures at the UAB/IFAE/ICE Master program.

Plenary addresses:

- *57th Rencontres de Moriond: Electroweak Interactions & Unified Theories*, La Thuile, Italy, Mar 18-25, 2023.

- *Beyond the Flavour Anomalies IV*, Barcelona, Spain, Apr 19-21, 2023.

- *7th Red LHC Workshop*, IFT, Madrid, Spain, May 10-12, 2023.

- *ATLAS HDBS and Exotics Workshop*, UAB, Bellaterra, Spain, Oct 9-13, 2023.

Workshop organization:

- *The LHC Precision Program*, CCBPP, Benasque, Spain, Oct 1-7, 2023.

- *ATLAS HBDS and Exotics Workshop,* UAB, Bellaterra, Spain, Oct 9-13, 2023.

ICREA**MEMOIR2023**

Giorgos Kallis
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

Giorgos Kallis is an ecological economist and political ecologist working on environmental justice and limits to growth. He has a Bachelors degree in chemistry and a Masters in environmental engineering from Imperial College, a PhD in environmental policy from the University of the Aegean, and a second Masters in economics from the Barcelona Graduate School of Economics. He is an ICREA professor since 2010. Before coming to Barcelona, Giorgos was a Marie Curie International Fellow at the Energy and Resources group at the University of California-Berkeley.

Research interests

My research is 'un-disciplinary'. I have worked over the years on very diverse topics; from water policy in Europe or California, participatory science, and evolution in societies, to climate change, limits to growth and conflicts over resource use. What connects my various pieces of work is a quest to understand why and how societies misuse their environments, and why behavioural, institutional and technological changes that could make a difference are not taken up. I am most known for my recent publications on 'degrowth', the hypothesis that societies can live better with less. My degrowth research combines institutional, ecological economic and historical analysis to explain how the idea of economic growth came to be hegemonic, why it is limited, and what alternatives there are to growth-based development. My latest book 'Limits: why Malthus was wrong and why environmentalists should care' was published by Stanford University Press in 2019.

Selected publications

- Nogue-Alguero B, Kallis G & **Ortega M**, 2023, 'Limits to fishing: the case for collective self-limitation illustrated with an example of small-scale fisheries in Catalonia', *Frontiers In Marine Science*, 10, 1134725.
- **Kallis G**, Mastini R & Zografos C 2023, 'Perceptions of degrowth in the European Parliament', *Nature Sustainability*, 7, 64–72.
- **Kallis G** 2023, 'Degrowth and the Barcelona School'. In *The Barcelona School of Ecological Economics and Political Ecology: A Companion in Honour of Joan Martinez-Alier,* 83-90, Cham: Springer International Publishing.
- Graham S, Wary M, Calcagni F, Cisneros M, De Luca C, Gorostiza S, Stedje Hanserud O, **Kallis G**, et al. 2023, 'An interdisciplinary framework for navigating social–climatic tipping points', *People and Nature*, 5, 5, 1445-1456
- Slameršak A, **Kallis G**, O'Neill DW & Hickel J 2023, 'Post-growth: A viable path to limiting global warming to 1.5° C', *One Earth*, 7, 1, 44-58.

Selected research activities

Launched in May the ERC Synergy grant REAL - A post-growth Deal.

ICREA**MEMOIR2023**

Francisca Kemper
Institut de Ciències de l'Espai (CSIC - ICE)
Experimental Sciences & Mathematics

After obtaining her Ph.D. in Astronomy from the University of Amsterdam in 2002, Ciska Kemper moved to UCLA in Los Angeles, California, to take up a Spitzer Fellowship. In 2005 she joined the faculty of University of Virginia, and in 2006 she moved to the UK to take up a faculty position at the University of Manchester's Jodrell Bank Centre for Astrophysics. In 2010 she moved to Taiwan for a research faculty position at the Institute of Astronomy and Astrophysics of Academia Sinica. In this position she formally joined several telescope projects, including the Atacama Large Millimetre/Submillimetre Array (ALMA), which ultimately led to her appointment as the European ALMA Programme Scientist at the European Southern Observatory in Garching, Germany, in 2018. In 2022 she joined the Institute of Space Sciences (ICE-CSIC) as an ICREA Research Professor. Ciska Kemper was awarded the Grand Prix Scientifique de la Fondation Franco-Taiwanaise jointly with Suzanne Madden in 2017.

Research interests

Ciska Kemper studies dust properties in order to understand the formation of dust in galaxies. In particular, she uses far-infrared and submillimeter observations of evolved stars and the interstellar medium of nearby galaxies to study the dust emissivity properties at these wavelengths, with the goal to improve on dust mass determinations at all redshifts. She also determines the mineralogical properties of silicate dust -- crystallinity, composition, nanocluster fraction -- in interstellar environments to follow dust formation and evolution.

Selected publications

- Armus L, Lai T, U V, ... **Kemper F**, et al., 2023, 'GOALS-JWST: Mid-Infrared Spectroscopy of the Nucleus of NGC 7469', *The Astrophysical Journal Letters,* 942, L37
- Linden ST, Evans AS, Armus L, ... **Kemper F**, et al. 2023, 'GOALS-JWST: Revealing the Buried Star Clusters in the Luminous Infrared Galaxy VV 114', *Astrophysical Journal Letters*, 944, L55.
- Tripodi R, Feruglio C, **Kemper F**, et al. 2023, 'Accurate Dust Temperature and Star Formation Rate in the Most Luminous z > 6 Quasar in the Hyperluminous Quasars at the Epoch of Reionization (HYPERION) Sample', *Astrophysical Journal Letters*, 946, L45
- Zeegers ST, Mariñoso Guiu J, **Kemper F**, Marshall JP & Bromley ST 2023, 'Predicting observable infrared signatures of nanosilicates in the diffuse interstellar medium', *Faraday Discussions,* 245, 609.
- Marshall JP, Ertel S, **Kemper F**, et al. 2023, 'Sudden Extreme Obscuration of a Sun-like Main-sequence Star: Evolution of the Circumstellar Dust around ASASSN-21qj', *Astrophysical Journal,* 954, 140

Selected research activities

Ciska Kemper has contributed to the scientific justification of two potential future astronomical observatories. Specifically, she has written two out of the in total 76 contributions for the PRIMA General Observer Science Book, describing potential observational programs to be carried out with this concept far-infrared space-based observatory. If approved, the observatory will operate at 24-235 micron, and will have both imaging and spectroscopic capabilities. Furthermore, she is a member of the science team for AtLAST, a potential 50-m single dish submm/mm telescope. She has co-authored the Nearby Galaxies science case. The white book will be published in 2024.

Kemper has also organized a summer school on The Life Cycle of Dust, in collaboration with her colleagues at ICE-CSIC: J. M. Girart, Á. Sánchez-Monge, J. M. Torrelles and N. Cortés. The school attracted 40 students from 14 countries, and lectures were given by local scientists and invited international experts.

ICREA**MEMOIR2023**

Arjan W. Kleij
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

MSc (with honors) and PhD (Cum Laude) from the University of Utrecht (NL). In 2002 he moved to Spain as a NWO TALENT fellow with Javier de Mendoza, followed by another postdoc at the University of Amsterdam (NL) working with Joost Reek. He also held various scientific positions in industry at Avantium and Hexion. In 2006, he returned to Spain as an ICREA Researcher and ICIQ Group Leader, and was promoted to ICREA Research Professor in 2011. He is current member of several advisory (ChemCatChem, JCOU, ASC Sust Chem Engin) and editorial boards (ChemSusChem). Guest editorships for Catal. Sci. & Technol., ChemSusChem and Adv. Synth. Catal.; chairman of the CDCC conference in Portugal in 2016, chair of the EUGSC-4 conference in 2019; Associate Editor for Organic Chemistry Frontiers. Citations >17000, h-index of around 72. He received the 2020 RSEQ Excellence Award, became a FRSC in 2021, and was awarded the 2023 SCQ Excellence Award and the 2023 European Sustainable Chemistry Award.

Research interests

The research of my group focuses on the valorization of small molecules (including CO2) into value-added chemicals and materials. We design new and more sustainable catalytic methods for their conversion and use in organic synthesis. We use homogeneous catalysis approaches based on metal complexes and/or organocatalysts, and investigate important process features such as catalyst recycling, energy/material efficiencies and overall selectivity/reactivity profiles. In all these endeavors, we wish to solve challenging stereoselective and enantioselective transformations including those focusing on the preparation of compounds featuring challenging quaternary stereocenters.

Selected publications

- Li X, Benet-Buchholz J, Escudero-Adán EC & **Kleij AW** 2023, 'Silver-Mediated Cascade Synthesis of Functionalized 1,4-dihydro-2H-Benzo-1,3-Oxazin-2-Ones from Carbon Dioxide', *Angewandte Chemie-international Edition*, 62, 11, e202217803.
- Garcia-Roca A, Perez-Soto R, Stoica G, Benet-Buchholz J, Maseras F & **Kleij AW** 2023, 'Comprehensive Mechanistic Scenario for the Cu-Mediated Asymmetric Propargylic Sulfonylation Forging Tertiary Carbon Stereocenters', *Journal Of The American Chemical Society*, 145, 11, 6442-6452.
- Zeng Q, Gao F, Benet-Buchholz J & **Kleij AW**. 2023, 'Stereoselective Three-Component Allylic Alkylation Enabled by Dual Photoredox/Ni Catalysis', *Acs Catalysis*, 13, 11, 7514 - 7522.
- Ghorai D, Garcia-Roca A, Toth BL, Benet-Buchholz J & **Kleij AW** 2023, 'Ni-Catalyzed Regio- and Enantioselective Homoallylic Coupling: Synthesis of Chiral Branched 1,5-Dienes Featuring a Quaternary Stereogenic Center and Mechanistic Analysis', *Angewandte Chemie-international Edition*, 62, 50, e202314865.
- Lamparelli DH, Grimaldi I, Martinez-Carrion A, Bravo F & **Kleij AW** 2023, 'Supercritical CO2 as an Efficient Medium for Macromolecular Carbonate Synthesis through Ring-Opening Co- and Teroligomerization', *Acs Sustainable Chemistry & Engineering*, 11, 22, 8193 - 8198.

Selected research activities

Received the Scientific Excellence Award from the Catalan Chemical Society (SCQ), **2023**

Received the European Sustainable Chemistry Award (ESCA), **2023**

Scientific coordinator of the HORIZON-TMA-MSCA-DN-JD (joint doctoral network) *"D-Carbonize"*, **2023**

Advisory board member for *Sustainable Chemistry for the Environment* (Elsevier), **2023**

Plenary lecture at the 6th EuChemS Conference on Green and Sustainable Chemistry (Salerno, Italy)

Keynote lecture at the 1st International Workshop of Green Chemistry, Cartagena (Murcia, Spain)

Panel 11 member at the DFG for the program on the Clusters of Excellence **2023**

ICREAMEMOIR2023

Tess Knighton
Universitat Autònoma de Barcelona (UAB)
Humanities

Tess Knighton holds MA and PhD degrees from the University of Cambridge and is an Emeritus Fellow of Clare College, Cambridge. From May 2011 she has been an ICREA Research Professor, until May 2020 at the Institució Milà i Fontanals (CSIC), and subsequently at the Universitat Autònoma de Barcelona. She held a Marie Curie Foundation grant (2012-6) for a research project on the urban musics of early modern Barcelona, and Spanish government grant (I+D) (2020-23)on the contribution of confraternities and guilds to the urban soundscape in the Iberian Peninsula, 1400-1700. She currently holds an ERC Advanced grant (2022-2027) on 'How Processions Moved' involving sensory and emotional history and DH tools. Her research interests embrace music and culture in the Iberian world from the 15th to the 17th centuries, and she has published widely in this field. She is Series Editor of the Studies in Medieval and Renaissance Music series for The Boydell Press.

Research interests

My research focuses on various interrelated aspects of music in the Iberian world in the long 16th century: music and ceremony; music in the urban context, including perspectives of sensory and emotional hiustory; the impact of music printing on the diffusion of musical repertory; and music historiography. Analysis of music and ceremony focuses on public display as well as private devotions; placing music in the context of court ceremonial reveals patterns of self-identity and image-making. Study of the urban musical experience of different social groups highlights the relationship between music and the institutional complex and urban societal interaction. The impact of music printing on the diffusion and accessibility of music is studied through extant inventories to reveal how European editions were transmitted to the centres of the book trade and the extent of musical literacy. Received ideas of Renaissance Iberian music are challenged and historiographical filters analyzed.

Selected publications

- **Knighton T** 2023, 'Urban Soundscapes in Early Modern Italian and Spanish Cities: Confraternities as Acoustic Communities', in *Music, Place and Identity in Italian Urban Soundscapes circa 1550–1800*, S. Caputo F, Piperno & E. Senici, London & NewYork: Routledge.
- **Kinghton T** 2023, 'El so de Barcelona del Renaixement', *Paperets. El podcast sobre patrimoni musical*, 17.

ICREA**MEMOIR2023**

Meike Köhler
Institut Català de Paleontologia (ICP)
Life & Medical Sciences

EDUCATION: 1982 – MSc of Sciences (Diplom), Univ Hamburg, Germany. 1988 – PhD Vertebrate Paleontology, Univ Hamburg, Germany. Positions: 2000-2006 – Researcher Inst Paleont Miquel Crusafont; 2006-current – ICREA Research Professor at Inst Cat Paleontologia; 2013-current – Ass.Prof Dep. BABVE UAB; 2006-2014 – Ass.Prof Dep. Ecology, Univ. Barcelona; AWARDS: 2010 "Premi Bartomeu Darder" Soc Nat Hist Balear; 2010; "Premio Paleonturología10" Int Award; 2010 "Research Excellence Prize 2010" Univ.Aut.Barcelona; 1999 "Premi Ciutat de Barcelona" Award of Barcelona City. PUBLICATIONS: Science; Nature; Trends Ecol Evol; Proc Natl Acad Sci USA; Current Biol; Proc R.Soc B; Scientific Reports; PLoS ONE; Peer J; C Biochem Physiol A; Brain Behav Evol; J. AnatOmy; Mam Biol; Geobios; Palaegeogr., Palaeoclimat., Palaeoecol.; J. Vert. Paleont; Biol.J.Linn Soc.; Lethaia; CR Palevol.; J Zool.; Integr. Zool.; Swiss J. Pal.; Zitteliana; J Human Evol; Am J Anthr; Folia Prim. etc.

Research interests

- Life History Evolution and Evolution of Ageing and Longevity - Evolution of Body Size - Insularity and Evolution in Resource-limited Environments - Evolution of Brain and Nervous system

Selected publications

- **Köhler M**, Nacarino-Meneses C, Quintana Cardona J, Arnold W, Stalder G, Suchentrunk F & **Moyà-Solà S** *2023*, ´Insular giant leporid matured later
than predicted by scaling', *iScience,* 26, 107654.

ICREA**MEMOIR2023**

Gerasimos Konstantatos
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Nov. 2015 – Present: ICREA/Group Leader at the Institute of Photonic Sciences (ICFO), Mediterranean Technology Park, Barcelona, Spain. April 2015 – Oct. 2015: Group Leader – Professor at the Institute of Photonic Sciences (ICFO) Sep. 2009 – March 2015: Group Leader – Assistant Professor at the Institute of Photonic Sciences (ICFO) Sep. 2008 – July 2009: Postdoctoral fellow in the department of Electrical and Computer Engineering at the University of Toronto, Canada. Ed/ Oct. 2004 – July 2008: PhD in the department of Electrical and Computer Engineering at the University of Toronto, Canada. Connaught Fellow. Sep. 2002 – Sep. 2004: MA Sc in the department of Electrical and Computer Engineering at the University of Toronto, Canada. Sep. 1996 – Sep. 2001: Diploma in Electrical and Computer Engineering from the University of Patras, Greece.

Research interests

We employ advances in nanoscience and we transform them into nanotechnology in solving real-world problems that current technology cannot address or do so at an affordable cost for the benefit of the society. We are doing so by assembling a group of physicists, chemists and engineers to tackle complex, interdisciplinary problems. We focus on novel functional nanomaterials, nanostructures and devices for optoelectronics and renewable energy applications. Our main scope is on the development of low-cost, high-efficiency solar cells employing nanostructured materials of low toxicity and high abundance to address the TW challenge and on the development of hybrid 2-dimensional / 0-dimensional optoelectronic platforms for highly sensitive, low cost photodetectors in the visible and infrared part of spectrum covering a broad range of applications including night vision, remote sensing, environmental monitoring and biomedical and health monitoring. We also develop low cost ingrared light emitting diodes and lasers for on-chip spectrometry, structured illumination and silicon-photonics aplications.

Selected publications

- Liga SM, Wang Y & **Konstantatos G** 2023, 'Stabilization of environmentally-friendly Cs2TiBr6 perovskite nanocrystals with SnBr4', *Chemical Communications*, 59, 37, 5567 - 5570.
- Righetto M, Wang Y, Elmestekaw K, et al. 2023, 'Cation-Disorder Engineering Promotes Efficient Charge-Carrier Transport in AgBiS2 Nanocrystal Films', *Advanced Materials,* 35, 48, 2305009.
- Taghipour N, Dalmases M, Whitworth GL, Wang Y & **Konstantatos G** 2023, 'Ultrafast Cascade Charge Transfer in Multibandgap Colloidal Quantum Dot Solids Enables Threshold Reduction for Optical Gain and Stimulated Emission', *Nano Letters*, 23, 18, 8637-8642.
- Mercier G, Polat EO, Shi S et al. 2023, 'Semitransparent Image Sensors for Eye-Tracking Applications', *Acs Photonics*, 10, 9, 2994-3000.

ICREA**MEMOIR2023**

Frank Koppens
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

Prof. Frank Koppens is group leader at the Institute of Photonic Sciences (ICFO). The Quantum Nano-Optoelectronics Group, led by Prof. Koppens, is at the forefront of exploring the fundamental science and potential applications of heterostructures of stacked and twisted two-dimensional (2D) materials. The group integrates the realms of nanophotonics, 2D materials, topology, emerging phenomena, and strong light-matter interactions, creating a multidisciplinary approach in their research.

Koppens has received the ERC starting grant, the ERC consolidator grant, and five ERC proof-of-concept grants. Other awards include the Christiaan Hugyensprijs 2012, the national award for research in Spain, the IUPAP young scientist prize in optics, and the ACS photonics investigator award. Since 2018 Koppens is on the Clarivate list for highly cited researchers, in the physics category, and in 2022 he has been elected as fellow of the American Physical Society.

Research interests

The group focusses on the exploration of a wide array of novel materials that are a mere atom thick, such as graphene and other 2D materials. By layering and twisting these materials, like building with atomic Lego, we can engineer entirely new material systems and properties. The group employs a variety of innovative techniques to study the nano-optoelectronic properties, utilizing imaging methods that operate with infrared and terahertz light. This includes pioneering low-temperature near-field imaging techniques, which allow us to examine the electronic response to light with unprecedented nanometer-scale spatial resolution. Beyond advancing scientific knowledge, the group is pioneering new quantum technologies, including single-photon detection and quantum molecular sensing. The goal is to develop prototypes of these groundbreaking technologies in collaboration with industry partners, paving the way for revolutionary applications in the field.

Selected publications

- Ma Q, Kumar R, Xu SY, et al. 2023, 'Photocurrent as a multiphysics diagnostic of quantum materials', *Nature Reviews Physics*, 5, 170-184.
- Herzig Sheinfux H, Jung M, Orsini L, Ceccanti M, Mahalanabish A, Martinez-Cercós D, Torre I, Barcons Ruiz D, Janzen E, Edgar JH, Pruneri V, Shvets G & **Koppens FHL** 2023, 'Transverse Hypercrystals Formed by Periodically Modulated Phonon Polaritons', *Acs Nano*, 17, 8, 7377-7383.
- Kurman Y, Dahan R, Shenfux H, et al. 2023, 'Dynamics of optical vortices in van der Waals materials', *Optica*, 10, 5, 612 - 618.
- Soundarapandian KP, De Fazio D, Bernal-Texca F, et al. 2023, 'Hysteresis-free high mobility graphene encapsulated in tungsten disulfide', *Applied Physics Letters*, 123, 6, 063103.
- Mercier G, Polat EO, Shi S et al. 2023, 'Semitransparent Image Sensors for Eye-Tracking Applications', *Acs Photonics*, 10, 9, 2994-3000.
- Agarwal H, Nowakowski K, Forrer A et al. 2023, 'Ultra-broadband photoconductivity in twisted graphene heterostructures with large responsivity', *Nature Photonics*, 17, 1047–1053.
- Barcons Ruiz D, Hesp NCH, Herzig Sheinfux H et al. 2023, 'Experimental signatures of the transition from acoustic plasmon to electronic sound in graphene', *Sci. Adv.* 9, 39, eadi0415.
- **Koppens FHL** 2023, '2D materials ratchet up biorealism in computing', *Nature*, 624 - 7992 - 534 - 536.
- Ruiz DB, Hesp NCH, Sheinfux HH, Marimón CR, Maissen CM, Principi A, Asgari R, Taniguchi T, Watanabe K, Polini M, Hillenbrand R, Torre I & **Koppens FHL** 2023, 'Experimental signatures of the transition from acoustic plasmon to electronic sound in graphene', *Science advances*, 9 - 39.

Selected research activities

Koppens is leading the QTWIST program with Prof. Pablo Jarillo-Herrero (MIT) with the aim to set up a large international effort with joined laboratories on quantum materials and its applications. Koppens is also leading the staff exchange program with MIT, Pisa, Weizmann and Max Planck.

ICREA**MEMOIR2023**

Ai Koyanagi
Fundació per la Recerca i la Docència Sant Joan de Déu (FSJD)
Life & Medical Sciences

I am a medical doctor with training in psychiatry, general medicine, gastroenterology, and tropical medicine. I obtained my Master's degree in Tropical Medicine from the University of Liverpool School of Tropical Medicine, UK (2003) and my PhD in International Health (Global Disease Epidemiology and Control) from Johns Hopkins University, USA (2008). My interest in multi-country research stems from my international background that has included living in the USA, Niger, Zimbabwe, Peru, Ecuador, and several countries in Europe, as well as visiting nearly 130 countries worldwide. I have authored or co-authored more than 600 peer-reviewed articles indexed in PubMed, and have also been the first author of papers in high impact factor journals such as the Lancet. I had been selected highly cited researcher 2022.

Research interests

I am interested in learning about health determinants and how they vary by geography. In particular, mental disorders and their comorbidity with physical disorders are my primary interest given my clinical experience as a physician and psychiatrist. Most of my research has focused on multi-country epidemiological studies examining the modifiable risk factors of a range of mental and physical disorders with high burden at the population level using large nationally representative datasets predominantly from low- and middle-income countries (LMICs). More recently, I have been involved in research on the physical and mental health impacts of COVID infection or the COVID pandemic.

Selected publications

- Hahn JW, Lee K, Shin JI, Cho SH, Turner S, Shin JU, Yeniova AÖ, ***Koyanagi A***, Jacob L, Smith L, Fond G, Boyer L, Lee SW, Kwon R, Kim S, Shin YH, Rhee SY, Moon JS, Ko JS, Yon DK & Papadopoulos NG 2023 'Global Incidence and Prevalence of Eosinophilic Esophagitis 1976-2022: A Systematic Review and Meta-analysis', *Clinical gastroenterology and hepatology*, 21 - 13.

ICREA**MEMOIR2023**

Carla Lancelotti
Universitat Pompeu Fabra (UPF)
Humanities

I graduated in Archaeology at the University of Bologna and, after a Master in Archaeological Science at the University of Milan, I obtained my PhD in Archaeobotany from the University of Cambridge. In 2014 I co-funded the research group Culture Archaeology and Socio-Ecological Dynamics (CASEs), recognised by the Catalan Agency for Management of University and Research Grants (AGAUR) as an excellence group. In 2017 I was awarded a Starting grant from the ERC to work on the role of drought-tolerant crops on long-term resilience and adaptation to drylands (RAINDROPS ERC-Stg-2017, 759800). I am currently co-vicepresident of the Institutional Committe for Ethical Review of Projects at Univeristat Pompeu Fabra (CIREP) and from 2022 I am the director of the Centre for Studies on Planetary Wellbeing at Universitat Pompeu Fabra.

Research interests

I am an archaeobotanist and quantitative archaeologist specialised in long-term human ecology of drylands. I combine methods from plant sciences, ethnography and archaeology with statistical analysis, modelling and simulation to study plant-related activities. Specifically, my work addresses the essential role of the so-called secondary resources (e.g., millets as foodstuff, dung as fuel, etc.) for the adaptation and resilience of past and present socio-ecological systems in drylands. I conduct research in South Asia, Europe, Near East, Africa and South America, covering a chronology that span from Early Neolithic to historic periods, with a special focus on South Asian Bronze Age and African late prehistory. I strongly believe in the importance of upholding Responsible Research and Innovation practices, by fully complying with the principles of ethical research, open access, civil society engagement and by incorporating a gender perspective to my work.

Selected publications

- D'Agostini F, Ruiz-Pérez J, **Madella M**, Vadez V, Kholova J & **Lancelotti C** 2023, 'Phytoliths as indicators of plant water availability: The case of millets cultivation in the Indus Valley civilization', *Review of Palaeobotany and Palynology,* vol. 309, pp 104783
- Ruiz-Giralt A, Biagetti S, Madella M & **Lancelotti C** 2023, 'Small-scale farming in drylands: New models for resilient practices of millet and sorghum cultivation', *Plos One*, 18, 2, e0268120.
- Kerfant C, Ruiz-Pérez J, García-Granero JJ, **Lancelotti C**, Madella M & Karoune E 2023, 'A dataset for assessing phytolith data for implementation of the FAIR data principles', *Scientific Data* 10, 479.
- Varalli A, D'Agostini F, **Madella M**, Fiorentino G & **Lancelotti C** 2023, 'Charring effects on stable carbon and nitrogen isotope values on C4 plants: Inferences for archaeological investigations', *Journal Of Archaeological Science*, 156, 105821.
- Ruiz-Giralt A, Nixon-Darcus L, D'Andrea A.C., Meresa Y, Biagetti S & **Lancelotti C** 2023, 'On the verge of domestication: Early use of C4 plants in the Horn of Africa', *Proceedings of the National Academy of Science*, vol. 120, n. 27 e2300166120.

Selected research activities

In 2023 I received the Accreditation as **Full Professor** by the Catalan University Quality Assurance Agency, AQU Catalunya.

I was co-PI of two research projects, one funded by MINECO and one by the EOSCL-Life consortium. I organised two international scientific seminars and delivered 4 keynote and invited talks in international conferences and seminars.

Two of the PhD candidates I supervised successfully passed their viva, obtaining the qualification *cum laude* and the international mention.

At the end of 2023 I was invited to become part of the editorial board of the Journal *Cambridge Prisms: Drylands*, published by Cambridge University Press.

ICREA**MEMOIR2023**

Evelina Leivada
Universitat Autònoma de Barcelona (UAB)
Humanities

Evelina Leivada is an ICREA Research Professor at Universitat Autònoma de Barcelona. Her focus is on language variation and bilingual development. She got her PhD in Cognitive Science and Language from Universitat de Barcelona in 2015. In 2017-2019, she was a Marie Skłodowska-Curie Postdoctoral Fellow at UiT-The Arctic University of Norway. Funded by the European Commission, she developed the project '*Disentangling Variation*', which examined how variation in the linguistic input affects development in bilingual and bidialectal populations. In 2020, she joined Universitat Rovira i Virgili as a Ramón y Cajal Senior Research Fellow, working on grammar processing in different groups of bilinguals. Among her recent achievements, her selection in the Aurora Outstanding Program (Tromsø Research Foundation & UiT) stands out. This initiative is available to the most outstanding young scholars in each discipline and trains them to become research leaders in their respective fields.

Research interests

Evelina is a psycholinguist. Her research brings together both the cognitive and the sociolinguistic aspects of the ability to acquire and use language through investigating of the effects of developmental trajectory on language and cognition. She specializes in bilingual development. More broadly, her research interests include language variation and how this affects the process of development, language acquisition in monolingual, bilingual, and bidialectal contexts, and theoretical linguistics. Supporting an interdisciplinary approach to language, Evelina is Associate Editor for Psycholinguistics in the Diamond Open Access journal *Biolinguistics*.

Selected publications

– Dentella V, Günther F & **Leivada E** 2023, 'Systematic testing of three Language Models reveals low language accuracy, absence of response stability, and a yes- response bias', *PNAS*, 120, 230958312.

– Mitrofanova N, **Leivada E &** Westergaard M 2023, 'Crosslinguistic influence in L3 acquisition Evidence from artificial language learning', *Linguistic approaches to bilingualism*, 13 – 5 – 717 – 742.

– **Leivada E** 2023 'A Classification Bias and an Exclusion Bias Jointly Overinflated the Estimation of Publication Biases in Bilingualism Research'. *Behav. Sci. 13*, 812.

– **Leivada E**, Rodríguez-Ordóñez I, Parafita Couto M C & Perpiñán S 2023, 'Bilingualism with minority languages: Why searching for unicorn language users does not move us forward'. *Applied Psycholinguistics*, 1–16. Cambridge University Press. PII S0142716423000036.

ICREA**MEMOIR2023**

Maciej Andrzej Lewenstein
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

Maciej Lewenstein (Warsaw 1955) joined the Centre for Theoretical Physics of the Polish Academy of Sciences in Warsaw in 1980, did Ph.D. in Essen in 1983 with Fritz Haake and habilitated in 1986 in Warsaw. Postdocs at Universität Essen and at Harvard University with Roy J. Glauber (Nobel 2005), a faculty member of CEA in Saclay (1995-1998), and of the Leibniz University Hannover (1998-2005). In 2005 he moved to Catalonia as ICREA Research Professor to lead the quantum optics theory at the Institut de Ciències Fotòniques in Castelldefels. His interests include quantum optics, quantum physics, quantum information, many-body theory, attosecond science, and statistical physics. His other passion is jazz and avant-garde music – he is an acclaimed jazz writer and critic. At ICFO Maciej Lewenstein leads a 35 people team working on the mentioned subjects.

Research interests

Lewenstein's research interests are extremely diverse. He works on and contributes successfully to different branches of physics and other sciences. On one side he deals with purely mathematical questions related to foundations of physics, such as the nature of correlations in quantum systems. On the other extreme, Lewenstein has worked on models of human cognition and human voting behavior. Recently his interests mainly focus on quantum many body physics, quantum information theory, quantum optics, atomic physics, atto-nanophysics, quantum simulators, quantum open systems, statistical physics, Brownian motion theory and its applications to quantum physics, nano- and bio-photonics, applications of theoretical quantum chemistry to quantum many body physics, or machine learning for theoretical physics.

Selected publications

- Bhattacharya U, Lamprou T, Maxwell AS, et al. 2023, 'Strong-laser-field physics, non-classical light states and quantum information science', *Reports On Progress In Physics*, 86, 9, 094401.
- Frerot I, Fadel M & **Lewenstein M** 2023, 'Probing quantum correlations in many-body systems: a review of scalable methods', *Reports On Progress In Physics*, 86, 11, 114001.
- Requena B, Masó-Orriols S, Bertran J, **Lewenstein M**, Manzo C, Muñoz-Gil G 2023, 'Inferring pointwise diffusion properties of single trajectories with deep learning', *Biophysical journal*, 122 - 22 - 4360 - 4369.
- Stammer P, Rivera-Dean J, Maxwell A, Lamprou T, Ordonez A, Ciappina MF, Tzallas P & **Lewenstein M** 2023, 'Quantum Electrodynamics of Intense Laser-Matter Interactions: A Tool for Quantum State Engineering', *Prx Quantum*, 4, 1, 010201.
- Jalalimola Z, Grass T, Kasper V, **Lewenstein M** & Bhattacharya U 2023, 'Topological Bogoliubov quasiparticles from Bose-Einstein condensate in a flat band systems', *Phys. Rev. Lett.*, 131, 226601.
- Sierant P, Schirò M, **Lewenstein M** & Turkeshi X 2023, 'Entanglement Growth and Minimal Membranes in (d+1) Random Unitary Circuits', *Physical Review Letters*, 131, 22660.
- Fraxanet J, Dauphin A, Lewenstein M, Barbiero L & González-Cuadra D 2023, 'Higher-order topological Peierls insulator in a two-dimensional atom-cavity system', *Phys. Rev. Lett.*, 131, 263001.

ICREA**MEMOIR2023**

Julio Lloret Fillol
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

Dr. Julio Lloret-Fillol graduated in Chemistry from the Universidad de Valencia in 2001 where he also obtained his PhD in 2006, working under the supervision of Prof. P. Lahuerta and Prof. J. Pérez-Prieto. After his PhD he moved to the University of Heidelberg to the group of Prof. L. H. Gade as a postdoctoral MEyC fellow and postdoctoral Marie Curie fellow. Since 2010, he has worked as an independent research leader at Universitat de Girona (Ramón y Cajal program). In 2014, he obtained a position as Young Research Group Leader at the Institut de Química Computacional i Catàlisi (UdG). In November 2014, he moved to the Institute of Chemical Research of Catalonia (ICIQ) as a junior group leader and in 2020 he was promoted to his current position of Senior group leader. From his reach activities, two spin-offs have been funded Treellum Technologies (July 2020) and Jolt Solutions (April 2022).

Research interests

My research mainly focuses on designing new catalysts for more sustainable chemistry using artificial photosynthetic schemes (APS) (ERC Consolidator Grant). Although artificial photosynthetic schemes are a potential solution for a future sustainable society, basic science still needs to be done to achieve this objective. Accordingly, my research dream is to address the production of fine chemicals using solely CO_2, water and light as driving force. To this end, we are working on developing new methodologies to employ light as a driving force to produce reductive organic transformation and in the understanding of one of the most important reactions on the earth, water oxidation, identified as one of the bottlenecks for the production of solar fuels. Mechanistic investigations will aid in understanding multi-proton multi-electron transformations. These research areas can open new avenues for newer and greener synthetic methods.

Selected publications

- Fernandez S, Franco F, Belmonte MM, Friães S, Royo B, Luis J M, **Lloret-Fillol J.** 2023, 'Decoding the CO_2 Reduction Mechanism of a Highly Active Organometallic Manganese Electrocatalyst: Direct Observation of a Hydride Intermediate and Its Implications', *Acs Catalysis*, 13, 15, 10375 - 10385.
- Gutierrez L, Martin-Diaconescu V, Casadevall C, Oropeza F, de la Peña O'Shea VA, Meng JJ, Ortuno MA & **Lloret-Fillol J** 2023, 'Low Oxidation State Cobalt Center Stabilized by a Covalent Organic Framework to Promote Hydroboration of Olefins', *Acs Catalysis*, 13, 5, 3044 - 3054.
- Vieira F, Ledeuil JB, Foix D, et al. 2023, 'Narrow band gap cuprous/cupric oxide thin films prepared via sol-gel methods for the electrochemical reduction of CO_2', *Solid State Sciences*, 143, 107276.
- Moneo-Corcuera A, Nieto-Castro D, Cirera J, Gómez V, Sanjosé-Orduna J, Casadevall C, Molnár G, Bousseksou A, Parella T, Martínez-Agudo JM, **Lloret-Fillol J**, Pérez-Temprano MH, Ruiz E, **Galán-Mascarós JR** 2023, 'Molecular memory near room temperature in an iron polyanionic complex', *Chem*, 9, 2, 377-393.

Selected research activities

Selected Meetings, Congresses and Invited Lectures
- Frontiers in chemistry seminars, University of Padova (Italy)
- Cambridge University, Yusuf Hamied Department of Chemistry (UK)
- XLI GEQO Meeting of the RSEQ (Spain)
- Rennes Institute of Chemical Sciences, (France)
- GEQO – School of Photochemistry, Valladolid, Spain

Technology Transfer
- Chief Scientist Officer of Treellum Technologies
- Chief Scientist of Jolt Solutions

Awards, Recognitions and Prices
- Fellow of the Royal Society of Chemistry, since 2023
- RSEQ - GEQO Award on Excellence GEQO Award for Research Excellence.
- Advisory Board of Chemical Science

ICREAMEMOIR2023

Josep M Llovet Bayer

Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()

Life & Medical Sciences

Josep M Llovet, MD, PhD is ICREA Research Prof at IDIBAPS-Hospital Clínic and Full Prof of Medicine-Hepatic Oncology at the Univ.Barcelona. Full Professor of Medicine and Director of the Liver Cancer Program at Icahn School of Medicine at Mount Sinai (New York). He has published 359 manuscripts (scopus citations:112,377; h-index:134; IF:8,590). Top 1% most cited researcher globally by Clarivate Analytics (2014-23), and world most cited investigator in liver cancer. Major achievements: a) Defining molecular and immune classes of hepatocellular carcinoma (HCC) and cholangiocarcinoma (CCA), b) discovery of drivers as therapeutic targets in liver cancer, and c) Establishing standard therapies for HCC, such as sorafenib, regorafenib, ramucirumab and chemoembolization. He is Editor-in-Chief of J HEP Reports, Founder and President of ILCA (2006-13), delivered > 700 lectures, and PI of ~100 competitive grants [coordinator of 2 European FP7 & Horizon Europe grants and 2 NIH-RO1].

Research interests

Prof Josep M. Llovet research has been focused on clinical and translational studies in liver cancer for the last 30 years. He is leading international randomized trials on immunotherapies and European and international consortiums for liver cancer research assessing molecular mechanism of response to immunotherapies. His main areas of interest are a) characterize the human atlas of immune populations in liver cancer b) identify mechanisms and biomarkers predicting response and resistance to checkpoint inhibitors for hepatocellular carcinoma (HCC) through single-cell data and spatial transcriptomics, NGS and artificial intelligence; c) translate oncogenic drivers discoveries as targeted therapies in liver cancer, d) exploring the role of liver microbiome in the pathogenesis of HCC. e) identification of drugs which, when combined, have synergistic effects; f) improving knowledge about the mechanisms involved in the origin, progression and dissemination of MASH-HCC

Selected publications

- Montironi C, Castet F, Haber P....**Llovet JM.** 2023 'Inflamed and non-inflamed classes of HCC: a revised immunogenomic classification' , *Gut*. 72:129-140.

- Haber PK, Castet F, Torres-Martin M ... **Llovet JM**. 2023, 'Molecular Markers of Response to Anti-PD1 Therapy in Advanced Hepatocellular Carcinoma', *Gastroenterology*, 164:72-88

- Singal AG, Kanwal F & **Llovet JM** 2023, 'Global trends in hepatocellular carcinoma epidemiology: implications for screening, prevention and therapy', *Nature Reviews Clinical Oncology*, 20:864-884.

- **Llovet JM**, Willoughby CE, Singal AG, Greten TF, Heikenwälder M, El-Serag HB, Finn RS & Friedman SL. 2023, 'Nonalcoholic steatohepatitis-related hepatocellular carcinoma: pathogenesis and treatment', *Nature Reviews Gastroenterology & Hepatology*, 20:487-503

- Singal, AG, **Llovet JM**, Yarchoan M et al. 2023, 'AASLD Practice Guidance on prevention, diagnosis, and treatment of hepatocellular carcinoma' *Hepatology*, 78:1922-1965.

ICREA**MEMOIR2023**

Jorge Lobo
Universitat Pompeu Fabra (UPF)
Engineering Sciences

I am an ICREA Research Professor in the Department of Information and Communication Technologies at UPF, and a Visiting Professor at Imperial College (London) Dept. of Computing. After receiving a PhD in Computer Science from University of Maryland (1990), I took a faculty position at the University of Illinois in Chicago, where I obtained tenure (1997). In 1998 I was invited to join Bell Labs' newly-formed Network Computing group, to help them integrate my work on rule system as logic program (then purely theoretic) into applications in the burgeoning field of soft-switches. The fruitful endeavor (Lucent NetMon, 2000) served to expand my interest in basic research to its real-world applications, and in 2001 I became Principal Architect at Teltier Technologies, a start-up company founded by researchers from Bell Labs (now part of Cisco Systems). I returned to full time research as Staff Member at IBM TJ Watson lab (2004-14), and in 2009 became an ACM Distinguished Scientist.

Research interests

My early work in formal logic has been the basis of all my research, which is at the interface of theory and practice in computer science. Broadly, my goal is to automate the complex task of managing distributed systems (eg, networks of computers) in ways that have a solid theoretical foundation (rather than by ad-hoc means). Central to this effort is the concept of policies: collections of rules controlling the system's behavior (eg, who can access private data). A major challenge is that amassing rules leads to conflicts (in access control, scheduling tasks, etc). My work has shown that the semantics of policies, as well as potential conflicts, can be defined axiomatically using disjunctive logic programs. Beyond conflict detection, the logic programming formulation provides a computational framework for conflict resolution, policy analysis and verification. Recent work focuses on how rules can be learned from examples (ie, inferred) using inductive logic programming techniques.

Selected publications

- Cunnington, D., Law, M., **Lobo, J.** *et al.* FFNSL: Feed-Forward Neural-Symbolic Learner. *Mach Learn* **112**, 515–569 (2023).
- Abu Jabal A, Bertino E, **Lobo J**, et al. 2023, 'FLAP - A Federated Learning Framework for Attribute-based Access Control Policies', in *Proceedings of the Thirteenth ACM Conference on Data and Application Security and Privacy (CODASPY '23)*. Association for Computing Machinery, New York, NY, USA, 263–272.
- Cunnington D, Law M **Lobo J** & Russo A 2023, 'Neuro-symbolic learning of answer set programs from raw data', in *Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence,* 3586-3596.

Selected research activities

Steering Committee Chair, The ACM Symposium Series on Access Control Models and Technologies (SACMAT).

Visiting Professor, Imperial College London (Honorary).

ICREA**MEMOIR2023**

Núria López-Bigas
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Núria López-Bigas has a PhD in Biology from the University of Barcelona and has expertise in Medical Genetics and in Computational Biology and Bioinformatics. During her PhD work, she studied the molecular causes of hereditary deafness at the group of Xavier Estivill. Next she moved to the European Bioinformatics Institute in Hinxton (Cambridge, UK) to work on Computational Genomics at the group of Christos A. Ouzounis and then at the Center for Regulatory Genomics (Barcelona) at the group of Roderic Guigó. Núria joined the Pompeu Fabra University in April 2006 with a Ramón y Cajal Position, was appointed ICREA Research Professor in October 2011 and her lab moved to Institute for Research in Biomedicine in November 2016. She leads the Biomedical Genomics Research Group (http://bbglab.irbbarcelona.org).

Research interests

Núria López-Bigas research is focused on the study of cancer from a genomics perspective. She is particularly interested in the identification of cancer driver mutations, genes and pathways across tumor types and in understanding the mutational processes leading to accumulation of mutations in tumors. Among the most important achievements obtained by Lopez-Bigas' lab are the development of pioneer methods to identify driver genes (Oncodrive methods), the creation a compendium of cancer genes across cancer types: IntOGen (http://www.intogen.org), the discovery that protein-bound DNA impairs nucleotide excision repair (Radhakrishnan et al., 2016), the finding that exons have reduced mutation rate due to differential mismatch repair (Frigola et al., 2017), the discovery that nucleosome covered DNA shows a 10 bp periodicity on the rate of somatic and germline mutations (Pich et al., 2018), the identification of the mutational footprints of cancer therapies (Pich et al., 2019), the study of the evolution of relapse of adult T cell acute lymphoblastic leukemia (Sentis et al., 2020), and the development of machine learning models to identify driver mutations in cancer genes (Muiños, Martinez-Jimenez et al 2021).

Selected publications

- Arnedo-Pac C, Muiños F, Gonzalez-Perez A & **López-Bigas N** 2023, 'Hotspot propensity across mutational processes', *Mol Syst Biol*, 20: 6 - 27.
- Gonzalez S, **Lopez-Bigas N** & Gonzalez-Perez A 2023, 'Copy number footprints of platinum-based anticancer therapies', *Plos Genetics*, 19, 2, e1010634.
- Mangiante L, Alcala N, Sexton-Oates A, et al. 2023, 'Multiomic analysis of malignant pleural mesothelioma identifies molecular axes and specialized tumor profiles driving intertumor heterogeneity', *Nature Genetics*, 55, 4, 607-618.

- Abbas S, Pich O, Devonshire G, Zamani SA, Katz-Summercorn A, Killcoyne S, Cheah C, Nutzinger B, Grehan N, **Lopez-Bigas N** & Fitzgerald RC 2023, '
Mutational signature dynamics shaping the evolution of oesophageal adenocarcinoma',
Secrier M
*Nature Comm,*14, 4239.

Selected research activities

Coordinator of the EU Funded Project CGI-Clinics: Data-driven cancer genome interpretation for personalised cancer treatment. Horizon Europe HORIZON-HLTH-2021-CARE-05. 2022-2027. Co-leader of the CancerGrendChallenge funded project: PROMINENT: Discovering the molecular signatures of cancer PROMotion to INform prevENTion. Cancer GrandChallenges. Co-funded by CRUK, NIH and AECC.

ICREA**MEMOIR2023**

Dan López de Sa
Universitat de Barcelona (UB)
Humanities

I am ICREA Research Professor at the Departament de Filosofia of the Universitat de Barcelona. I did my PhD in Barcelona (visiting ANU for a short while). I was Arché Postdoc in St Andrews (2004-06), Fullbright-GenCat Postdoc at NYU (2006-07), ICREA Researcher (2007-12) and then RyC (2012-13). I have published papers in Analysis, Erkenntnis, Mind, Noûs, Philosophers' Imprint, Philosophical Studies, Proceedings of the Aristotelian Society, and Synthèse, among others.

Research interests

I work on matters issuing from words -vagueness, contextualism/relativism, rigidity- and issues where words don't really matter (much) -truthmaking, grounding, time, disagreement, values-. In between, I have an increasing interest in topics around gender, sex, and sexualities.

Selected publications

- Cepollaro B & **López de Sa D** 2023, 'The successes of reclamation', *Synthese*, vol. 202, no 205
- Horden J & **López de Sa D** 2023, 'Gender Essentilisms', *Feminist Philosophical Quarterly,* 9, 2.

ICREA**MEMOIR2023**

Rachel Lowe
Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)
Life & Medical Sciences

Rachel obtained a PhD in Mathematics at the University of Exeter in 2011. Her thesis focused on spatiotemporal modelling of dengue epidemics in Brazil. She held postdoctoral positions at the International Centre for Theoretical Physics in Italy and the Catalan Institute for Climate Sciences, working at the interface of climate prediction science and public health decision-making. In 2017 she was awarded a Royal Society Dorothy Hodgkin Fellowship, which allowed her to create the Planetary Health & Infectious Diseases Lab at the London School of Hygiene & Tropical Medicine (LSHTM). Rachel now leads the Earth Sciences – Global Health Resilience group at the Barcelona Supercomputing Center (BSC). She is also the Director of the Lancet Countdown in Europe, a transdisciplinary collaboration tracking progress on health and climate change.

Research interests

Rachel's research involves modelling the impact of environmental change on infectious disease epidemics, to inform disease control and prevention strategies. She has published high impact research on modelling climate-sensitive disease risk, with a focus on integrating seasonal climate forecasts in dengue early warning systems in Latin America, the Caribbean and Southeast Asia. Her group works on diverse projects including disentangling the role of land-use change and socio-economic pressures on malaria resurgence in the Amazon, modelling zoonotic disease risk at the human-animal-environment interface, and understanding the role of climate, cities and spatial connectivity on dengue transmission regimes. In 2018, she won the International Society for Neglected Tropical Diseases (ISNTD) Water Award for Research, in recognition of the quality of her research on the linkages between hydrometeorological extremes and dengue outbreaks and the multi-sectoral relevance for policy and practice.

Selected publications

- Gibb R, et al. 2023, 'Interactions between climate change, urban infrastructure and mobility are driving dengue emergence in Vietnam' *Nature Communications,* 14, 8179.
- Vega MS, **Lowe R**, Anselin L, Desai V, Vaishnav KG, Naik A & Pascual M 2023, 'Quantifying climatic and socioeconomic drivers of urban malaria in Surat, India: a statistical spatiotemporal modelling study', *Lancet planetary health*, 7 - 12.
- Rocklöv J, Semenza JC, Dasgupta S, et al. 2023, 'Decision-support tools to build climate resilience against emerging infectious diseases in Europe and beyond', *Lancet Regional Health-europe*, 32, 100701.

- Colón-González FJ, Gibb R, Khan K, Watts A, **Lowe R** & Brady OJ 2023, 'Projecting the future incidence and burden of dengue in Southeast Asia', *Nature Communications*, 14, 1, 5439-5439.

- Lotto Batista M, Rees EM, Gómez A, et al. 2023, 'Towards a leptospirosis early warning system in northeastern Argentina', *Journal Of The Royal Society Interface*, 20, 202, 20230069
- Ryan SJ, Lippi CA, Caplan T, et al. 2023, 'The current landscape of software tools for the climate- sensitive infectious disease modelling community', *Lancet Planetary Health*, 7, 6, E527 - E536.

Selected research activities

- Member of the World Meteorological Organization Steering Group for Sub-seasonal Applications for Agriculture and Environment (SAGE) project of the World Weather Research Programme (WWRP)
- Commissioner for the Lancet Commission for Strengthening the Use of Epidemiological Modelling of Emerging and Pandemic Infectious Diseases.
- Director of the Lancet Countdown in Europe
- Principal Investigator of Wellcome Trust digital technology awards for climate-sensitive infectious diseases: HARMONIZE and IDExtremes

ICREA**MEMOIR2023**

Gábor Lugosi
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Gábor Lugosi received his PhD from the Hungarian Academy of Sciences in 1991 in electrical engineering. Since September 1996, he has been at the Department of Economics, Pompeu Fabra University. He became ICREA Research Professor in 2006.

Research interests

Gábor Lugosi has mostly worked on the mathematics of machine learning, probability, mathematical statistics, information theory, and game theory. His research has been motivated by applications in telecommunications and computer science and also by game-theoretic learning. Recently he has mostly worked on high-dimensional problems in statistics, random graphs, "on-line" learning and sequential optimization, and inequalities in probability theory.

Selected publications

- **Lugosi G**, Pike-Burke C& Savalle PA 2023, 'Bandit problems with fidelity rewards', *Journal of machine learning research*, $(328):1-44$, 2023.
- Briend S, Cavillo F & **Lugosi G** 2023, 'Archaeology of random recursive dags and Cooper-Frieze random networks', *Combinatorics, Probability and Computing*, 32:6, 859-873, 2023.

- Khaleghi A & **Lugosi G** 2023, 'Inferring the mixing properties of a stationary ergodic process from a single path', *IEEE Transactions on Information Theory*, 69:6, 4014-4026.

Selected research activities

Gábor Lugosi is co-editor of the journal Mathematical Statistics and Learning and associate editor of the journals Electronic Journal of Probability, Electronic Communications of Probability, Probability Theory and Related Fields, Journal of Machine Learning Research, TEST, ESAIM: Probability and Statistics.

In 2023 he was elected to be a member of the Institute of Mathematical Statistics Council.

He was plenary lecturer at the IMS International Conference on Statistics and Data Science and he gave invited talks at Queens University, where he gave the Lorne Campbell Colloquium, University of Vienna, IMPA (Rio de Janeiro), University of Toronto, Mohamed bin Zayed University of Artificial Intelligence, University of Copenhagen, and University of Zagreb.

ICREA**MEMOIR2023**

María Macías

Institut de Recerca Biomèdica (IRB Barcelona)

Life & Medical Sciences

Since 2002 at the IRB Barcelona working in the Mechanisms of Disease Programme as GL of the Structural Characterization of Macromolecular Assemblies group. Past positions: 1998- 2002, Staff Scientist at the EMBL (Structural Biology) Heidelberg, Germany 1993-1998 Post Doctoral position at the EMBL (Structural Biology) Heidelberg, Germany in the group of Prof. Dr. H. Oschkinat 1993-PhD Degree: PhD in Organic Chemistry, Salamanca University (Spain), supervised by Prof. M. Grande Research Fields: Structural Biology, NMR, X-ray crystallography, Computational Biology, Signaling Current Research: Structural determination of protein complexes involved in splicing, transcription and signaling. Protein folding and stability. Relapse prediction of endometrial cancers using artificial intelligence.

Research interests

Our research aims at deciphering the mechanisms that correlate cell signaling with gene expression using high resolution structural biology. We also aim at discovering how these mechanisms are regulated, and their consequent implications in human diseases. Our work has been focused on the family of transcription factors Smads, where we have discovered a mechanism that labels these key components of the TGFb pathway first for activation and then for degradation. Using NMR and X-ray crystallography we are currently characterizing the interactions of Smads and cofactors with DNA promoters, to provide a first understanding of how these molecular machines work and to pave the basis for the design of small molecular inhibitors specifically targeted towards tumor-derived SMAD forms. We also aim to determine the probability of relapse and metastasis of gynecological cancer patients combining information from data obtained from biopsis and genomic data deposited in databases.

Selected publications

- Characterization of p38α autophosphorylation inhibitors that target the non-canonical activation pathway', *Nature Communications,* 14, 1, 3318.
- Pous J, Baginski B, Martin-Malpartida P, et al. 2023, Structural basis of a redox-dependent conformational switch that regulates the stress kinase p38α, *Nature Communications*,14, 7920.

Selected research activities

-Invited presentation at the DRIVE final project meeting in Berlin (EU-OPENSCREEN) on driving innovation in drug discovery.

-2 Invited presentations to the general public on topics related to equity and diversity and the Sustainable Development Goals, and presenting the results of our CALIPER project Linking Research and Innovation for Gender Equality.

-La Marató de TV3, visits to our laboratory.

ICREA**MEMOIR2023**

Marco Madella
Universitat Pompeu Fabra (UPF)
Humanities

I am ICREA Research Professor at the Department of Humanities, Universitat Pompeu Fabra, where I coordinate the Culture, Archaeology and Socio-Ecological Dynamics research group and the newly established UPF Centre for Digital Humanities. I hold honorary professorships in the School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand, South Africa and the Center for Archaeology, Heritage & Museum Studies, Shiv Nadar University, India. I have been an ICREA at the IMF-CSIC Barcelona, Affiliated Lecturer in the Department of Archaeology and Director of Studies in Archaeology and Anthropology at St. Edmund's College (University of Cambridge) as well as visiting professor at University of Sheffield, Research Institute for Humanity and Nature (Japan) and J Nehru University (India). Over the last twenty years I have been awarded several international grants from the EU and Spanish/Catalan governments as well as BBVA, Palarq and Arcadia foundations.

Research interests

My background is in archaeobotany and environmental archaeology, and I am interested in understanding the socio-ecological dynamics of past human populations in extreme environments such as hyper-humid and arid/semi-arid. My interests span from past vegetation histories and land use, the modelling and simulation of processes in human behavioural change, people-plants co-evolutionary dynamics, long term trajectories of biodiversity and sustainability in prehistoric societies, and the origin and resilience of agriculture. My work in plant remains and simulation of human behaviour is playing a key role in developing such lines of investigation. A new research avenue that I have been developing during the last few years is that of identifying, monitoring and protecting heritage using remote sensing and modeling approaches. Key areas for my work are South and West Asia, and South America. I have been carrying out fieldwork in Pakistan, India, Iran, Turkey, Brazil.

Selected publications

- D'Agostini F, Ruiz-Perez J, **Madella M**, Vadez V, Kholova J & **Lancelotti C** 2023, 'Phytoliths as indicators of plant water availability: The case of millets cultivation in the Indus Valley civilization', *Review of Palaeobotany and Palynology* 309, 104783
- Gadekar C, Garcia-Granero JJ, **Madella M**, **Lancelotti C**, Veesar GM, Abro TA, Chandio MA & Zurro D 2023, 'Phytoliths and lithics: An alliance of convenience? Performing first comprehensive residue analysis for the artefacts of the Indus Civilisation', *Journal of Archaeological Science Reports*, 52, 104254.
- Ruiz-Giralt A, Biagetti S, **Madella M** & Lancelotti C 2023, 'Small-scale farming in drylands: New models for resilient practices of millet and sorghum cultivation', *Plos One*, 18, 2, e0268120.
- Kerfant C, Ruiz-Pérez J, García-Granero JJ, **Lancelotti C, Madella M** & Karoune E 2023, 'A dataset for assessing phytolith data for implementation of the FAIR data principles', *Sci Data*, 10, 479.
- Lindmaë M & **Madella M** 2023, 'La Boqueria, "the mirror of what Barcelona represents": An analysis of public policy and the commodification of food markets', in van Melik R & Sezer C (eds) *Marketplaces - Movements, Representations and Practices*, Routledge, Oxon, 63-75.
- Varalli A, D'Agostini F, **Madella M**, Fiorentino G & Lancelotti C 2023, 'Charring effects on stable carbon and nitrogen isotope values on C4 plants: Inferences for archaeological investigations', Journal Of Archaeological Science, 156, 105821.

Selected research activities

Director, UPF Centre for Digital Humanities

Visiting Professor, Shah Abdul Latif University (Pakistan) (Nov-Dec 23)

Board of the Human and Environment Commission – International Association of Quaternary Studies INQUA

Representative for Iberian Peninsula, European Association of South Asian Archaeology and Art

PI, ModAgrO Project - Pakistan (funded by Palarq, Spanish Ministry of Science & Ministry of Culture)

PI, MAPHSA Project - South America (funded by Arcadia Fund)

ICREA**MEMOIR2023**

Vivek Malhotra

Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Vivek Malhotra is one of world's leaders on protein secretion and cellular compartmentation. His work is focused on how cellular compartments are made and communicate with each other, and how cells duplicate their compartments during cell division. He has been studying these processes since the late 80s and is acknowledge world wide for his creativity and novel findings. He obtained his Ph.D from Oxford and was a postdoc at Stanford University. He was a professor at University of California San Diego for 18 years. He joined the Centre for Genomic Regulation, Barcelona as a coordinator of the Cell and Developmental Biology Programme and ICREA Research Professor.

Research interests

We want to understand the mechanism by which eukaryotic cells model membranes to generate transport carriers based on their needs. For example, how bulky molecules such as the collagens are secreted, how mucins are secreted in a regulated manner, and how transport carriers form at the Golgi. Protein such as TANGO's, PIMS and PKD are helping us resolve this issue. We have uncovered a new pathway by which cells secrete proteins that cannot enter the ER-Golgi pathway of secretion. We hope this will help us understand the mechanism by which cells release various cytokines, growth and angiogenic factors in a signal dependent manner. Finally we are interested in the mechanism by which Golgi complex is built during repeated cycles of cell-division.

Selected publications

- Lujan AL, Foresti O, Sugden C, et al. 2023, 'Defects in lipid homeostasis reflect the function of TANGO2 in phospholipid and neutral lipid metabolism', *Elife*, 12, e85345.
- Raote I, Saxena S & **Malhotra V** 2023, 'Sorting and Export of Proteins at the Endoplasmic Reticulum', *Cold Spring Harbor Perspectives In Biology*, 15, 5, a041258.
- Wojnacki J, Lujan AL, Brouwers N, Aranda-Vallejo C, Bigliani G, Rodriguez MP, Foresti O, **Malhotra V** 2023, 'Tetraspanin-8 sequesters syntaxin-2 to control biphasic release propensity of mucin granules', *Nat Commun,* 14, 3710.
- Bunel L, Pincet L, **Malhotra, V**, Raote I & Pincet F 2023, 'A model for collagen secretion by inter compartmental continuities', *Proc Natl Acad Sci U S A,* 121,1, e2310404120.
- Lujan P, Garcia-Cabau C, Wakana Y, **Malhotra V**, Salvarella X, Garcia-Parajo M & Campelo F 2023, 'Sorting of secretory proteins at the trans-Golgi network by TGN46', *eLife*, Accepted on line.

ICREA**MEMOIR2023**

Marcos Malumbres
Vall d'Hebron Institut d'Oncologia (VHIO)
Life & Medical Sciences

Marcos Malumbres studied Biology at the Universidad de Navarra and obtained the PhD by the Universidad de León in 1993. He moved to the New York University Medical Center for posdoctoral training for 4 years and, in 1998, joined M. Barbacid's lab in the newly created Spanish National Cancer Research Centre (CNIO) in Madrid. He obtained a Staff Scientist position at the Consejo Superior de Investigaciones Científicas (CSIC) and was appointed senior group leader at CNIO in 2004. He moved to the Vall d'Hebron Institute of Oncology (VHIO) as director of the Systems Oncology Program and Cancer Cell Cycle group leader. Dr. Malumbres has authored more than 200 international articles including relevant contributions on the function of key cell cycle regulators and their relevance in cancer therapy. He was elected member of the European Molecular Biology Organization (EMBO) in 2016 and received the Gold Medal of the Spanish Association against cancer in 2019.

Research interests

Marcos' lab focuses on the mechanisms that control cell differentiation and proliferation and their implications in pathology. His group is interested in molecules that drive tumor cell proliferation and the therapeutic opportunities of inhibiting their activity in cancer. Past research in the last years contributed to the approval of inhibitors of cyclin-dependent kinases 4 and 6 (CDK4/6) in breast cancer therapy. Yet, these inhibitors are not efficient in other tumor types and understanding how cells drive the cell cycle in the absence of CDK4/6 activity is a major goal in his lab. Recent efforts in his lab also focus on therapeutic opportunities in genomically unstable tumors, as well as generating a platform of patient-derived samples in which genetics, biochemistry and single-cell studies can be combined to develop and test efficacious therapeutic strategies to be translated to the clinic.

Selected publications

– Sanz-Castillo B, Hurtado B, Vara-Ciruelos D, El Bakkali A, Hermida D, Salvador-Barbero B, Martínez-Alonso D, González-Martínez J, Santiveri C, Campos-Olivas R, Ximénez-Embún P, Muñoz J, Álvarez-Fernández M, **Malumbres M**. (2023) The MASTL/PP2A cell cycle kinase-phosphatase module restrains PI3K-Akt activity in an mTORC1-dependent manner. *EMBO J.* **42**, e110833.

– Dhital B, Santasusagna S, Kirthika P, Xu M, Li P, Carceles-Cordon M, Soni RK, Li Z, Hendrickson RC, Schiewer MJ, Kelly WK, Sternberg CN, Luo J, Lujambio A, Cordon-Cardo C, Alvarez-Fernandez M, **Malumbres M**, Huang H, Ertel A, Domingo-Domenech J & Rodriguez-Bravo V 2023, Harnessing transcriptionally driven chromosomal instability adaptation to target therapy-refractory lethal prostate cancer. *Cell Rep Med.* **4**, 100937.

– Mouron S, Bueno MJ, Muñoz M, Torres R, Rodríguez S, Apala JV, Silva J, Sánchez-Bayona R, Manso L, Guerra J, Rodriguez-Lajusticia L, Malon D, **Malumbres M,** Quintela-Fandino M. (2023) p27Kip1 V109G as a biomarker for CDK4/6 inhibitors indication in hormone receptor-positive breast cancer. *JNCI Cancer Spectr.* Feb 20:pkad014.

– Sayago C, Sánchez-Wandelmer J, García F, Hurtado B, Lafarga V, Prieto P, Zarzuela E, Ximénez-Embún P, Ortega S, Megías D, Fernández-Capetillo O, **Malumbres M** & Munoz J 2023, 'Decoding protein methylation function with thermal stability analysis'. *Nat. Commun*. 25;14(1):3016.

– Martínez-Illescas NG, Leal S, González P, Graña-Castro O, Muñoz-Oliveira JJ, Cortés-Peña A, Gómez-Gil M, Vega Z, Neva V, Romero A, Quintela-Fandino M, Ciruelos E, Sanz C, Aragón S, Sotolongo L, Jiménez S, Caleiras E, Mulero F, Sánchez C*, **Malumbres M*,** Salazar-Roa M*. (2023) miR-203 drives breast cancer cell differentiation. *Breast Cancer Res* **25**:91.

ICREA**MEMOIR2023**

Mervi Johanna Mantsinen
Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)
Engineering Sciences

I graduated in Technical Physics at Helsinki University of Technology (HUT), now Aalto University, Finland in 1992. I carried out my research in the Plasma Physics and Fusion Group of HUT until 1995 when I moved to the JET Joint European Torus, the largest tokamak in the world, located in the UK. At JET, I worked as Ion Cyclotron Resonance Frequency (ICRF) Physics Expert, Scientific Coordinator, Responsible Officer for several large modelling codes and Physicist in Charge as well as trained as Session Leader of JET experiments. My thesis for the degree of Doctor of Science in Technology at HUT in 1999 was based on my research at JET. In 2003 I became Deputy Leader of Task Force Heating and Current Drive at JET, with approx. 80 members at several research institutions across Europe. In 2006 I joined the ICRF group of the ASDEX Upgrade tokamak, Max-Planck-Institute for Plasma Physics, Germany and in October 2013 I was appointed ICREA Research Professor at BSC.

Research interests

My research is directed towards contributing to the development of nuclear fusion as a source of energy and, in particular, to the ITER project. ITER is an international nuclear fusion R&D project, which is building the world's largest experimental tokamak nuclear fusion reactor in France. ITER aims to demonstrate that fusion energy is scientifically and technologically feasible. My research is focused in the numerical modelling of experiments in magnetically confined fusion devices in preparation for ITER operation, working towards the objectives of the European fusion research programme EUROfusion for Horizon Europe in close collaboration with ITER, International Tokamak Physics Activity, EUROfusion and the Spanish national fusion laboratory CIEMAT. My overall objective is to enhance the modelling capabilities by code validation and optimization, with the ultimate goal of helping improve the performance of ITER and future fusion reactors.

Selected publications

– **Mantsinen M** J et al 2023, 'Experiments in high-performance JET plasmas in preparation of second harmonic ICRF heating of tritium in ITER' *Nucl. Fusion* 63 112015.
– Hobirk J et al 2023, The JET hybrid scenario in Deuterium, Tritium and Deuterium-Tritium, *Nucl. Fusion* 63 112001.
– Garcia J et al 2023. 'Modelling performed for predictions of fusion power in JET DTE2: overview and lessons learnt', *Nucl. Fusion*, 63, 11, 112003.
– Solano ER, et al. 2023, 'L-H transition studies in tritium and deuterium–tritium campaigns at JET with Be wall and W divertor', *Nuclear Fusion*, 63, 112011.
– Štancar Ž, et al. 2023, 'Overview of interpretive modelling of fusion performance in JET DTE2 discharges with TRANSP', *Nuclear Fusion*, 63, 126058.
– Rodrigues P et al. 2023 *Nucl. Fusion* 63 066011.
– Birkenmeier G *et al* 2023 *Plasma Phys. Contr. Fusion* 65 054001.
– Jacquet P, et al. 2023, 'ICRH operations and experiments during the JET-ILW tritium and DTE2 campaigns', *AIP Conference Proceedings*, 2984, 030003.
– Bilato A *et al. 2023,* 'Impact of ICRF fast-ions on core turbulance and MHD activity in ASDEX upgrade', *AIP Conf.* 2984, 030010.
– Kazakov YeO et al. 2023, 'Progress with applications of three-ion ICRF scenarious for fusion research', *AIP Conf. Proc.,* 2984, 020001

Selected research activities

-Fusion Group Leader at BSC (fusion.bsc.es)
-PI EUROfusion Advanced Computing Hub CIEMAT-BSC (2021-2025, 2M€)
-Scientific Coordinator of EUROfusion experiment "2nd harmonic heating of T in DT plasmas in preparation for ITER" on JET
-Member of the EPS Plasma Physics Division Board
-Organizer of 4th Fusion HPC workshop, online event, 2023
-Supervisor of one PhD student and one MSc student (UPC)
-European expert for the IFERC Project Committee of Broader Approach between Europe and Japan
-Member of EUROfusion Allocation Committee for Marconi-Fusion
-Expert evaluator for Chalmers University (Sweden) and Max-Planck Institute for Plasma Physics (Germany)
-Reviewer for U.S. Department of Energy and the Luxembourg national research fund (FNR)

ICREA**MEMOIR2023**

Albert Marcet Torrens

Centre de Recerca en Economia Internacional (CREI)

Social & Behavioural Sciences

* PhD in Economics U. of Minnesota, 1987 * Assistant professor, Carnegie Mellon University, 1986-1991 * Full Professor, Universitat Pompeu Fabra, 1990-2004 * Research Professor, IAE-CSIC, 2004-2009 * Full Professor, London School of Economics, 2009-2011, Full Professor, University College London, Jan 2019-Sept 2020

Research interests

RECURSIVE CONTRACTS many models in social sci. involve dynamic optimization with forward-looking constraints (, e.g., policy analysis or contracts). These are not amenable to a standard Bellman equation treatment. We propose a new way of formulating recursively these dynamic optimization problems. Our approach has a very wide range of applications. ASSET PRICES AND LEARNING Asset prices show huge fluctuations over time that are hard to reconcile with actual fundamentals. We study agents that behave rationally and have an empirically plausible model of asset prices to explain asset behavior. DEBT MANAGEMENT recent debt crisis highlight the importance of bond portfolios issued by governments (debt management). We analyze the optimal combination of bond maturities that should be issued over the business cycle. FISCAL POLICY: this is a main them in macroeconomics, we use the above tools to study fiscal pollicy, speciallly with heterogeneous agents.

Selected publications

- Greulich K, Laczo S & **Marcet A** 2023, 'Pareto-Improving Optimal Capital and Labor Taxes', *Journal of Political Economy*, 131, 7.

ICREA**MEMOIR2023**

Ivan Markovsky
Centre Internacional de Mètodes Numèrics a Enginyeria (CIMNE)
Engineering Sciences

Ivan Markovsky is an ICREA research professor at the International Centre for Numerical Methods in Engineering (CIMNE). His background is in electrical engineering with a PhD from the Katholieke Universiteit Leuven, Belgium, in 2005. From 2006 to 2012 he lectured and did research at the School of Electronics and Computer Science of the University of Southampton, U.K. He continued his academic career with a 10-years research professor mandate 2012-2022 at the Electrical Engineering Department of the Vrije Universiteit Brussel, Belgium. After a 3-month visiting professor position at the Automatic Control Laboratory (IfA) of the ETH Zurich, Switzerland, he moved in 2023 to CIMNE. His expertise is in structured low-rank approximation, system identification, and data-driven control. On these topics he has 110 peer-reviewed papers, 11 book chapters, and 2 monographs.
In 2011, he was awarded an ERC starting grant on the topic of structured low-rank approximation.

Research interests

The objective of my research is unsupervised data-driven analysis and design of dynamical systems. The classical paradigm splits the problem into model identification and model-based design. In general, there is no separation principle for modeling and design, so that the two-stage approach may be suboptimal. I am investigating an alternative direct data-driven paradigm that combines modeling and design into one joint problem. In 2010, I proposed a solution approach for data-driven design based on structured low-rank approximation (ERC starting grant). More recently, I investigated convex relaxation, subspace, and regularization methods. Current topics of interest are data-driven methods for nonlinear, time-varying, and distributed systems. Besides data-driven design, I am interested in methods for teaching and learning that are effective in training critical thinking and creativity. I am an advocate of the open peer review as an alternative to the traditional closed review system.

Selected publications

– **Markovsky I**, Huang L & Dörfler F 2023, 'Data-driven control based on behavioral approach: From theory to applications in power systems', *IEEE Control Systems Magazine*, 43, 28-68.
– **Markovsky I** & Dorfler F 2023, 'Identifiability in the Behavioral Setting', *Ieee Transactions On Automatic Control*, 68, 3, 1667 – 1677.
– **Markovsky I**, Prieto-Araujo E & Doerfler F 2023, 'On the persistency of excitation', *Automatica*, 147, 110657.
– Dorfler F, Coulson J & **Markovsky I** 2023, 'Bridging Direct and Indirect Data-Driven Control Formulations via Regularizations and Relaxations', *Ieee Transactions On Automatic Control*, 68, 2, 883 – 897.
– **Markovsky I** 2023, 'Data-Driven Simulation of Generalized Bilinear Systems via Linear Time-Invariant Embedding', *Ieee Transactions On Automatic Control*, 68, 2, 1101 – 1106.
– Fazzi A & **Markovsky I** 2023 'Distance problems in the behavioral setting', *European journal of control*, 74.

Selected research activities

– Invited talk "Behavioral approach to system identification and data-driven signal processing" given at the Seminar Series on Optimization, Learning and Control, Laboratoire d'Automatique, EPFL, Switzerland, 10 March.
– Invited talk "Direct data-driven analysis, signal processing, and control" given at the Kolloquium Technische Kybernetik, University of Stuttgart, Germany, 6 June.
– Research visit for collaboration with Florian Dörfler and his group on a joint project "From model-based to data-driven design: Signal processing and control of noisy nonlinear systems", IfA lab of ETH-Zurich, Switzerland, 1-31 August.
– Invited talk "Optimization problems in data-driven control" given at the Optimization days workshop, University of Southampton, 28 September.
– Talk "System theory without state-space and transfer functions? Yes, it's possible!" given at STADIUS group, K.U.Leuven, Belgium, 4 December.

ICREA**MEMOIR2023**

Tomàs Marquès Bonet
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

Dr. Marquès-Bonet is the Principal Investigator of the group "Comparative Genomics" and director of the Institute of Evolutionary Biology (IBE; UPF/CSIC) and at the CRG-CNAG. He started his own lab in 2010 with an ERC Starting Grant and was selected as ICREA in 2011. In 2013 he was selected for the EMBO young Investigator award. Starting on 2017 he is an HHMI International young investigator. His group aims to characterize human specific genomics features, including the combination of evolution and conservation genetics. With a total of more than 200 peer-reviewed publications, he has published as a senior authorship in Science (2023(x3), 2016,2020), Nature (2013;2019, 2024), Genome Research (2015,2021), Plos Genetics (2013,2015) among others. He was director of the Institute of Evolutionary Biology (UPF-CSIC), 2017-2020. He was awarded with an ERC Consolidator 2019. He published a Special Issue in Science (5 articles) in 2023 dedicated to Primate Genomics.

Research interests

What makes us human? This is a fundamental question in many disciplines. Our team analyzes a wide range of genome variants to determine processes, variants and molecular features that are intrinsic to our species. To do so, we study full genome, epigenomes and transcriptomic sequences of humans and great apes for a better understanding of human specific features.

Selected publications

- Kuderna LFK, Gao H, Janiak MC, et al. 2023, 'A global catalog of whole-genome diversity from 233 primate species', *Science*, 380, 6648, 906 - 912.
- Sørensen EF, Harris RA, Zhang L, et al. 2023, 'Genome-wide coancestry reveals details of ancient and recent male-driven reticulation in baboons', *Science*, 380, 6648, eabn8153.
- Gao H, Hamp T, Ede J, et al. 2023, 'The landscape of tolerated genetic variation in humans and primates', *Science*, 380, 6648, eabn8197.
- Murat F, Mbengue N, Winge SB et al. 2023, 'The molecular evolution of spermatogenesis across mammals', *Nature,* 613, 308–316.

ICREA**MEMOIR2023**

Genoveva Martí
Universitat de Barcelona (UB)
Humanities

I was born in Barcelona and I obtained my BA at the University of Barcelona. In 1982 I joined the PhD program at Stanford University, where my PhD was awarded in January 1989. I have been Assistant Professor at the University of Washington, Seattle, Assistant and Associate Professor at the University of California, Riverside, and Reader at the London School of Economics. In 2014-15 I was Professor of Philosophy at Western University, Ontario (Canada). I have been coordinator of the research group LOGOS (http://www.ub.es/grc_logos). I was awarded the Narcís Monturiol Medal by the Generalitat de Catalunya in 2012. I am an elected member of the Academia Europaea. Between 2017 and 2022 I was Chair of the Philosophy, Theology and Religious Studies Section of the Academia Europaea. From 2018 till 2022 I was Vice-President of the Academia Europaea.

Research interests

My research focuses on the exploration of reference, the relation between words and pieces of the world that makes it possible to talk about things. Traditionally, reference has been conceived as mediated by our cognitive perspective on things. On this view, which objects we talk about is determined by the concepts we associate with the expressions we use. Against this view I defend an approach to semantics according to which reference is not determined just by our mental states nor by the concepts we entertain; it rather depends on causal and social factors that are external to our mind. My research topics are connected to research areas in Linguistics and Psychology. I also have worked on the explanation of legal disputes from the point of view of different theories of reference, on the role of the theory of reference in the defense of scientific realism and on the impact of experimental data on semantics.

Selected publications

- **Martí G** 2023, 'The semantics of natural kind terms: a critical reflection on experimental and theoretical issues', *Acta Philosophica Fennica*, vol. 100, pp 153-172.

Selected research activities

Invited presentations

'The semantics of natural kind terms. A critical reflection on experimental and theoretical issues'. *Sign-Language-Reality Seminar,* University of Warsaw.

'Conceptual Engineering, Semantic Tolerance and Flexibility'. Work co-authored with L. Ramírez-Ludeña (UPF). *6th Parma Workshop on Semantics and Pragmatics* and University of Krakow.

ICREA**MEMOIR2023**

Marc A. Marti-Renom
Centre Nacional d'Anàlisi Genómica (CNAG)
Life & Medical Sciences

I obtained a Ph.D. in Biophysics from the UAB where I worked on protein folding under the supervision of Professors B. Oliva, F.X. Avilés and M. Karplus (Nobel Laureate in 2013). After that, I went to the US for a postdoctoral training on protein structure modeling at the Sali Lab (Rockefeller University) as the recipient of the Burroughs Wellcome Fund fellowship. Later on, I was appointed Assistant Adjunct Professor at UCSF. Between 2006 and 2011, I headed the Structural Genomics Group at the CIPF in Valencia (Spain). Since October 2013, I am ICREA Research Professor and lead the Structural Genomics Group at the CNAG and CRG. Our group is broadly interested on how chromatin organizes and regulates cell fate. I have published over 135 articles in international peer-reviewed journals with over 20,000 citations (Google Scholar indexed).

Research interests

How biomolecules fold and function in a three-dimensional space is one of the most challenging questions in biology. For example, we have limited knowledge on how the 2-meter-long DNA molecule folds in the micro-sized nucleus or how RNA, proteins and small chemical compounds fold and interact to perform their most basic functions of the cell. Our research group employ the laws of physics and the rules of evolution to develop and apply experimental and computational methods for predicting the 3D structures of macromolecules and their complexes.

Selected publications

- Kocanova S, et al. 2023, 'Enhancer-driven local 3D chromatin domain folding modulates transcription in human mammary tumor cells', *Life Science Alliance, 7, 2,* e202302154.
- Yeh SC, Strilets T, Tan WL, et al. 2023, 'The anti-immune dengue subgenomic flaviviral RNA is present in vesicles in mosquito saliva and is associated with increased infectivity', *Plos Pathogens*, 19, 3, e1011224.

Selected research activities

President of the Catalan Society of Biology since 2021

ICREA**MEMOIR2023**

Ruben Martin Romo
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

Ruben Martin was born in Barcelona in 1976. He received his PhD in 2003 at the Universitat de Barcelona with Prof. A. Riera. In January 2004 he moved to the Max-Planck-Institut für Kohlenforschung as a Humboldt postdoctoral fellow with Prof. A. Fürstner and in May 2005 he undertook further postdoctoral studies at MIT with Prof. Stephen L. Buchwald. In September 2008 he joined the ICIQ as a group leader. His current research interests concern the discovery and development of synthetically useful organometallic protocols. Ruben Martin was promoted to Associate Professor in July 2013 and to ICREA Professor in October 2013. During his time as group leader he has been awarded with 4 ERC projects by the European Research Council and with the 2020 Arthur Cope Scholar Award, 2019 Novartis Chemistry Award, 2018 Banc Sabadell Award to Sciences and Engineering, 2018 Hirata Award, 2018 OMCOS Award or being on the Forbes List for the top50 most awarded spaniards, among the most recent.

Research interests

Our research is focused on the development of new catalytic protocols for producing synthetically relevant molecules from ubiquitous and simple precursors by activating inert, abundant and ubiquitous C-H, C-C and C-O bonds, probably the most fundamental linkages in nature. Additionally, my research has also been focused on the design of new catalytic protocols that utilize biomass-derived feedstocks such as carbon dioxide (CO_2) for preparing valuable carboxylic acid derivatives under mild reaction conditions. During the last years, my research at ICIQ has provided solutions to relevant and challenging synthetic problems from both scientific and industrial standpoint, thus providing a new opportunities to build up molecular complexity from simple and abundant precursors

Selected publications

- Rodrigalvarez J, Haut FL & **Martin R** 2023 *Regiodivergent sp3 C–H Functionalization via Ni-Catalyzed Chain-Walking Reactions JACS Au*, *3*, 12, 3270-3282.

- Lv X, Abrams R & **Martin R**, 2023 *Copper-Catalyzed C(sp3)-Amination of Ketone-Derived Dihydroquinazolinones by Aromatization-Driven C-C Bond Scission*', *Angewandte Chemie International Edition*, 62, 8, e202217386

- Zhang H, Rodrigalvarez J, Martin R 2023, 'C(sp2)-H Hydroxylation via Catalytic 1,4-Ni Migration with N2O', *Journal Of The American Chemical Society*, 145, 32, 17564-17569.

- Day CS & **Martin R** 2023, 'Comproportionation and disproportionation in nickel and copper complexes', *Chemical Society Reviews*, 52, 6601-6616.

- Yue WJ & **Martin R** 2023, 'a-Difluoroalkylation of Benzyl Amines with Trifluoromethylarenes', *Angewandte Chemie-international Edition*, 62, 40, e202310304.

- Haut FL, Mega RS, Estornell JV & **Martin R** 2023, 'Catalytic Photoinduced Intramolecular Decarboxylative and Desulfonylative sp(3) Allylation Enabled by Sulfinate Salts', *Angewandte Chemie-international Edition*, 62(28):e202304084.

- Talavera L, Freud RRA, Zhang H, Wakeling M, Jensen M & **Martin R** 2023, 'Nickel-Catalyzed 1,1-Aminoborylation of Unactivated Terminal Alkenes', *ACS Catalysis*, 13, 8, 5538 - 5543.

- Day CS, Rentería-Gómez Á, Ton SJ, et al. 2023, 'Elucidating electron-transfer events in polypyridine nickel complexes for reductive coupling reactions', *Nature Catalysis*, 6, 244-253.

- Rodrigalvarez J, Wang H & **Martin R** 2023, 'Native Amides as Enabling Vehicles for Forging spa-spa Architectures via Interrupted Deaminative Ni-Catalyzed Chain- Walking', *Journal Of The American Chemical Society*, 145(7):3869-3874.

- Cong, F.; Mega, R. S.; Chen, J.; Day, C. S.; Martin, Ruben 2023, 'Trifluoromethylation of carbonyl and unactivated olefin derivatives by C(sp3)-C bond cleavage', *Angewandte Chemie International Edition*,

ICREA**MEMOIR2023**

Iñaki Martín-Subero

Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()

Life & Medical Sciences

In 2001, I obtained my PhD in Biochemistry from the University of Navarra on genetics of lymphoid neoplasms under the supervision of Prof. Maria J Calasanz and co-supervision of Prof. Reiner Siebert from the Christian-Albrechts University of Kiel. After that, I continued my studies on lymphoma genetics as postdoctoral fellow with Prof. Siebert. In 2005, I became interested in the field of epigenomics and in 2009 I came back to Spain. After a short stay at the IDIBELL, I went to the UB/IDIBAPS to start my career as independent researcher embedded in the group of Prof. Elias Campo. In 2016, I was appointed Junior Leader of the Biomedical Epigenomics group at the IDIBAPS and from November 2018 I am ICREA Research Professor at the IDIBAPS. I also have an appointment as associate professor at the UB. Our group is interested in the role of epigenetics in the origin, evolution and clinical manifestations of lymphoid tumors.

Research interests

Understanding the molecular mechamisms underlying cancer initiation and evolution is an academically extiting question and has important translational implications for affected patients. In this global context, our group uses epigenomics to study the causes and consequences of corrupted transcriptional programs in a variety of lymphoid tumors. In the last years, we have performed detailed multi-omics characterization of normal and neoplastic B cells. In the next phase of our research program, we are mostly focusing on i) the role of DNA methylation as tracer of epigenetic memory, ii) describing the cellular architecture of normal B cell differentiation and in the evolution of B cell tumors using single cell technologies, and iii) translating epigenomic information to better diagnose B cell tumors according to their biological basis and clinical risk as well as to generate novel therapeutic targets.

Selected publications

– Tsagiopoulou M, Chapaprieta V, Russiñol N, et al. Chromatin activation profiling of stereotyped chronic lymphocytic leukemias reveals a subset 8-specific signature. *Blood*. 2023;141(24):2955-2960.

– Broséus J, Hergalant S, Vogt J, et al. Molecular characterization of Richter syndrome identifies de novo diffuse large B-cell lymphomas with poor prognosis. *Nat Commun*. 2023;14(1):309.

– Kulis M, Martin-Subero JI. Integrative epigenomics in chronic lymphocytic leukaemia: Biological insights and clinical applications. *Br J Haematol.* 2023;200(3):280-290.

– Mateos-Jaimez J, Mangolini M, Vidal A, et al. Robust CRISPR-Cas9 Genetic Editing of Primary Chronic Lymphocytic Leukemia and Mantle Cell Lymphoma Cells. *Hemasphere*. 2023;7(6):e909.

Selected research activities

- Appointed co-coordinator of the Lymphoid Neoplasms Researach Program of the IDIBAPS.
- Keynote lecture: Exploiting bulk and single cell omics to understand normal B cell maturation and neoplastic transformationat the 19th B cell Forum (Meschede, Germany)
- Selected invited talks: Intercepting Blood Cancers 2023, ESMO Congress 2023, Annual Meeting of the Italian group of CLL, and Cancer in Context IRB Meeting 2023.
- Faculty member of the Translational Research Training in Hematology program of the American and European Associations of Hematology.
- Faculty member of the Computational Biology Training in Hematology of the European Association of Hematology.

ICREA**MEMOIR2023**

Alfonso Martinez Arias
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

I am a developmental biologist. Over the last fifteen years my work has focused on using Embryonic Stem Cells (ESCs) to explore cell fate decisions during mammalian development. Recently, we have developed a novel experimental system which is changing the way to study early mammalian development. Defined numbers of mouse ESCs are aggregated in controlled culture conditions and over time develop structures that mimic the organization of the vertebrate embryo; we call them 'gastruloids' because they mirror the process of gastrulation. This system is opening up unforeseen experimental possibilities for studies of mammalian development whose embryos, particularly at the crucial early stages, are difficult to access. Recently we have successfully extended this work to human ESCs and obtained human gastruloids which mimic the postgastrulation body plan thus opening up the possibility to, for the first time, study the process of gastrulation and its consequences in humans.

Research interests

Alfonso was born in Madrid (Spain) and obtained his undergraduate degree at the Universidad Complutense in Madrid (Spain) in 1977 and, in 1983, a PhD from the University of Chicago, Chicago (USA). After a postdoc with Peter Lawrence at the MRC LMB in Cambridge became a Wellcome Trust Senior Fellow and since 2003 until 2021, has been Professor of Developmental Mechanics in the Department of Genetics of the University of Cambridge, Cambridge (UK) working on developmental biology with the fruit fly (Drosophila) and more recently Embryonic Stem Cells. His interests cover the interface of cell and developmental biology with Physics and Engineering. He is a member of EMBO, has been awarded two ERC Advanced Investigator grants and in 2012 received the Waddington medal of the BSDB for his contributions to british developmental biology.

Selected publications

- Dias, Andre; Arias, Alfonso Martinez 2023, 'Laying out the mammalian body plan to a T', *Developmental Cell*, 58, 18, 1625 - 1626.
- Rivron, Nicolas C.; Martinez-Arias, Alfonso; Sermon, Karen; Mummery, Christine; Schoeler, Hans R.; Wells, James; Nichols, Jenny; Hadjantonakis, Anna-Katerina; Lancaster, Madeline A.; Morris, Naomi; Fu, Jianping; Sturmey, Roger G.; Niakan, Kathy; Rossant, Janet; Kato, Kazuto 2023, 'Changing the public perception of human embryology', *Nature Cell Biology*, .
- Yamanaka Y, Hamidi S, Yoshioka-Kobayashi K, Munira S, Sunadome K, Zhang Y, Kurokawa Y, Ericsson R, Mieda A, Thompson JL, Kerwin J, Lisgo S, Yamamoto T, Moris N, **Martinez-Arias A**, Tsujimura T & Alev C. 2023, 'Reconstituting human somitogenesis in vitro'. *Nature*, 614(7948):509-520.

ICREA**MEMOIR2023**

Bienvenido Martínez Navarro
Institut Català de Paleoecologia Humana i Evolució Social (IPHES)
Humanities

Degree in Geology (1987) and PhD in Paleontology (1991). I work on Neogene-Quaternary mammals, and participate at different Plio-Pleistocene projects around the World, been the co-leader of the Baza and Incarcal projects in Spain, the Oued Sarrat project in Tunisia, and the Engel Ela-Ramud project in Eritrea. I also participate in the study of the sites of Buia in Eritrea, Melka Wakena in Ethiopia, and Dmanisi in Georgia, and have worked in the past studying the sites of the Atbara River in Sudan, `Ubeidiya, Gesher Benot Ya'aqov, and Bizat Ruhama in Israel, Argentario and Pirro Nord in Italy, Vallonnet in France, Orce and Cueva Victoria in Spain.

Research interests

I am a paleontologist working on Plio-Pleistocene mammals from Europe, Asia and Africa. My main interest is to describe the ecological scenario where our ancestors, the earlier members of the genus *Homo*, evolving and dispersing from Africa, were able to colonize the middle latitudes of Eurasia, and survive in seasonal climates during the Pleistocene times. I have developed an intense research travelling around the world to study the African origin mammals dispersing into Eurasia, and the Eurasian origin mammals dispersing into Africa, in order to describe their systematics, phylogeny, biochronology, paleobiogeography, autoecology, and their potential ecological relationships among them and with hominins. I work on fossil hyenas, sabertoothed tigers, hunting dogs, bears, elephants and mastodonts, hippos, pigs, buffaloes, antelopes, deers, giraffes, camels, monkeys and other groups.

Selected publications

- **Martínez-Navarro B***, Gossa T*, Carotenuto F, Bartolini-Lucenti S, Palmqvist P, Asrat A, Figueirido B, Rook L, Niespolo E, Renne PR, Herzlinger G & Hovers E* 2023. 'The earliest Ethiopian wolf: implications for the species evolution and its future survival'. *Communications Biology* 6, 530.
- Espigares MP*, Palmqvist , Rodríguez-Ruiz MD, Ros-Montoya S, Pérez-Ramos A, Rodríguez-Gómez G, Guerra-Merchán A, García-Aguilar JM, Granados A, Campaña I, **Martínez-Navarro B*** 2023, 'Sharing food with hyenas: a latrine of Pachycrocuta brevirostris
in the Early Pleistocene assemblage of Fuente Nueva-3 (Orce, Baza Basin, SE Spain)'. *Archaeological and Anthropological Sciences* 15:81

- **Burjachs F**, Karoui-Yaakoub N, Expósito I, Mtimet M-S, Amri L & **Martínez-Navarro B** 2023**,** 'Palaeoenvironmental features of the early Middle Pleistocene site of Wadi Sarrat in NW Tunisia (Northern Africa)'. *Review of Palaeobotany and Palynology*, vol. 317, 104972.
- Fidalgo D, Rosas A, Bartolini-Lucenti S, Boisserie J-R, Pandolfi L, Martínez-Navarro B, Palmqvist P, Rook L, Madurell-Malapeira J, 2023, 'Increase on environmental seasonality through the European Early Pleistocene inferred from dental enamel hypoplasia', *Scientific Reports*, 13, 1, 16941.
- Pandolfi L, Martino R, Belvedere M, **Martínez-Navarro B**, Medin T, Libsekal Y & Rook L, 2023, 'The latest Early Pleistocene hippopotami from the human-bearing locality of Buia (Eritrea)', *Quaternary Science Reviews* 308, 108039.
- Palmqvist P, Rodríguez-Gómez G, **Martínez-Navarro B**, et al. 2023, 'Déjà vu: On the use of meat resources by sabretoothcats, hominins, and hyaenas', in t*he Early Pleistocene site of Fuente Nueva 3 (Guadix-Baza Depression, SE Spain),* Archaeological and Anthropological Sciences, 15:17, pp. 1-31.

Selected research activities

I have been doing excavations in Baza (Spain) and Engel Ela (Eritrea), and studying the fossil carnivores from Dmanisi (Georgia). I also co-supervised two Master Thesis.

ICREA**MEMOIR2023**
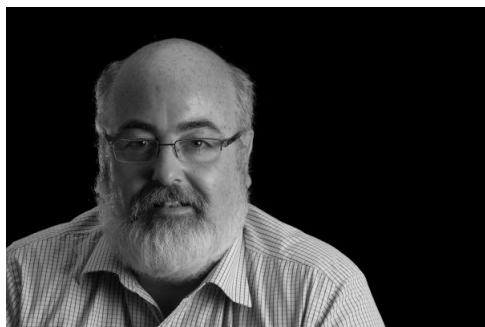
Mario Martínez Pérez
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

Born in Madrid, he studied Theoretical Physics at the Universidad Autónoma de Madrid. He spent many years at DESY in Hamburg (Germany) studying deeply inelastic scattering in the ZEUS experiment, where he obtained his PhD and then worked as DESY researcher. In 2001, he moved to USA to work in Fermilab. He participated in the CDF experiment at the Tevatron collider, with emphasis on searches for new physics. In 2007 he moved back to Europe and started working also in the ATLAS experiment at the Large Hadron Collider at CERN, initiating operations in 2009. Since then he was acting as project leader of the IFAE-Barcelona group in ATLAS. In 2015 he was appointed Head of IFAE Experimental Division (until 2020), Scientific Manager of the Spanish High Energy Physics, and Scientific Delegate in CERN's Council (until June 2018). Starting in 2018, he initiated an activity on Gravitational Waves Physics with the LIGO-Virgo-KAGRA interferometers.

Research interests

I originally focused on searches for new physics at particle physics experiments in Europe and USA. Since 2009, I focused on the LHC physics program at CERN. In 2012 the LHC experiments discovered the Higgs boson. In the period 2009-2015, I led a group of scientists from IFAE-Barcelona that analyzes the data from the ATLAS experiment. In 2015 I took responsibilities as Head of IFAE Experimental Division (untill September 2020), Scientific Manager of the Spanish High Energy Physics Program (until June 2018), and Scientific Delegate to CERN Council (until June 2018). In November 2018, I initiated at IFAE a brand new involvement in Gravitational Wave Physics in the Virgo interferometer with emphasis on those aspects related to fundamental physics and cosmology. I am also involved in the preparation of the Einstein Telescope (ET) 3rd-generation inteferometer project. I supervised 17 PhD theses to date.

Selected publications

- Andres-Carcasona, M. & Macquet A et al. 2023, 'Study of scattered light in the main arms of the Einstein Telescope gravitational wave detector', *Phys. Rev.* 108, 102001.
- Andres-Carcasona M, Menendez-Vazquez A, **Martinez M** & Mir LlM 2023, 'Searches for mass-asymmetric compact binary coalescence events using neural networks in the LIGO/Virgo third observation period', *Physical Review D*, 107, 8, 082003.
- Andres-Carcasona M et al. 2023, 'Instrumented baffle for the Advanced Virgo input mode cleaner end mirror', *Phys. Rev, 07, 062001.*
- Abbott R, et al. 2023, 'Open Data from the Third Observing Run of LIGO, Virgo, KAGRA, and GEO' 2023 ApJS, 267, 29.

Selected research activities

- IFAE Deputy Director
- Member of Einstein Telescope Directorate
- PI and European coordinator of the Horizon-CSA INFRA-DEV ET-PP Project (Einstein Telescope preparatory phase)
- Member of the ET Board of Scientific Representatives
- Co-coordinator of Stray Light Control WG in the Einstein Telescope.
- Member of the Virgo Steering Committee
- Member of P2UG Committee at CERN
- Supervising 3 PhD Theses in Virgo/ET
- Observer in EGO Council

ICREA**MEMOIR2023**

Javier Martínez-Picado
Institut de Recerca de la Sida - IrsiCaixa (IrsiCaixa)
Life & Medical Sciences

Javier Martinez-Picado is ICREA Research Professor at the IrsiCaixa AIDS Research Institute in Barcelona. He is also an associate professor at the University of Vic, and an elected member of the Royal Academy of Science and Arts of Barcelona. He obtained his PhD in Microbiology from the University of Barcelona, where he also lectured as an associate professor. In 1996, he joined Massachusetts General Hospital as a research fellow at Harvard Medical School, where he focused on HIV/AIDS research. In 2000 he obtained the position of biomedical researcher at the Spanish Health Department appointed to the Hospital Germans Trias de Badalona. In 2006 he obtained his current ICREA position. Dr. Martinez-Picado serves on different government, academic and industry advisory boards. He has given numerous invited lectures in multiple countries, and has published more than 240 articles on virology and immunology topics, mainly related to the pathogenesis of HIV, in international journals.

Research interests

His research is focused on characterizing the immuno-virological mechanisms of viral pathogenesis in human diseases, including HIV-1, Ebola virus, arenaviruses and, more recently, SARS-CoV-2. His group's translational program has the ultimate goal of investigating potential new viral therapeutic strategies, especially in the field of HIV/AIDS, through basic and applied research. They work closely with other national and international biomedical institutes, focusing on three priority research topics: understanding viral persistence to tackle HIV cure strategies, viral pathogenesis mediated by myeloid cells, and extreme phenotypes of virus disease progression. As a result of the COVID-19 pandemic, they have expanded their research to the pathogenesis of SARS-CoV-2, implementing organoid models to assess viral infection and inflammatory responses.

Selected publications

- McLaren PJ, *et al* 2023, 'Africa-specific human genetic variation near CHD1L associates with HIV-1 load', *Nature* 620(7976):1025-30.
- Jensen BEO, *et al* 2023, 'In-depth virological and immunological characterization of HIV-1 cure after CCR5Δ32/Δ32 allogeneic hematopoietic stem cell transplantation', *Nat Med* 29(3):583-7.
- Matuozzo D*, et al* 2023, 'Rare predicted loss-of-function variants of type I IFN immunity genes are associated with life-threatening COVID-19', *Genome Med* 15(1):22.
- Gutiérrez-Martínez E, *et al* 2023, 'Actin-regulated Siglec-1 nanoclustering influences HIV-1 capture and virus-containing compartment formation in dendritic cells', *eLife* 12:e78836.
- Bernal S, *et al* 2023, 'Impact of Obefazimod on Viral Persistence, Inflammation, and Immune Activation in People With HIV-1 on Suppressive Antiretroviral Therapy', *J Infect Dis* 228(9):1280–91.
- García-González L, *et al* 2023, 'Understanding the neurological implications of acute and long COVID using brain organoids', *Dis Models Mech* 16(7):dmm050049.
- Chumillas S, *et al* 2023, 'Exploring the HIV-1 Rev Recognition Element (RRE)-Rev Inhibitory Capacity and Antiretroviral Action of Benfluron Analogs', *Molecules*, 28(20):7031.
- Morón-López S, *et al* 2023, 'Comparison of RT-qPCR and RT-ddPCR for Detection of Genomic and Subgenomic SARS-CoV-2 RNA', *Microbiol Spectr* 11(2):e0415922.
- Campos-Gonzalez G, *et al* 2023, 'Opportunities for CAR-T Cell Immunotherapy in HIV Cure', *Viruses* 15(3):789.
- Paton B, *et al* 2023, 'Fucosylated N-glycans as early biomarkers of COVID-19 severity', *Front Immunol* 14:1204661.
- Rosado-Sánchez I, *et al* 2023, 'Caecum OX40DCD4 T-cell subset associates with mucosal damage and key markers of disease in treated HIV-infection', *J Microbiol Immunol Infect* 56(6):1129-38.
- Duran-Castells C, *et al* 2023, 'Plasma proteomic profiling identifies CD33 as a marker of HIV control in natural infection and after therapeutic vaccination', *Ebiomedicine* 95:104732.

ICREA**MEMOIR2023**

Pedro Martínez Serra
Universitat de Barcelona (UB)
Life & Medical Sciences

I graduated in Chemistry (Biochemistry and Molecular Biology) in 1982 from the Universitat Autònoma de Barcelona, where I also obtained my PhD (in 1990). My training was completed in several places, but mainly at the California Institute of Technology (Pasadena, USA) and at the Centro Nacional de Biotecnología (Madrid, Spain). Before my ICREA appointment I was Associate Professor in the Faculty of Medicine at the University of Bergen (Norway). Currently I am an ICREA Research Professor at the Universitat de Barcelona, Departament de Genètica, a position that I hold since the year 2003. The area of my research is the Evolution of Developmental Mechanisms.

Research interests

In our group we are interested in understanding how animals have evolved over time. We assume that the morphological changes have occurred as a consequence of modifications in the use of different genes during development. In this context, the main aim of our research is to study the origin of the bilateral animals, from radial ancestors. We compare the expression of genes in bilateral and radial animals, hoping to find what changes may have occurred when that transition happened (more than 500 million years ago). Recently we have extended the analysis using genome comparisons. We have sequenced the genomes of several basal bilaterian animals (members of the phylum Xenacoelomorpha) and are in the process of analyzing, and comparing, all types of genomic features. They should give us key insights into the mechanisms that underlie the origin and diversification of animals. The origin of the centralized nervous system is, at present, the major focus of our research efforts.

Selected publications

- **Martinez P**, Ustyantsev K, Biryukov M, et al. 2023, 'Genome assembly of the acoel flatworm *Symsagittifera roscoffensis*, a model for research on body plan evolution and photosymbiosis', *G3 Genes|Genomes|Genetics*, 13 (2), jkac336.
- Matassi G & **Martinez P** 2023, 'The Brain-Computer Analogy- "a Special Issue"'. *Frontiers Ecol Evol*, 10:1099253.
- Matassi G, Mishra B, & **Martinez P** 2023, 'Editorial: Current Thoughts on the Brain-Computer Analogy -All Metaphors Are Wrong, but Some Are Useful', *Front Ecol Evol,* 11:1130510.
- Botton-Amiot G, **Martinez P** & Sprecher SG 2023, 'Associative learning in the cnidarian *Nematostella vectensis*', *PNAS.* 120 (13) e2220685120.
- Magalhães F, Andrade C, Simões B, et al. 2023 'Regeneration of Starfish Radial Nerve Cord restores animal mobility and unveils a new coelomocyte population', *Cell Tissue Res*, 394, 293–308.

- Perea-Atienza E, Gavilán B, Chiodin M, Sprecher SG & **Martinez P** 2023, *Xenacoelomorpha*, Manuale di Zoologia, Chapter 9, Piccin Editore, Padova.
- Matassi G, **Martinez P**, Mishra B, et al. 2023, *Current thoughts on the brain-computer analogy - all metaphors are wrong, but some are useful*, Lausanne: Frontiers Media SA.

- Marlétaz F, et al. 2023, 'Analysis of the P. lividus sea urchin genome highlights contrasting trends of genomic and regulatory evolution in deuterostomes', *Cell Genomics,* 3, 4, 100295.
- Wanninger A, **Martinez P** & Meyer NP 2023, 'MorphoEvoDevo: a multilevel approach to elucidate the evolution of metazoan organ systems', *Frontiers In Ecology And Evolution*, 11, 1307280.

ICREA**MEMOIR2023**

Daniel Maspoch Comamala
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Born in L'Escala (Girona) in 1976. He graduated in chemistry at the Universitat de Girona and obtained his PhD in materials science at the Universitat Autònoma de Barcelona & Institut de Ciència de Materials de Barcelona. He then moved to Northwestern University, where he worked as a postdoctoral fellow in the group of professor Chad A. Mirkin. He moved back to the Institut Català de Nanotecnologia (ICN) thanks to a Ramón y Cajal contract, where he founded the Supramolecular NanoChemistry & Materials Group. Since September 2011 he is ICREA Research Professor and Group Leader at the Institut Català de Nanociència i Nanotecnologia (ICN2). He is a recipient of European Research Council (ERC) Advanced, Consolidator and PoC Grants.

Research interests

My research interests are focused on controlling the assembly -Supramolecular Chemistry- of molecules, metal ions and nanoparticles for the creation of functional nanostructured materials -Nanotechnology- with empty spaces; and use them to encapsulate, store, separate, react and deliver molecules of interest. My main contributions are in the fields of nanoporous Metal-Organic Frameworks (MOFs), Covalent-Organic Frameworks (COFs), Metal-Organic Polyhedra (MOPs) and Delivery Systems for applications in myriad areas, including Energy (e.g. gas storage), Catalysis, the Environment (e.g. pollutant removal, $CO2$ storage), Encapsulation (e.g. long-lasting fragrances), and Life Science –Medicine and animals health– (e.g. drug-delivery systems and contrast agents).

Selected publications

- Fonseca J, Meng L, Imaz I & **Maspoch D** 2023, 'Self-assembly of colloidal metal-organic framework (MOF) particles', *Chemical Society Reviews*, vol. 52, pp. 2528-2543.
- Carné-Sánchez A, Martínez-Esaín J, Rookard T, Flood C.J., Faraudo J, Stylianou K.C. & **Maspoch D** 2023, 'Ammonia capture in rhodium(II)-based metal–organic polyhedra via synergistic coordinative and H-bonding interactions', *ACS Applied Materials & Interfaces*, 15, 5, 6747-6754.
- Broto-Ribas A, Ruiz-Relaño S, Albalad J, Yang Y, Gándara F, Juanhuix J, Imaz I & **Maspoch D** 2023, 'Retrosynthetic analysis applied to clip-off chemistry: synthesis of four Rh(II)-based complexes as proof-of-concept', *Angewandte Chemie-International Edition*, vol. 62, pp. e202310354.
- Yang Y, Fernández-Seriñán P, Imaz I, Gándara F, Handke M, Ortín-Rubio B, Juanhuix J & **Maspoch D** 2023, 'Isoreticular contraction of Metal-Organic Frameworks induced by cleavage of covalent bonds', *Journal of the American Chemical Society*, vol. 145, 31, pp. 17398 - 17405.
- Fonseca J, Meng L, Moronta P, Imaz I, López C & **Maspoch D** 2023, 'Assembly of covalent organic frameworks into colloidal photonic crystals', *Journal of the American Chemical Society*, vol. 145, 37, pp. 20163-20168.
- Çamur C, Babu R, Suárez Del Pino J.A., Rampal N, Pérez-Carvajal J, Hügenell Ph, Ernst S.J., Silvestre-Albero J, Imaz I, Madden D.G., **Maspoch D** & Fairen-Jimenez D 2023, 'Monolithic zirconium-based metal-organic frameworks for energy-efficient water adsorption applications', *Advanced Materials*, vol. 35, pp. e2209104.
- Calvo-Lozano O, Hernández-López L, Gomez L, Carné-Sánchez A, von Baeckmann C, Lechuga L.M. & **Maspoch D** 2023, 'Integration of metal-organic polyhedra onto a nanophotonic sensor for real-time detection of itrogenous organic pollutants in water', *ACS Applied Materials & Interfaces*, vol. 15, 33, pp. 39523-39529.

Selected research activities

Rei Jaume I Award 2023 in New Technologies

ICREA**MEMOIR2023**

David Mateos
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

I was born in 1974 in Barcelona. I obtained my PhD in Theoretical Physics from the University of Barcelona in 2000. After that I enjoyed many years of wonderful postdoctoral life at Cambridge University, UK (2 years), Perimeter Institute, Canada (3 years) and University of California at Santa Barbara, USA (3 years). I am an ICREA Research Professor at the Department of Quantum Physics and Astrophysics at the University of Barcelona since July 2008. In 2012 I was awarded a Starting Grant from the European Research Council (1.4 M€).

Research interests

My main goal is to understand the physics of the Universe at the most fundamental level. Our present understanding is based on two theories. General relativity is a classical theory that provides a good description of gravitational interactions at large, macroscopic scales. The other three interactions, the electromagnetic, the strong and the weak interactions, are unified in a quantum theory, the so-called Standard Model of elementary particles. The answers to many important questions in fundamental physics require a unified, quantum theory of all interactions; these questions include the quantum properties of black holes, cosmology and the origin of the Universe, particle physics beyond the Standard Model, etc. For this reason I work on string theory, a quantum theory that has the potential to describe all forces and particles in Nature in a single, unified framework.

Selected publications

– Bea Y, Casalderrey-Solana J, Giannakopoulos T, et al. 2023, 'Holographic bubbles with Jecco: expanding, collapsing and critical (Sept, 008, 2022)', *Journal Of High Energy Physics*, 225.

Selected research activities

CONFERENCES AND WORKSHOPS
-AdS/CAP: A Holographic Approach to Cosmology and Astrophysics, "Rencontres Théoriciens," Institut Henri Poincaré, Paris, France (June 2023).
-Holography in the Gravitational Wave Era, "ICC Winter Meeting", U Barcelona (Feb 2023).
OTHER INVITED TALKS
-Holography in the Gravitational Wave Era, Niels Bohr Institute, Copenhagen (Sep 2023).
CONFERENCE ORGANIZATION
-"Holography, Black Holes and Confinement", organizer, U Barcelona (Jan 2023).
-"Quantum Fields and Gravity (Enric Verdaguer's Fest)", co-organizer, U Barcelona (Feb 2023).
-"Iberian Strings 2023", member of the Scientific Advisory Committee, Murcia, Spain (January 2023).
MASTER THESIS
-Pablo Tejerina, "Gauge theory thermodynamics from spacetime geometry, and back" (June 2023).
-Alberto Revilla, "Holographic thermodynamics: beyond the conformal case" (June 2023).
EVALUATION PANELS
-Edwan Preau, PhD, U. Sorbonne Paris Cite and U. Paris Diderot (Jun 2023).
-Diego Gutiez, PhD, U Oviedo (Sep 2024).
TEACHING
-"Frontiers of Theoretical Physics", Master's course, U Barcelona (Feb-March 2023).
MANAGERIAL
-Member of the Advisory Board of the Institute for Cosmos Sciences at U Barcelona (since 2012).

ICREA**MEMOIR2023**

Maurizio Mencuccini
Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)
Experimental Sciences & Mathematics

BSc Forest Science at University of Firenze (Italy, 1992). Research Associate at Istituto Sperimentale per la Selvicoltura (Italy, 1992). PhD in plant environmental biology at the University of Firenze (Italy, 1993-1995). Postdoc at Boyce Thompson at Cornell University (USA, 1995-1997). Lecturer, senior Lecturer, Reader, then Professor of Forest Science at Edinburgh University (UK, 1997-2016). ICREA Research Professor of Plant and Ecosystem Ecology at CREAF (Barcelona, Spain) since 2012. Visiting scientist positions at CSIRO (Australia) and Western Sydney University (Australia). Honorary Professor of Forest Science at University of Edinburgh (UK, 2016-ongoing). Since 2018, ranked as a Highly Cited Researcher (top 1% by citations) in the field of Plant and Animal Science by Clarivate Analytics. Ranked among the top Italian Scientists in the area of Natural & Environmental Science by Via-Academy (https://www.topitalianscientists.org/top-italian-scientists).

Research interests

I work at the frontier between plant biology and environmental sciences, at the interface with global change. My major contributions to science are in the study of the carbon and water cycles of forests, across Boreal, temperate, tropical and Mediterranean biomes of Europe, the Americas, Australia and Africa. I have authored more than 250 peer-reviewed papers. I am very involved in debates concerning how more severe droughts, as a consequence of climate change, can accelerate tree mortality. One area of major contribution has been in identifying the processes by which plant physiological properties affect the likelihood of survival following extreme drought events. I am also very interested in how canopies of forest trees can act as filters of atmospheric nitrogen deposition via their leaf microbiome. I have supervised more than 40 scientists, of whom more than 20 are still active in senior academic positions or universities. I have spoken at several high-profile conferences.

Selected publications

- Sanchez-Martinez P, Mencuccini M, Garcia-Valdes R, et al. 2023, 'Increased hydraulic risk in assemblages of woody plant species predicts spatial patterns of drought-induced mortality', *Nature Ecology & Evolution*, 7, 1620–1632.
- Martínez-Vilalta J, García-Valdés R, Jump A, Vilà-Cabrera A & **Mencuccini M** 2023, 'Accounting for trait variability and coordination in predictions of drought-induced range shifts in woody plants', *New Phytologist*, .
- Tavares JV, Oliveira RS, Mencuccini M, et al. 2023, 'Basin-wide variation in tree hydraulic safety margins predicts the carbon balance of Amazon forests', *Nature*, 617, 7959, 111.117.
- Fernandez-de-Una L, Martinez-Vilalta J, Poyatos R, **Mencuccini M** & McDowell NG 2023, 'The role of height-driven constraints and compensations on tree vulnerability to drought', *New Phytologist*, 239, 6, 2083-2098.
- Xu WB, Guo WY, Serra-Diaz JM, et al. 2023, 'Global beta-diversity of angiosperm trees is shaped by Quaternary climate change', *Science Advances*, 9, 14, eadd8553.
- Rowland L, Ramírez-Valiente JA, Hartley IP & **Mencuccini M** 2023, 'How woody plants adjust above- and below-ground traits in response to sustained drought', *New Phytologist*, 239(4):1173-1189.

ICREA**MEMOIR2023**

Raúl Méndez de la Iglesia
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Raúl Méndez studied biology (biochemistry) in the Universidad Autónoma de Madrid. He obtained his PhD in 1993 for work carried out at the Centro de Biología Molecular Severo Ochoa under the supervision of César de Haro. He did postdoctoral work in the laboratory of Robert E. Rhoads at the Louisiana State University Medical Center (1994-1997) and then in the laboratory of Joel D. Richter (1997-2001) at the University of Massachusetts and in 2001 he joined the Centre de Regulació Genòmica of Barcelona as a group leader. In 2010 his group moved to the Institut de Recerca Biomèdica of Barcelona, where he is a senior scientist and ICREA Research Professor. Since the time of his PhD work, his research has focused on how mRNAs are translated into proteins and how this process is regulated during cell division and differentiation. EMBO member since 2012.

Research interests

The primary interest of our group is to understand the molecular mechanisms that dictate alternative 3' UTR formation and the temporal and spatial translational control of specific mRNAs during cell cycle progression and chromosome segregation, senescence and related pathologies. Cell cycle progression is programmed, at least in part, by stored silent mRNAs whose translation is specifically regulated by sequences located at their 3´-untranslated regions (3´-UTRs) and their binding proteins. Our work in the past years has focused on three main questions: 1, to elucidate the mechanisms underlying the translational control by cytoplasmic polyadenylation cis-acting elements and trans-acting factors. 2, to define how this translational control circuit regulates cell cycle progression by establishing a molecular circuit, stabilized by positive and negative feed-back loops. 3, to explore the contribution of these mechanisms in the reprogramming of gene expression in cancer.

Selected publications

- Fernández-Alfara M, Sibilio A, Martin J, et al. 2023, 'Antitumor T-cell function requires CPEB4-mediated adaptation to chronic endoplasmic reticulum stress', *Embo Journal*, 42(9):e111494.
- Cobo I, Paliwal S, Bodas C, et al. 2023, 'NFIC regulates ribosomal biology and ER stress in pancreatic acinar cells and restrains PDAC initiation', *Nature Communications*, 14, 1, 3761.
- Ollà I, Pardiñas AF, Parras A, et al. 2023, 'Pathogenic Mis-splicing of CPEB4 in Schizophrenia', *Biological Psychiatry*, 94, 4, 341 - 351.
- Huang YS, **Mendez R**, Fernandez M & Richter JD 2023, 'CPEB and translational control by cytoplasmic polyadenylation: impact on synaptic plasticity, learning, and memory', *Molecular Psychiatry*, 28, 2728–2736.

ICREA**MEMOIR2023**

Pablo Menéndez
Institut de Recerca contra la Leucèmia Josep Carreras (IJC)
Life & Medical Sciences

Born in Avilés, Asturias, in 1974. Biochemist by University of Salamanca (1997) and PhD in Medicine (Hematology) by the same University in 2002, under the supervision of Prof. Alberto Orfao and Prof. Jesus San Miguel. Postdoctoral training in stem cell biology (Mick Bhatia Laboratory, London, ON, Canada; 2002-2005) and in childhood leukemia (Mel Greaves Laboratory, London, UK; 2005-2007). In 2007, I was appointed Director of the Andalusian Stem Cell Bank, and was leading my own lab at CIBM (Granada, Spain) until July 2011 when I moved to GENyO (Granada, Spain) as Principal Invesigator. In June 2013 I was appointed ICREA Research Professor and coordinator of Clinic campus of The Josep Carreras Leukemia Research Institute (Barcelona).

Research interests

1.-Understanding the pathogenesis and cellular origin of MLL-rearranged and MLL-germline Acute Lymphoblastic Leukemia in children. 2.- Leukemic cell-bone marrow environment interactions and targeted therapies in Acute Myeloid Leukemia and therapy resistance. 3.- Adoptive T-cell-based CAR immunotherapy for B-cell, T-cell ALL, AML and bone sarcomas. 4.-Deciphering the intrinsic determinants and signaling pathways underlying hematopoietic from human pluripotent stem cells.

Selected publications

- Tomás-Daza L, Rovirosa L, López-Martí P, et al. 2023, 'Low input capture Hi-C (liCHi-C) identifies promoter-enhancer interactions at high-resolution', *Nature Comm, 14(1), 268.*
- Lahera A et al. 2023, 'Comprehensive characterization of a novel, oncogenic and targetable SEPTIN6::ABL2 fusion in T-ALL', *Br J Haematol,* 202(3):693-698.
- Meyer C, Larghero P, Almeida Lopes B, et al.2023, 'The KMT2A recombinome of acute leukemias in 2023', *Leukemia*, 37(5):988-1005.
- Bueno C, Torres-Ruiz R, Molina O, Velasco T, Martínez A, Roy A, Marschalek R, Milne T, Fraga MF, Tejedor R & **Menendez P*** 2023, 'A human genome editing-based MLL::AF4 B-cell ALL model recapitulates key cellular and molecular leukemogenic features', *Blood*, 142(20):1752-1756.
- Mensali N, Koeksal H, Joaquina S, Wernhoff P, et al. 2023, 'ALPL-1 is a target for chimeric antigen receptor therapy in osteosarcoma', *Nature Communications*, 14, 1, 3375.
- Bueno C, Martínez A, Romecin PA, et al. 2023, 'TIM3, a human acute myeloid leukemia stem cell marker, does not enrich for leukemia-initiating stem cells in B-cell acute lymphoblastic leukemia', *Haematologica*, 108, 8, 2229 - 2233.
- Velasco P, Bautista F, Rubio A, et al. 2023, 'The relapsed acute lymphoblastic leukemia network (ReALLNet): a multidisciplinary project from the spanish society of pediatric hematology and oncology (SEHOP)' *Fronteirs Pediatrics*, 11, 1269560.
- Marin-Bejar O, Romero-Moya D, Rodriguez-Ubreva J, et al. 2023, 'Epigenome profiling reveals aberrant DNA methylation signature in GATA2 deficiency', *Haematologica*, 108, 9, 2551 - 2557.
- Velasco-Hernandez T & **Menendez P** 2023, 'Long non-coding RNAs emerge as a novel prognostic indicator in pediatric acute myeloid leukemia', *Translational Pediatrics,* TP-23-351.

ICREA**MEMOIR2023**

Arben Merkoçi
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

ICREA Research Professor and head of Nanobioelectronics & Biosensors Group at ICN2 (Institut Català de Nanociència i Nanotecnologia). He obtained his PhD at University of Tirana working on ion selective electrodes. Since 1992 he has been doing research as postdoctoral fellow and research professor at Polytechnic Univ. of Budapest, Univ. of Ioanina, Univ. degli Studi di Padua, Univ. Politècnica de Catalunya, Univ. Autònoma de Barcelona and New Mexico State Univ. His research is focused on the integration of biological molecules and other species with micro- and nanostructures with interest for the design of novel (bio)sensors. He has published more than 340 articles and supervised 45 PhD thesis. He is co-founder of two spin-off companies, PaperDrop dedicated to nanodiagnostics and GraphenicaLab to electronic printing.

Research interests

1. **Development of Innovative nanocomposites** with improved electronic/catalytic properties, spatially-oriented anchoring substrates and highly sensitive electro/colorimetric readouts are being developed for sensing applications.
2. **Paper-based biosensors** modified with laser patterned rGO to enable electrochemical sensing on paper substrates without altering the paper microfluidic properties, thanks to the stamping method.
3. **Plug & play printing platforms** for the ubiquitous fabrication of low-cost and environmental friendly nanomaterial biosensors with nanofunctional inks, using commercially available office printers.
4. **Multilayered graphene and metal nanoparticle** sensors printed on flexible polymers for the development of sensitive biosensors with impedimetric readout.
5. **Disposable, wireless, low-cost electrochemical readout systems** interfaced with smartphones for connecting to the IoT and an AI approach to the data analysis for environmental and healthcare applications.

Selected publications

– Maroli G, Abarintos V, Piper A & **Merkoçi A** 2023, 'The Cleanroom-Free, Cheap, and Rapid Fabrication of Nanoelectrodes with Low zM Limits of Detection', *Small*, 19, 2302136.

– Della Pelle F, Bukhari QUA, Diduk R, et al. 2023, 'Freestanding laser-induced two dimensional heterostructures for self-contained paper-based sensors', *Nanoscale*, 15, 7164-7175.

– Scroccarello A, Álvarez-Diduk R, Della Pelle F, et al. 2023, 'One-Step Laser Nanostructuration of Reduced Graphene Oxide Films Embedding Metal Nanoparticles for Sensing Applications', *Acs Sensors*, 8, 2, 598 – 609.

– Zhao L, Rosati G, Piper A, et al. 2023, 'Laser Reduced Graphene Oxide Electrode for Pathogenic Escherichia coli Detection', *Acs Applied Materials & Interfaces*, 15(7):9024-9033.

– Rivas L, Hu L, Parolo C, Idili A & **Merkoçi A** 2023, 'Rational Approach to Tailor Au-IrO2 Nanoflowers as Colorimetric Labels for Lateral Flow Assays', *ACS Applied Nano Materials*, 6, 6, 4151-4161.

– Yang Q, Nguyen EP, Panáček D, Šedajová V, Hrubý V, Rosati G, Silva CCC, Bakandritsos A, Otyepka M & **Merkoçi A** 2023, 'Metal-free cysteamine-functionalized graphene alleviates mutual interferences in heavy metal electrochemical detection', *Green Chemistry*, 25(4):1647-1657.

– Renzi E, Piper A, Nastri F, **Merkoçi A** & Lombardi A 2023, 'An Artificial Miniaturized Peroxidase for Signal Amplification in Lateral Flow Immunoassays', *Small*, 19, 2207949.

Selected research activities

ICREA**MEMOIR2023**

Andreas Meyerhans
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

University Education – 1987 PhD in Chemistry, University of Hamburg, Germany. – 1982 Diploma in Chemistry, University of Hamburg, Germany. Professional Positions – Since 2010 ICREA Research Professor at Pompeu Fabra University, Barcelona. – 1998-2009 Full Professor, Saarland University, Germany. – 1990-1998 Assistant Professor, University of Freiburg, Germany. – 1988-1990 Postdoctoral Fellow, Institute Pasteur, Paris, France. – 1987-1988 Postdoctoral Fellow, Institute Biotechnological Research, Braunschweig, Germany.

Research interests

Infections with non-cytopathic viruses usually have 2 different outcomes. They may be eliminated by host immune responses (acute infections) or they may persist lifelong (persistent infections). Medically important examples are the Hepatitis B virus (HBV), the Human Immunodeficiency virus (HIV) and the Hepatitis C virus (HCV) that in adults usually follow an acute (HBV), a persistent (HIV) or an either acute or persistent (HCV) infection course. My laboratory is interested (i) to understand the factors that regulate the decision between an acute versus a persistent infection course, (ii) to define the factors that control the dynamic balance of virus expansion and immune control in persistent infections, (iii) to design immunogens to inhibit virus infections, and (iv) to generate quantitative descriptions of the virus/immune system dynamics by mathematical modeling.

Selected publications

- Casella V, Domenjo-Vila E, Esteve-Codina A, Pedragosa M, Rica PC, Vidal E, de la Rubia I, López-Rodríguez C, Bocharov G, Argilaguet J & **Meyerhans A** 2023, 'Differential kinetics of splenic CD169+macrophage death is one underlying cause of virus infection fate regulation', *Cell death & disease*, 14 - 12.

- Domenjo-Vila E, Casella V, Iwabuchi R, Fossum E, Pedragosa M, Castellví Q, Cebollada Rica P, Kaisho T, Terahara K, Bocharov G, Argilaguet J, **Meyerhans A** 2023, 'XCR1+DCs are critical for T cell-mediated immunotherapy of chronic viral infections', *Cell Reports*, 42, 2, 112123.

- Kobayashi-Ishihara M, Frazão Smutná K, Alonso FE, Argilaguet J, Esteve-Codina A, Geiger K, Genescà M, Grau-Expósito J, Duran-Castells C, Rogenmoser S, Böttcher R, Jungfleisch J, Oliva B, Martinez JP, Li M, David M, Yamagishi M, Ruiz-Riol M, Brander C, Tsunetsugu-Yokota Y, Buzon MJ, Díez J, **Meyerhans A** 2023, 'Schlafen 12 restricts HIV-1 latency reversal by a codon-usage dependent post-transcriptional block in CD4+T cells', *Communications Biology*, 6, 1, 487.

- Grossman Z, **Meyerhans A** & Bocharov G 2023, 'An integrative systems biology view of host-pathogen interactions: The regulation of immunity and homeostasis is concomitant, flexible, and smart', *Frontiers In Immunology*, 13, 1061290.

- Esteban I, Pastor-Quiñones C, Usero L, et al. 2023, '
Assessment of Human SARS CoV-2-Specific T-Cell Responses Elicited In Vitro by New Computationally Designed mRNA Immunogens (COVARNA)',
Vaccines (Basel), 12, 1, 15.

ICREA**MEMOIR2023**

Marco Milán Kalbfleisch
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Graduated in Biology at the Universidad Complutense in 1991, I obtained my PhD in the laboratory of Antonio García-Bellido at the CBM-Severo Ochoa in 1995. In 1997, I joined the laboratory of Stephen M. Cohen at the EMBL-Heidelberg where I got a position as Staff Scientist. Since 2003, I am ICREA Research Professor at the IRB Barcellona leading the Development and Growth Control Laboratory. Since 2007, I have also been Head of the Cell and Developmental Biology (2007-2018) and Mechanisms of Disease (2018-present) Programmes. I was Visiting Professor at the National University of Singapore in 2010 and I am Lecturer at the University of Barcelona since 2020. I am member of the Disease, Models and Mechanisms editorial (2016-) and European Drosophila Society (2021-) boards. I was elected EMBO Young Investigator in 2007 and EMBO member in 2023. I have directed 13 PhD theses, 17 Master theses, and published, as first or lead author, more than 75 papers.

Research interests

A balanced gene complement is crucial for proper cell function. Aneuploidy, the condition of having an imbalanced chromosome set, alters the stoichiometry of gene copy numbers and protein complexes and has dramatic consequences at the cellular and organismal levels. In humans, aneuploidy is associated with different pathological conditions including miscarriages, aging, cancer, microcephaly and mental retardation. Our lab uses Drosophila to molecularly characterize the impact of aneuploidy at the cellular, tissue-wide and organismal levels. We have established an epithelial model of Chromosomal instability (CIN), a feature of most human epithelial tumors, to unravel a leading role of aneuploidy in the emergence of tumor-like behaviors like tissue invasiveness, senescence and malignancy. We are also interested in addressing the impact of aneuploidy in other tissue types and cells, including stem cells.

Selected publications

- Barrio L, Gaspar AE, Muzzopappa M, et al. 2023, 'Chromosomal instability-induced cell invasion through caspase-driven DNA damage', *Current Biology*, 33, 20, 4446-4457, e5.

Selected research activities

EMBO Member 2023

ICREA**MEMOIR2023**

Ramon Miquel Pascual
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

Born in 1962 in Gelida (Barcelona). Graduated in physics in 1985 at Universitat de Barcelona (UB). PhD in experimental high-energy physics in 1989 at Universitat Autònoma de Barcelona. Postdoctoral stay at CERN, Geneva (Switzerland) from 1991 to 1996, mostly working on the ALEPH experiment at the LEP accelerator. "Professor Titular" at UB, 1997-2000. Moved to Lawrence Berkeley National Laboratory, Berkeley (USA) as a Career Staff Scientist in 2001, where started a transition towards observational cosmology. Since 2006, ICREA Research Professor at Institut de Física d'Altes Energies (IFAE). Associate Director of IFAE from 2008 to 2014. Director from 2015 to 2022. Working on the "Dark Energy Survey" (DES), "Dark Energy Spectroscopic Instrument" (DESI), and IFAE-led "Physics of the Accelerating Universe" (PAU) projects, trying to shed light into the nature of the "dark energy" that is causing the current acceleration of the expansion of the Universe.

Research interests

I am an experimental particle physicist trying to understand the ultimate building blocks of the Universe and their interactions, through both experiments involving particle accelerators and astronomical observations. Recently, my work has been mostly devoted to planning instruments and performing observations to try to unveil the nature of the so-called "dark-energy" component of the Universe, which accounts for about 70% of the matter-energy of the Universe, counters the attractive effect of gravity on all other forms of matter and energy, and drives the current accelerated expansion of the Universe.

Selected publications

- **Silber JH** et al. 2023, 'The Robotic Multiobject Focal Plane System of the Dark Energy Spectroscopic Instrument (DESI)', *The Astronomical Journal* 165, 9
- **Abbott TMC** et al. (DES Collaboration) 2023, 'Dark Energy Survey Year 3 results: Constraints on extensions to Lambda CDM with weak lensing and galaxy clustering', *Physical Review D* 107, 083504
- **Cabayol L** et al. 2023, 'The PAU Survey and Euclid: Improving broadband photometric redshifts with multi-task learning', *Astronomy Astrophys*, 671, A153.
- **Gordon C** et al. (DESI Collaboration) 2023, '3D Correlations in the Lyman-a Forest from Early DESI Data', *Journal of Cosmology and Astroparticle Physics*, 1, 045.
- **Abbott TMC** et al. (KiDS and DES Collaborations) 2023, 'Consistent cosmology combining cosmic shear surveys', *Open J. Astrophysics*, 6.
- **Giannini G** et al. (DES Collaboration) 2023, 'Dark Energy Survey Year 3 results: redshift calibration of the MagLim lens sample from the combination of SOMPZ and clustering and its impact on cosmology', *Monthly Notices of the Royal Astronomical Society,* 527, 2010.

Selected research activities

-Member of the Board of the High Energy and Particle Physics Division of the European Physical Society (EPS-HEPP)

-Chair of the Membership Committee of the Dark Energy Spectroscopic Instrument (DESI) Collaboration

-Spanish representative in the Management Committee of the Dark Energy Survey (DES) Collaboration

-Chair of the DES Builders' Committee

-Member of the DES Publications Board

ICREA**MEMOIR2023**

Jordi Miralda Escudé
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

I learned physics at the Autonomous University of Barcelona, and astronomy on my own and through some amateur associations in Catalonia. I did my PhD in astrophysics at Princeton University, graduating in 1991 with a thesis on gravitational lensing by clusters of galaxies and large-scale structure. I was a postdoc at the Institute of Astronomy in Cambridge, and a Long-Term Member at the Institute for Advanced Study. I joined the University of Pennsylvania as a professor of astrophysics in 1996, and then moved to The Ohio State University in 2000. I moved back to Catalonia with an ICREA position in 2005, and I have been doing research on astrophysics and cosmology at the Institut de Ciències del Cosmos in the University of Barcelona. At present I am interested in the nature of dark matter in the Universe and axion detection experiments.

Research interests

I enjoy searching for physical explanations of what we observe in the Universe. My interests range over the formation of galaxies and their large-scale distribution, gravitational lensing and dark matter in the Universe, the intergalactic medium, and black holes in galactic nuclei. For many years I have focused on the large-scale distribution of intergalactic gas probed by absorption spectra in quasar spectroscopic surveys, which reveals crucial clues on both the initial conditions of the Universe and the formation of galaxies. At present I am looking at various techniques to inquire on the nature of dark matter, among them the observation of extremely magnified high-redshift stars close to the critical curves of clusters of galaxies acting as gravitational lenses, the study of tidal streams of stars left by stellar systems orbiting the Milky Way galaxy, and several techniques to detect axion waves as a highly promising dark matter candidate.

Selected publications

- Palau CG & **Miralda-Escude J** 2023, 'The oblateness of the Milky Way dark matter halo from the stellar streams of NGC 3201, M68, and Palomar 5', *Monthly Notices Of The Royal Astronomical Society*, 524, 2, 2124-2147.
- Ahyoune S, et al. 2023, 'A Proposal for a Low-Frequency Axion Search in the 1-2 ueV Range and Below with the BabyIAXO Magnet', *Annalen der Physik*, 535, 12, 2300326.

Selected research activities

-I have been active in collaborations for experimental searches of the axion (IAXO, Rades), a promising candidate for the cold dark matter of the Universe, doing data analysis and investigating the use of superconducting qubits to reach higher sensitivity.

-I have acted as Scientific Director at the Institute of Cosmos Sciences as the Principal Investigator of the Maria de Maeztu award.

ICREA**MEMOIR2023**

Morgan W. Mitchell
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

Born in 1968 in Palo Alto, California, USA, Prof. Mitchell earned his Ph.D. in Physics from the University of California at Berkeley in 1999 with a thesis on the quantum optics of photon-photon interactions. In the group of Serge Haroche at the Ecole Normale Superieure he advanced cavity quantum electrodynamics with cold atoms and microfabricated optical resonators. At Reed College he built the first diode-laser based entangled photon sources, and in the group of Aephraim Steingberg in Toronto he demonstrated the first multi-photon NooN states and quantum process tomography. He joined ICFO in 2004 and ICREA in 2011. His leads the research group Atomic Quantum Optics at ICFO and coordinates the Quantum Technologies Emergent Community in Catalonia (QuantumCAT). He was awarded an ERC Starting Grant in 2011, an ERC Proof-of-Concept Grant in 2016, an ERC Advanced Grant in 2023 and has been recognized with a Vanguardia de la Ciencia award in 2012, Ehrenfest Prize and Kavli Publication Prize.

Research interests

Prof. Mitchell leads the Atomic Quantum Optics group at ICFO, which uses experimental quantum optics and atomic physics for quantum technology and quantum foundations. The group works with single neutral atoms as single quantum systems, spinor Bose-Einstein condensates and high-density atomic vapors as extreme sensors, and has invented several sources of atom-resonant squeezed and entangled light. Major projects include chip-scale atomic magnetometers for magnetic brain imaging (Quantum Technologies Flagship and EIC Transition projects), quantum enhancement protocols for state of the art optical lattice atomic clocks, quantum random number generators for loophole-free Bell tests and device-independent quantum technologies, and coordination of The BIG Bell Test, a world-wide collaboration in foundations of physics. In 2017 Prof. Mitchell co-founded the Quside Technologies to deliver state of the art quantum random number generation for communications and data security applications.

Selected publications

- Mouloudakis K, Bodenstedt S, Azagra M, **Mitchell MW**, Marco-Rius I & Tayler MCD 2023, 'Real-Time Polarimetry of Hyperpolarized 13C Nuclear Spins Using an Atomic Magnetometer', *Journal Of Physical Chemistry Letters*, 14, 5, 1192 - 1197.
- Storz S, Schär J, Kulikov A, Magnard P, Kurpiers P, Lütolf J, Walter T, Copetudo A, Reuer K, Akin A, Besse J-C, Gabureac M, Norris GJ, Rosario A, Martin F, Martinez J, Amaya W, **Mitchell MW**, Abellan C, Bancal J-D, Sangouard N, Royer B, Blais A & Wallraff A 2023, 'Loophole-free bell inequality violation with superconducting circuits', *Nature* 617, 265-270.

- Troullinou C, Giovanni Lucivero V & **Mitchell MW**
2023, 'Quantum-Enhanced Magnetometry at Optimal Number Density', *Physical Review Letters,* 131, 133602.

ICREA**MEMOIR2023**

Sandra Montón Subías
Universitat Pompeu Fabra (UPF)
Humanities

I am an ICREA Research Professor at Universitat Pompeu Fabra, where I coordinate CGyM (Research Group on Colonialism, Gender and Materialities) and GRASEG (Research Group in Social Archaeology and Gender Studies). I began my research at Universitat Autònoma de Barcelona, where I received my PhD in 1993. I was subsequently appointed by the McDonald Institute for Archaeological Research, the University of Cambridge, and the Universitat Autònoma de Barcelona. I have been honorary research fellow and visiting professor at different centres including UCSC, Northwestern, the National Taiwan University, the German Archaeological Institute, the University of Oslo, and the University of Sydney. I have received several grants from the Catalan and the Spanish government, the European Union, and the Palarq Foundation. I am currently supervising 7 PhD students and 2 postdocs. I was funding member and co-chair of AGE (Archaeology and Gender in Europe) for the period 2009-2015.

Research interests

I am an archaeologist with broad interests in social and theoretical archaeology. My fields of research include the Archaeology of Colonialism, the Archeology of Globalization, and the Archaeology of Gender. I am investigating the consequences that Jesuit missions had on native CHamoru (Guam, western Pacific). This research challenges conceptual dichotomies among disciplines and within disciplines (i.e. prehistoric and historic archaeology), and addresses issues of high scientific and social relevance such as the construction of gender and the value of dynamics related to cultural continuity, cooperation, and interdependence to human societies. I am PI in GenderGlobal, and ABERIGUA; scientist in charge in two ERC IF-MSCAs; and co-director of archaeological campaigns at Humatak. I believe that research must result in a more equitable and sustainable future, which in my case implies diluting divides between popular and academic understandings of colonialism and gender.

Selected publications

- **Montón Subías S** 2023, 'Arqueología y Cuidados. Representación del pasado, actividades de mantenimiento y prácticas académicas'. In Pilar Fatás et al. eds. *Los bisontes de Altamira los descubrió una mujer. Museos, arqueología, patrimonio y género*. Museo Nacional y Centro de Investigación Altamira, Altamira, 39-56.
- **Montón Subías S** 2023, El proyecto Aberigua: el estudio de la materialidad colonial en las islas Marianas. In Rodríguez-Ponga R & Barbero MA, *Quinientos años de un Oceano llamado Pacífico*, Dykinson*,* Madrid: 239-259.

Selected research activities

1. Coordinator SGR-Cat 2021 *Grup de Recerca en Arqueologia Social i Estudis de Gènere*-GRASEG.
2. PI in *Gender and Globalization. From Prehistory to Early Modernity in the Mariana Islands (*PID2019-105431GB-I00).
3. Interview 2nd step ERC AdG.
4. 1 new doctoral contract FI-Joan Oró.
5. Invited speaker to workshops *Cocina, Cultura Material y Actividades de Mantenimiento*, *Arqueología Doméstica. Identidad y parentesco* and *Jesuit Launcheon Workshop.*
6. Invited round tables *L'art de la cuina. Un diàleg durant segles* and *Retos de la arqueología feminista e interseccional:camino recorrido y nuevas perspectivas*.
7. Supervision: 7 doctoral candidates.
8. Co-organization: session *In Small Islands Forgotten*, Society for Historical Archaeology, Universidade Nova, Lisbon..
9. Co-organization: round table *AGE for a Slow Archaeology*, European Association of Archaeologists, Queens University, Belfast.
10. Organization: running seminar *Charlas Feministas en Arqueologia* (Pompeu Fabra University).

ICREA**MEMOIR2023**

Núria Montserrat Pulido

Institut de Bioenginyeria de Catalunya (IBEC)

Life & Medical Sciences

My research activity was recognized with the prestigious ERC-Starting grant (call 2014) and the ERC Consolidator Grant (call 2020). I received >14 M€ in competitive projects. I published more than 80 papers in peer review journals (Cell, Cell Metabolism, Nature Materials, among others). I combine my research activity being Deputy Director [CMRB:2011-13 and IBEC:2018-today]. From January 2021 I have been selected in a competitive call as Coordinator of the Spanish Platform for Biobanks and Biomodels from the Institute of Health Carlos III (P_ISCIII_BB). From 2021 the P_ISCIII_BB is the national node of the European Infrastructure of research BBMRI-ERIC.

Research interests

By generating new organoid model systems developing cutting-edge solutions in cell and tissue engineering we study how systemic conditions (i.e., diabetes) and physical constrains (i.e., changes in extracellular matrix) lead to morphogenesis and disease in heart, kidney, retina and brain.

Selected publications

- Fontcuberta-PiSunyer M, García-Alamán A, Prades È, Téllez N, Alves-Figueiredo H, Ramos-Rodríguez M, Enrich C, Fernandez-Ruiz R, Cervantes S, Clua L, Ramón-Azcón J, Broca C, Wojtusciszyn A, **Montserrat N**, Pasquali L, Novials A, Servitja JM, Vidal J, Gomis R & Gasa R 2023, 'Direct reprogramming of human fibroblasts into insulin-producing cells using transcription factors', *Commun Biol,* 24,6,1,256.
- Nauryzgaliyeva Z, Goux Corredera I, Garreta E, **Montserrat N** 2023, 'Harnessing mechanobiology for kidney organoid research' *Front Cell Dev Biol,* 24, 11, 1273923.

ICREA**MEMOIR2023**

Kasper Moth-Poulsen
Institut de Ciència de Materials de Barcelona (CSIC - ICMAB) & Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics

Kasper Moth-Poulsen (KMP) studied Chemistry and obtained his PhD from University of Copenhagen (Denmark) in 2007. He worked as a postdoc in denmark for 2 years before moving to UC Berkeley as a post doctoral Scholar. In 2011 KMP joined Chalmers University of Technology in Gothenburg (Sweden) as an assistant professor and later associate and full professor (2019). Since October 2021 KMP is awarded a professor position at the Catalan Institute of Advanced Studies (ICREA) and joins the Institute of Materials Science of Barcelona (ICMAB-CSIC) as a professor in 2021. Since 2023 he is a professor at the polytechnic University of Catalunya

Research interests

My research in nanomaterials chemistry has focused on 3 research topics, the most prominent is the development of solar energy storage in molecular photoswitches, so-called MOST systems. This class of materials offers an emission free way to capture and store solar energy.Thompson reuters and more. In a second research area, I've been developing nanomaterials for molecular electronics, catalysis and sensing. Notable achievements are the development of the plastic plasmonics concept where we combine nanoparticle based sensors with functional polymers. Another outcome is the use of flow chemistry to produce large amounts of nanoparticles with specific surface facets. The flow chemistry allows for a high degree of automation, reaction optimization and quality monitoring using artificial intelligence and machine learning concepts. This research has lead to the formation of the startup Nano Scientifica Scandinavica AB.

Selected publications

– Dreos A, Ge J, Najera F, Tebikachew BE, Perez-Inestrosa E, **Moth-Poulsen K**, Blennow K, Zetterberg H & Hanrieder J 2023, 'Investigating New Applications of a Photoswitchable Fluorescent Norbornadiene as a Multifunctional Probe for Delineation of Amyloid Plaque Polymorphism', *Acs Sensors*, 8, 4, 1500-1509.

– Baronas P, Elholm JL & **Moth-Poulsen K** 2023, 'Efficient degassing and ppm-level oxygen monitoring flow chemistry system', *Reaction Chemistry & Engineering*, 8(8):2052-2059.

– Bharmoria P, Ooi SA, Cellini A, et al. 2023, 'Protein cohabitation: long-term immunoglobulin G storage at room temperature', *Journal Of Materials Chemistry B*, 11, 5400-5405.

– Darmadi I, Ostergren I, Lerch S, et al. 2023, 'Bulk-Processed Plasmonic Plastic Nanocomposite Materials for Optical Hydrogen Detection', *Accounts Of Chemical Research*, 56, 13, 1850 – 1861.

– Wen X, Nazemi SA, da Silva RR & **Moth-Poulsen K** 2023, 'The Effect of the Pd Precursors on the Shape of Hollow Ag-Pd Alloy Nanoparticles Using Ag Nanocubes as Seeds', *Langmuir*, 39, 32, 11268 – 11273.

– Hillers-Bendtsen AE, Elholm JL, Obel OB, Hölzel H, **Moth-Poulsen K** & Mikkelsen KV 2023, 'Searching the Chemical Space of Bicyclic Dienes for Molecular Solar Thermal Energy Storage Candidates', *Angewandte Chemie-international Edition*, 62, 40, e202309543.

– Naimovicius L, Bharmoria P & **Moth-Poulsen K** 2023, 'Triplet-triplet annihilation mediated photon upconversion solar energy systems', *Materials Chemistry Frontiers*, 7, 12, 2297-2315.

– Wang Z, et al. 2023, 'Chasing the rainbow: Exploiting photosensitizers to drive photoisomerization reactions', Responseve Materials 1, 2.

– Darmadi I, Piella J, Stolas A, Andersson C, Tiburski C, **Moth-Poulsen K** & Langhammer C 2023, 'Plasma Cleaning of Cationic Surfactants from Pd Nanoparticle Surfaces: Implications for Hydrogen Sorption', *Acs Applied Nano Materials*, 6, 10, 8168-8177.

ICREA**MEMOIR2023**

Massimo Motta
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Massimo Motta (BSc Bocconi, Milan, 1987; PhD Louvain, 1991) is Research Professor at ICREA, Universitat Pompeu Fabra (UPF) and Barcelona School of Economics, since 2010. He was Chief Economist at the European Commission in 2013-2016, where he coordinated the EC's economic analysis on antitrust, mergers and state aid. He was previously a professor at Univ. Bologna (2007-2010), European University Institute, Florence (1998-2008) and UPF (1992-1998). His research is on industrial organization, and it has been published in the top international economic journals. Massimo's book on Competition Policy: Theory and Practice (Cambridge UP, 2004) is the standard reference on antitrust. He has also co-authored a book on Exclusionary Practices (Cambridge UP, 2018) and on Market Investigations (Cambridge UP, 2022). He was President of the European Association of Researchers in Industrial Economics.

Research interests

Massimo has been working on a number of topics related to the welfare effects of business practices. In particular, he has been studying exclusionary practices - such as predation, rebates, exclusive contracts, tying, refusal to deal - that dominant firms may adopt to exclude rivals from the market, and the effects of mergers and acquisitions (on which he is now writing a new book). Both sets of issues are very important in today's digital economies. His current research focuses on the conduct of the big digital platforms. Among other topics, he has been studying the effects of acquisitions of start-ups by big firms and the optimal policy towards them; dominant firms' decisions not to allow access to their platforms; or their strategies to imitate products and applications of complementors, to prevent the possibility of being challenged by them.

Selected publications

- **Motta M** 2023, 'Self-preferencing and foreclosure in digital markets: Theories of harm for abuse cases', *International Journal Of Industrial Organization*, 90, 102974.

ICREA**MEMOIR2023**

Salvador Moyà Solà
Institut Català de Paleontologia (ICP)
Life & Medical Sciences

PhD in Geological Sciences (UAB, 1983). He was researcher of the Institute of Paleontology of Sabadell. Currently, he is ICREA research professor at the Institut Català de Paleontologia M. Crusafont (CERCA program). He was the founder and first director of this institute (2006-2017). Science, Pnas, Tree, Proc. Royal Soc., between others. He has received several national and international awards. He participates in several national and international projects, among them the RHOI Project (Revealing Hominid Origin Initiative, NSF USA) and international projects (Leakey Foundation, Wenner-Gren foundation) as well as national projects (Mineco, Agaur). He and his team are responsible for the discovery and study of key fossil hominoid specimens such as the partial skeletons of Hispanopithecus laietanus, Pierolapithecus catalaunicusand Pliobates cataloniae, the best preserved of the whole Eurasian continent.

Research interests

The main aim of my research is the study of the origin and evolution of hominoids (Primates) from a paleontological perspective. It forms part of a wider research scope, embracing the evolutionary history of primates including Paleogene and Pleistocene primates. A major goal is the study of the paradox existing between the ancestral crown-hominoid (and hominid) morphotypes reconstructed on the basis of derived features shared by extant taxa and the more primitive morphotype found in the fossil record. This suggests that homoplasy plays a role in hominoid evolution, suggesting that orthograde adaptations could be convergent in the three hominoid lineages, gibbons, orangutans and African Apes. Morphofunctional analysis of complex structures or the application of proteomics to fossil hominoids, would help to identify homoplastic characters. Field work on the Vallès-Penedès Neogene basin with the objective to increase the current hominoid fossil record, is a priority action of my research.

Selected publications

- Pugh, KD, Catalano SA, et al. 2023, 'The reconstructed cranium of Pierolapithecus and the evolution of the great ape face', *Proceedings of the National Academy of Sciences USA*, 120, e2218778120.
- Köhler M, Nacarino-Meneses C, Cardona JQ, Arnold W, Stalder G, Suchentrunk F & **Moyà-Solà S** 2023, 'Insular giant leporid matured later than predicted by scaling', *Iscience*, 26 - 9.
- Pugh, Kelsey D.; Catalano, Santiago A.; De Los Rios, Miriam Perez; Fortuny, Josep; Shearer, Brian M.; Vecino Gazabon, Alessandra; Hammond, Ashley S.; Moya-Sola, Salvador; Alba, David M.; Almecija, Sergio 2023, 'Evolutionary modeling of the hominid face', *American Journal Of Biological Anthropology*, 180, 142 - 143.
- Raventós-Izard G, Almécija S, Moyà-Solà S, Alba DM & Arias-Martorell J.2023. 'The proximal ulnar morphology of the Miocene small-bodied catarrhine
Pliobates cataloniae' [Abstract]. In D M Alba, J Marigó, C Nacarino-Meneses & A
Villa (Eds.), Book of Abstracts of the 20th Annual Conference of the European
Association of Vertebrate Palaeontologists, .
Palaeovertebrata, Special Volume 1, pp. 220-221.
- Figueroa-Torrejón A, Almécija, S, et al. 2023, *'Geometric morphometric analysis of the distal humerus of Pliobates
cataloniae: Locomotor inferences and anthropoid elbow evolution',*
Book of Abstracts of the
20th Annual Conference of the European Association of Vertebrate Palaeontologists, 1-2023, 86-87, Palaeovertebrata, Special.
- Alba DM, Marigó J, et al. 2023,
Book of Abstracts of the 20th Annual Conference
of the European Association of Vertebrate Palaeontologists, Palaeo Vertebrata
- Viladot A, Sánchez IM, **Moyà-Solà S** & Nacarino-Meneses C 2023, 'Bone
histology of Ampelomeryx (Mammalia, Ruminantia) from els Casots fossil site sheds
light on its growth pattern [Abstract]' in Alba DM, Marigó J, Nacarino-Meneses C
& Villa A (Eds.), *Book of Abstracts of the 20th Annual Conference of the European
Association of Vertebrate Palaeontologists, Palaeovertebrata*, Special Vol.1, 264.

ICREA**MEMOIR2023**

Aitor Mugarza Ezpeleta
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Aitor Mugarza graduated and obtained his PhD in Physics both at the University of Basque Country. After his doctoral studies, he was awarded a Marie Curie fellowship to work as a postdoctoral scientist at the Lawrence Berkeley National Laboratory, USA, and at the Materials Science Institute of Barcelona (ICMAB). He later joined the Catalan Institute of Nanoscience and Nanotechnology-ICN2 (formerly ICN) starting as a Ramon y Cajal Fellow in 2007, and as Tenure Track Group Leader of the Atomic Manipulation and Spectroscopy Group at ICN2 since 2013. He is author of 78 articles, and of 64 invited talks at international conferences, universities and schools. His research activity is based on the investigation of quantum properties of matter on the nanoscale, and developing strategies to manipulate them with atomic precision.

Research interests

The research interests of Aitor Mugarza focus on the atomic-scale engineering of the quantum properties of novel nanomaterials. At the nanoscale, the properties of materials are dominated by quantum effects and interfacial phenomena, which impose strong limitations on the control and reproducibility of device performances, but also open up avenues for engineering new physical properties. The aim of Aitor Mugarza and his group is to understand and control quantum phenomena with atomic precision by chemical and structural manipulation, nanostructuring and interfacing materials that are identified as strategic in the roadmap for new technologies (hybrid metal-organic heterostructures, graphene-based 2D materials, topological insulators...).

Selected publications

- Muñiz Cano B, Ferreiros Y, Pantaleón PA, Dai J, Tallarida M, Figueroa AI, Marinova V, García-Díez K, **Mugarza A**, et al. 2023,'Experimental Demonstration of a Magnetically Induced Warping Transition in a Topological Insulator Mediated by Rare-Earth Surface Dopants', *Nano Letters,* 23, 6249-6258.
- Tenorio, Maria; Moreno, Cesar; Vilas-Varela, Manuel; Castro-Esteban, Jesus; Febrer, Pol; Pruneda, Miguel; Pena, Diego; Mugarza, Aitor 2023, 'Introducing Design Strategies to Preserve N-Heterocycles Throughout the On-Surface Synthesis of Graphene Nanostructures', *Small Methods*, .
- Bartolomé E, Ferrari L, Sedona F, Arauzo A, Rubín J, Luzón J, Herrero-Albillos J, Panighel M, **Mugarza A**, Rancan M, Sambi M, Armelao L, Bartolomé J & Bartolomé F 2023, 'Surface Deposition Induced Reduction of the Ground State Spin in Cr10 Wheel', *Advanced Materials Interfaces*, 10, 20, 2300146.
- Moreno C, Diaz de Cerio X, Vilas-Varela M, Tenorio M, Sarasola A, Brandbyge M, Peña D, Garcia-Lekue A & **Mugarza A** 2023, 'Molecular Bridge Engineering for Tuning Quantum Electronic Transport and Anisotropy in Nanoporous Graphene', *Journal of the American Chemical Society*, 145, 16, 8988–8995.

Selected research activities

Invited contributions:

- "Manipulating Topological States by Proximity and Templating Strategies", International Conference on Materials for Advanced Technologies, June 26-30, Singapore (2023).
- "Bringing atomic precision to the synthesis of graphene-based lateral heterostructures ", European Graphene Forum, Oct 25-27 Albufeira, Portugal (2023).

Management:

- Coordinator of the Scanning Probe Microscopy (SPM) Platform at ALBA

Committees:

- Spanish Delegate at the Nanometer Structure Division of the International Union for Vacuum Science, Technique, and Applications - IUVSTA
- Access Committee of the Integrated Infrastructure for Electron Microscopy of Materials -ELECMI
- Scientific Committee of the Spanish Vacuum Society - ASEVA

ICREA**MEMOIR2023**

Silvia Muro Galindo

Institut de Bioenginyeria de Catalunya (IBEC)
Life & Medical Sciences

Dr. Muro obtained her PhD in Sciences from Universidad Autónoma de Madrid, then was a Research Assistant Professor in Pharmacology in the University of Pennsylvania, and then a Tenured Associate Professor in the University of Maryland. Since November 2017, she is an ICREA Professor in the Institute for Bioengineering of Catalonia. She has published 98 articles and chapters in drug delivery and received awards from the Controlled Release Society, the American Society for Nanomedicine, has been a member of the USA NIH Nanomedicine Study Section and is an elected Fellow of the American Institute for Medical and Biological Engineering.

Research interests

Dr. Muro's research sits at the interface between cellular biology, nanotechnology, and drug delivery. She studies the biological mechanisms ruling how our tissues transport cargoes within our bodies and applies this knowledge to design of nanodevices for delivery of therapeutics to specific disease sites. Focusing on genetic conditions that cause metabolic, neurodegenerative and cardiovascular syndromes, as well as on a new transport pathway she helped discover, her goal is to gain efficient access within the body and its cells, to enable effective treatment of these life-threatening disorders.

Selected publications

- Placci M, Giannotti MI & **Muro S** 2023, 'Polymer-based drug delivery systems under investigation for enzyme replacement and other therapies of lysosomal storage disorders', *Advanced Drug Delivery Reviews*, 197, 114683.
- Nong J, Glassman PM, Myerson JW, et al. 2023, 'Targeted Nanocarriers Co-Opting Pulmonary Intravascular Leukocytes for Drug Delivery to the Injured Brain', *Acs Nano*, 17, 14, 13121 - 13136.
- Loeck M, Placci M & **Muro S** 2023, 'Effect of acid sphingomyelinase deficiency in type A Niemann-Pick disease on the transport of therapeutic nanocarriers across the blood-brain barrier', *Drug Delivery And Translational Research*, AHEAD
- del Moral, Maria; Loeck, Maximilian; Muntimadugu, Eameema; Vives, Guillem; Pham, Vy; Pfeifer, Peter; Battaglia, Giuseppe; Muro, Silvia; Andrianov, Alexander K. 2023, 'Role of the Lactide:Glycolide Ratio in PLGA Nanoparticle Stability and Release under Lysosomal Conditions for Enzyme Replacement Therapy of Lysosomal Storage Disorders', *Journal Of Functional Biomaterials*, 14, 9, 440.

Selected research activities

Editor:

-Special Issue + editorial remark: Lysosomal Therapies and Drug Delivery Strategies. Adv Drug Deliv Revs.

Talks:

-Cellular transport and new enzyme replacement strategies (Sep. 2023) Annual Conference, Spanish Society for Acid Sphingomyelinase Deficiency, Madrid, Spain.

-Drug delivery: fundamental aspects and applications (Mar. 2023) Annual Retreat, Bioengineering Undergraduate Program, University of Barcelona, Spain.

-ICAM-1-mediated nano-biotechnology (Mar. 2023) Seminar series, Molecular Biotechnology Master Program, University of Barcelona, Spain.

Conferences:

-Transcytosis of anti-ICAM-1 nanoparticles in a model of the lung endothelium. (2023) Annual Symposium, Institute for Bioengineering of Catalonia, Barcelona, Spain.

Honors:

-Scientific Advisory Board, Nocturna Therapeutics (2023) Barcelona, Spain.

-Nominated Full Member of the Sigma Xi, The Scientific Research Honor Society (2023) USA.

ICREA**MEMOIR2023**

Toni Ñaco del Hoyo
Universitat de Girona (UdG)
Humanities

Prof. Toni Ñaco del Hoyo (PhD 1996, UAB) is a Roman Historian. Before joining ICREA in 2009 he held Catalan and Spanish funded postdoctoral positions at Oxford for 3 years till 2002, Fulbright Visiting Fellowship at UC Berkeley (2004), and a Ramón y Cajal job at UAB (2004-9). Research awards as PI: H.F. Guggenheim Foundation (2007), RICIP (2010; 2012-3), 5 Spanish R+D Grants, Icrea Conference Award (2012), Tytus Visiting Fellowship at U.Cincinnati (2014); grants for archaeological research (2018-21; 2022-5). He is currently Visiting Scholar at Classics (Oxford). He has sponsored 6 postdocs (2012-4; 2018-25) and 3 PhD assistants. In 2015 he moved to UdG, where he has coordinated and still does a funded SGR Consolidated Group (2017-21; 2022-4) leading 22 researchers. He has successfully supervised 5 PhD theses and he is currently supervising 2 further theses. Member of an editorial board: *Colección Libera Res Publica* (Zaragoza-Sevilla), and of its Research Network (2023-5).

Research interests

Prof. Ñaco del Hoyo's research and interests lie predominantly with the history of Republican Rome. Alongside J. Principal (Barcelona) and M. Dobson (Exeter) he recently edted an international volume on 'Rome and the north-western Mediterranean integration and connectivity c. 150-70 BC', for Oxbow Books (2022), and he continues to expand such a research line for the years to come. Additionally, he has conducted research on Republican taxation, collateral damage, garrisoning strategies, asymmetrical warfare, military intelligence and logistics, crisis management, international relations, and peace studies in the Classical World. He is is currently co-editing a 'Brill's Companion to the Mercenaries of the Ancient Western Mediterranean', alongside J. Armstrong (Auckland) and L. Rawlings (Cardiff), under contract.

Selected publications

- **Ñaco del Hoyo, T.** 2023, 'ITALY'S ECONOMIC REVOLUTION: INTEGRATION AND ECONOMY IN REPUBLICAN ITALY', *Journal of Roman Studies*, 113 - 228 - 229,
- **Ñaco del Hoyo T** 2023, 'Rome. Strategy of Empire', *Classical Review*, 73, 2, 609-61.
- G. Cabezas-Guzmán & **T. Ñaco del Hoyo** 2023, 'Spoils, army wages and supplies in Rome's early military intervention in Hispania'. In M. Helm, S. Roselaar (eds.), *Spoils in the Roman Republic. Boone and Bane*, Franz Steiner Verlag, Historia. Zeitschrift für Alte Geschichte Series, ISBN 978-3-515-13369-2 (Print), Stuttgart, 265-285.

Selected research activities

-June 2023 to May 2025. *Ayudas 2022 a Redes de Investigación. Agencia Estatal de Investigación*. "RED2022-134584-T "Libera Res Publica. Red de Estudios sobre la República Romana" · **Role**: Researcher. -**PhD Dissertation**: Dr. Gerard Ventós Rodríguez, "*Divide et impera. Conectividad y dinámicas de conflicto en Occidente durante la República Romana (ss. III-II aC)*, Universitat de Girona, 15-12-2023. Excellent 'cum laude'. **Role**: co-supervisor. -**Reviewing**: VIII PURPUREAE VESTES International Symposium (Athens), Cambridge University Press (2), Università di Catania, Universitat Rovira i Virgili. **-Conference paper:** *V Seminario Libera Res Publica*, Madrid (October). BA Thesis (TFG): Mr. Enric Bagué Noguer: "*L'Arqueologia del conflicte: marc teòric i alguns casos d'estudi en la Hispania republicana*". UdG. 29-06-2023. **Role**: supervisor. - **Project meeting and presentation** of T. Ñaco, J. Principal, M. Dobson (eds.), Rome and the North-Western Mediterranean. Integration and Connectivity, Oxford 2022: UdG, 17-02-2023. **Role**: organiser and chairman. -**External examiner**: PhD thesis J.P. Prieto Iummi. *Romana arma non ante visa. Las guerras romanas en el Oriente helenístico (229-194 A.C.).* Université Bordeaux Montaigne. 18-12-2023.

ICREA**MEMOIR2023**

Rosemarie Nagel
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Rosemarie Nagel is an ICREA-Research Professor and BESlab-UPF director in experimental, behavioral, and neuroeconomics at Universitat Pompeu Fabra and Barcelona GSE. In 1994, Nagel gained her doctoral degree in economics under Reinhard Selten (University Bonn), and was Alvin Roth's postdoctoral fellow (University Pittsburgh) 1994-95. Since 1995 she has been working in the Department of Economics and Business at the Universitat Pompeu Fabra; in 2006, she was promoted to full professor, and in 2007 she joined ICREA.

Research interests

Her research builds bridges between economic theory and human behavior, structuring bounded rationality and economic situations through pattern recognition, experimental designs, and cognitive models using game-theoretic, laboratory and field experiments, and neuroscientific tools. She links behavioral data with brain activity gained with functional magnetic resonance imaging (fMRI) or eye-tracking data co-working with cognitive scientists, neuroscientists, biologists, and psychologists. Furthermore, with experimental economists and macro theorists, and recently also with computational economists, she organizes summer schools, workshops, and research using experimental tools to tackle macro and computational economic questions. Her approaches are applied in micro and macroeconomics, finance, neuroeconomics, management, psychology, and computer science.

ICREA**MEMOIR2023**

Arcadi Navarro i Cuartiellas
Centre de Regulació Genòmica (CRG) & Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

Arcadi got a PhD in Biology at the UAB. After quitting academia for some time, he went back to research as a postdoc at the University of Edinburgh. He entered the UPF in 2002 and joined ICREA in 2006. Between 2008-13 he was vice-director of the Institute for Evolutionary Biology, a joint UPF-CSIC initiative. Since 2010 he is Professor of Genetics at the UPF and leads a group on Evolutionary Genomics within the Department of Medicine and Life Sciences. He directed the Department between 2013 and 2016, a time during which he started a collaboration with the CRG, the EMBL-EBI and the BSC to co-direct the European Genome-Phenome Archive. In 2016 he left academy again to become Secretary for Universities and Research at the Generalitat de Catalunya. After a short sabbatical, he returned to all his previous appointments in January 2019. Since 2020 he also directs the Pasqual Maragall Foundation and its research center, the BarcelonaBeta Brain Research Center.

Research interests

Life as we see it in our planet today has been shaped by many different biological processes during billions of years. These processes leave complex and fascinating signatures in our genomes in the form of differences between species, or between individuals of the same species. Studying these patterns of genome diversity we can infer what are the forces that affect living organisms, how and when they act and how do they affect such various things as biodiversity, ageing or the differential susceptibility of different people to complex disease. All this knowledge empowers us to control our future but, above all, it is fun to obtain.

Selected publications

– Gao H et al. 2023, 'The landscape of tolerated genetic variation in humans and primates', *Science,* 380, eabn8153.
– Barteri F, Valenzuela A, Farré X, et al. 2023, 'CAAStools: a toolbox to identify and test Convergent Amino Acid Substitutions', *Bioinformatics*, 39, 10, btad623.
– Kuderna LFK, Gao H, Janiak MC, et al. 2023, 'A global catalog of whole-genome diversity from 233 primate species', *Science*, 380, 6648, 906 – 912.
– García-González L, Martí-Sarrias A, Puertas MC, et al. 2023, 'Understanding the neurological implications of acute and long COVID using brain organoids', *Disease Models & Mechanisms*, 16, 7, dmm050049.

ICREA**MEMOIR2023**

Tamer Nawar
Universitat de Barcelona (UB)
Humanities

Tamer Nawar is ICREA Research Professor at the University of Barcelona.

After receiving his PhD from the University of Cambridge, he was a postdoctoral research fellow in philosophy at the University of Oxford and then, from 2015 to 2022, was Assistant Professor and then Associate Professor at the Faculty of Philosophy at the University of Groningen. He has also been Nelson Distinguished Visiting Professor of Philosophy at the University of Michigan, Ann Arbor.

Research interests

His work focuses on diverse issues in the history of philosophy, epistemology, metaphysics, and the philosophy of language of logic. His research has appeared in *Mind*, *The Philosophical Quarterly*, *Philosophers' Imprint*, the *Journal of the History of Philosophy*, *Oxford Studies in Ancient Philosophy, Oxford Studies in Medieval Philosophy*, *Phronesis*, *Synthese*, and several other journals. He is currently leading a research project 'Truth in Ancient and Medieval Philosophy', funded by the European Research Council. This project examines the development of philosophical theories of truth in the Greco-Roman, Arabic, and Latin philosophical traditions in antiquity and the Middle Ages and how such theories responded to problems concerning issues such as semantic paradoxes (e.g. Liar paradoxes), various difficulties concerning the truth of statements about the future, and worries about the nature of correspondence between language and reality.

Selected publications

- **Nawar T** 2023, 'Pyrrhonian Scepticism, the Infinite Regress of Reasons, and Ancient Infinitism', *Rhizomata*, vol. 10 (2022), no. 2, pp 283-306.

ICREA**MEMOIR2023**

Konstantin Neyman
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Konstantin Neyman is ICREA Professor at Dept. de Ciència de Materials i Química Física & Institut de Química Teòrica i Computacional, Universitat de Barcelona, leading *Reactivity of Nanostructures* group. He obtained PhD from Inorganic Chemistry Institute in Novosibirsk and completed Habilitation (Venia Legendi) in Theoretical Chemistry at TU München. He published a book, 9 book chapters, 204 research articles and made several hundred conference and university presentations, including 154 invited lectures. His publications were cited 12000 times in WoS, H=59 & 14000 times in GoogleScholar, H=66. Before joining ICREA, Dr. Neyman held research positions in Germany at TU München, LMU München and Fritz-Haber-Institut (Berlin). He contributed to funding 45 research projects. Recent awards: Nanyang TU Invited Visiting Professor (SG), Chalmers Jubilee Professor (SE), Uppsala Uni. Visiting Professor (SE), Uni. Erlangen-Nuremberg Invited Scientist (DE), TU Vienna Visiting Professor (AT).

Research interests

The research group Reactivity of Nanostructures of Dr. Neyman at the Universitat de Barcelona deals with computational modelling of advanced, in particular, nanostructured inorganic materials important for catalysis, hydrogen technology, energy storage and related applications. A general aim is to understand at the atomic level by carrying out large-scale quantum mechanical computer calculations how the structure and composition of a material are related with its function in a given chemical process. It is often hardly possible to obtain this information experimentally. Yet, its absence drastically hinders knowledge-driven creation of materials with desired improved properties.

Selected publications

- Xie X, Briega-Martos V, Farris R, Dopita M, Vorokhta M, Skála T, Matolínová I, **Neyman KM**, Cherevko S & Khalakhan I 2023, 'Optimal Pt-Au alloying for efficient and stable oxygen reduction reaction catalyst', *ACS Applied Materials & Interfaces*, 15, 1, 1192-1200
- Slavinskaya EM, Stadnichenko AI, Quinlivan Domínguez JE, Stonkus OA, Vorokhta M, Smid B, Castro-Latorre P, Bruix A, **Neyman KM** & Boronin AI 2023, 'States of Pt/CeO_2 catalysts for CO oxidation below room temperature', *Journal of Catalysis*, 421, 285-299.
- Castro-Latorre P, **Neyman KM** & Bruix A 2023, 'Systematic Characterization of Electronic Metal-Support Interactions in Ceria-Supported Pt Particles', *Journal Of Physical Chemistry C*, 127, 36, 17700-17710.
- Zerbato E, Farris R, Fronzoni G, **Neyman KM**, Stener M & Bruix A 2023, 'Effects of oxygen adsorption on optical properties of Ag nanoparticles', *Journal of Physical Chemistry A*, 127, 49, 10412-10424.

Selected research activities

Invited talks

COST Action 18234 conference 'Designing the Future: Electro-, Photo- and Thermo-chemical Water Splitting', Brussels (BE) February;

Webinar of the journal 'Metals', May; CLINT-Collaborative Research Center 1452 'Catalysis at Liquid Interfaces', Erlangen (DE) April;

Technische Universität München, Garching (DE) April;

Intern. workshop 'Fundamental Principles of Catalysis', on-line talk (RU) November

Contributed talks

Intern. Meeting on Nanoalloys, Orleans (FR) May;

COST Action 18234 conference, Haifa (IL) July;

Intern. Workshop 'Metal-Oxide Ultrathin Films and Nanostructures', Zaragoza (ES) July

María de Maeztu Excellence CEX2021-001202-M for Inst. de Quimica Teòrica i Computacional, Uni. Barcelona 2023-2026, area leader

Computational modelling of complex materials for advanced technologies, MCIUN grant PID2021-128217NB-I00 (2022-2025), co-PI

Intern. project EXTREME with Uni. Sofia (BG) & ETH Zürich (CH) 2021-2024, PI Uni. Barcelona & Steering Committee chairman

ICREA**MEMOIR2023**

Josep Nogués Sanmiquel

Institut Català de Nanociència i Nanotecnologia (ICN2)

Engineering Sciences

ICREA Research Professor and Group Leader of the Magnetic Nanostructures group at the Institut Català de Nanociència i Nanotecnologia. Graduated in Physics from the Universitat Autònoma de Barcelona in 1986, earned his PhD in Condensed Matter Physics from the Royal Institute of Technology (Stockholm, Sweden) in 1993. He was post-doc fellow at the University of California San Diego from 1993 to 1997. From 1997-2001 research associate at the Universitat Autònoma de Barcelona and since 2001 ICREA Research Professor at the same university. In 2007 he moved to the ICN2 – Institut Català de Nanociencia I Nanotecnologia. His research interest is in the magnetic properties of diverse materials and the exchange coupling between dissimilar magnetic materials. In recent he has expanded hir reesrach interest into magnetoplasmonic materials for biomedical applications, novel structures for enviromental remediation and advanced characterization of nanomaterials.

Research interests

We study the magnetic properties of different types of exchange coupled nanostructures, e.g., lithographically patterned structures and core-shell type nanoparticles. The idea is to use magnetic interactions that arise between different magnetic materials to improve the overall magnetic properties of the materials. We correlate the different structural, morphological or magnetic parameters with the enhanced magnetic properties. Onther core topic of the group os magnetoplasmonic nanostructures for biomedical applications (e.g., hyperthermia). In recent years,w e have started to work on new topics like novel structures for enviromental remediation or advanced characterization of nanomaterials (using TEM, synchrotron techniques or neutrons).

Selected publications

- Roca AG et al. 2023 'Iron oxide nanoparticles (Fe_3O_4, γ-Fe_2O_3, FeO) ad as photothermal heat mediators in the first, second and third biological windows' Phys. Rep 1043, 1 - 35
- Fluksman A et al. 2023, 'Efficient Tumor Eradication at Ultralow Drug Concentration via Externally Controlled and Boosted Metallic Iron Magnetoplasmonic Nanocapsules', *ACS Nano*, 17, 1946
- Pujol-Vila F et al. 2023, 'Soft Optomechanical Systems for Sensing, Modulation, and Actuation', *Adv. Funct. Mater.* 33, 2213109.
- Golosovsky IV et al. 2023,
'Elucidating Individual Magnetic Contributions in Bi-Magnetic Fe3O4/Mn3O4 Core/Shell Nanoparticles by Polarized Powder Neutron diffraction´,
Small Methods, 7, 2201725.
- Careta O et al. 2023,
'Enhanced Proliferation and Differentiation of Human Osteoblasts by Remotely Controlled Magnetic-Field-Induced Electric Stimulation Using Flexible Substrates',
ACS Appl. Mater. Interfaces, 15, 58054.

Selected research activities

Talks:

Plenary: "Magnetoplasmonic nanodomes as a novel structure for biomedical Applications"; International Conference on Nanomaterials Nanfabrication and Nanocharacterization; Turkey

Invited: "Ansiometric Fe3O4 nanoparticles ad versatile theranostic agents" ; New Advances in Magnetic Nanoparticles: Biomedical and Environmental Applications; Spain

Invited: "Magnetoplasmonic nanodomes as a novel structure for biomedical Applications"
Joint Rapidly Quenched and Metasatble Materials and International Symposium on Metasable Amorphous and Nanostructured Materials; Poland

Invited: "Magnetoplasmonic nanocapsules as wiresely controlled nanotherapies"; International Conference on Material Science and Technology; Spain

ICREA**MEMOIR2023**

Sergey Odintsov
Institut de Ciències de l'Espai (CSIC - ICE)
Experimental Sciences & Mathematics

ICREA Research Professor at ICE (CSIC-IEEC) since 2003. Author of over 700 articles cited over 61000 times. Two ms were cited more than 3000 times, while 8 ms and two books – more than 1000 times each. Foreign Member of the Royal Norwegian Academy and of Serbian Academy of Nonlinear Sciences, member of Eur. Phys. Soc., Italian Grav. Soc. Awarded by Amaldi Gold Medal: European Prize for Grav. Physics 2014. Editorial Board Member of 9 journals, Editor-in-Chief of journal Symmetry and referee of about 20 journals (with dozen excellence certificates). Hirsh index h=119(Google S.), h=109(inspirehep), h=101(Scopus). Supervisor of 15 PhDs. Speaker/lecturer of about 125 and organizer of 45 int. workshops. Top Cited Clarivate Analytics Researcher in 2014-2018, 2023 (6 years in all). Honorary professor of several universities.

Research interests

I develop the theory which should describe our universe evolution as a whole. My main purpose is to resolve the fundamental puzzle of modern cosmology: why and how the universe accelerates? What is Dark Energy and Inflation? In fact, I proposed the first modified gravity which may describe the consistent universe history. In relation with modified gravity we proposed new very general and non-singular entropy which generalises known earlier variants. The alternative gravity which we develop should describe the whole sequence of the universe eras: inflation, radiation-matter dominance and dark energy era in a unified way. We also continue the search for exotic intermediate eras like pre-inflationary or exotic reheating era and the related gravitational waves. Our study of current universe will clarify its future: if it will expand eternally or if its evolution will be finished in the future singularity. The similarity of Big Bang and future singularity will be investigated too.

Selected publications

- **Odintsov SD**& Oikonomou VK 2023, 'Inflationary attractors predictions for static neutron stars in the mass-gap region', *Physical Review D,* 107, 104039.
- de Haro J, Nojiri S, **Odintsov SD**, Oikonomou VK & Pan S 2023, 'Finite-time cosmological singularities and the possible fate of the Universe', *Physics Reports*, 1034, 1-114.
- Nojiri S & **Odintsov SD** 2023, 'Micro-canonical and canonical description for generalised entropy', *Physics Letters B,* 845, 138130.
- **Odintsov SD**, Oikonomou VK & Sharov GS 2023, 'Early dark energy with power-law $F(R)$ gravity', *Physics Letters B*, B843 8, 137988.
- **Odintsov SD**, Oikonomou VK & Fronimos FP 2023, 'Inflationary dynamics and swampland criteria for modified Gauss-Bonnet gravity compatible with GW170817', *Physical Review D*, 107, 8, 084007.
- **Odintsov SD** & Paul T 2023, A non-singular generalized entropy and its implications on bounce cosmology', *Phys Dark Universe,* 39, 101159.

Selected research activities

Inv. speaker and organizer of int. workshops Cosmology and Quantum Vacuum (Benasque, Sept.2023), III conference on Non-linearity (Belgrad, Sept.2023). Inv. speaker at MITP-EISA workshop, (Corfu island , May 2023). Chairman of int. conf. Symmetry 2023, June, Barcelona.

ICREA**MEMOIR2023**

Serena Olsaretti
Universitat Pompeu Fabra (UPF)
Humanities

I have been an ICREA Research Professor at the Universitat Pompeu Fabra since 2010, where I am a member of the Law & Philosophy research group and of the Barcelona Institute of Analytic Philosophy. I have been an elected member of the Academia Europaea since 2019. Prior to joining ICREA I was Senior Lecturer at the Faculty of Philosophy, University of Cambridge, and Fellow of St. John's College (2001-2010). I had first arrived at Cambridge in 1999, as a Research Fellow at Emmanuel College, after studying at the University of Oxford between 1990 and 1999. At Oxford I obtained a B.A., an M.Phil. and a DPhil.degree.

Research interests

My research is in moral and political philosophy. My current research focuses mostly on issues concerning justice and the family. One of these is what society owes the family for its role in securing demographic replacement. A book I am working on, titled *Parental Justice*, asks what a fair distribution of the costs and benefits of children is, between parents, non parents and across generations. Other issues my on work tackles are how liberal states should respond to procreation and migration as two sources of demographic renewal; what normative assumptions underpin estimates of the carbon footprint of procreation which environmental scientists provide; whether parents' partiality towards their children can be reconciled with equality of opportunity. Some of this work also contributes to foundational debates on how to understand the demands of equality, on exploitation and on the principle of fair play. In the past I have worked on freedom; equality; desert; well-being; responsibility.

Selected publications

- Bou-Habib, P & **Olsaretti, S** 2023, ´Uniform Inheritance: The Argument from Liberal Neutrality´, *Raisons politiques* 92, 4, 69-83.

Selected research activities

- Invited speaker at Ashoka University; Dartmouth University; University of Vermont

- Organiser (with I Trifan) of Panel on *Climate Justice and the Carbon Footprint of Procreation*, Society for Applied Philosophy conference, 30 June-2 July 2023

- Associate editor, *Ethics*; *Law, Ethics & Philosophy*

- Editorial board: *Journal of Applied Philosophy; Economics and Philosophy; Utilitas*

- External evaluator, University of Toronto; Fundació La Caixa

- *Investigador garante* (with JJ Moreso) of subproject on *Evidence, Politics and the Public Sphere*, Maria de Maeztu Grant for the Barcelona Institute of Analytic Philosophy

ICREA**MEMOIR2023**

Hector Orengo Romeu
Institut Català d'Arqueologia Clàssica (ICAC)
Humanities

Hèctor A. Orengo is an ICREA Research Professor at the Catalan Institute of Classical Archaeology, where he serves as Research Coordinator and co-directs the Landscape Archaeology Research Group (GIAP). He is also currently an Honorary Research Associate at the McDonald Institute for Archaeological Research at the University of Cambridge. He obtained his PhD from the Rovira i Virgili University in 2010 and, since then, he has developed research at the GEOLAB (UMR 6042), France, and the Universities of Nottingham, Sheffield and Cambridge in the UK. His research has focused on long-term human-environment interactions and the development of computational methods to archaeological problems.

Research interests

Hèctor's research has mainly focused on the analysis of human-landscape dynamics in Mediterranean environments and beyond. He has developed extensive research on computational archaeology that includes, but is not restricted to, GIS and remote sensing techniques, field survey, and site detection methods. He is currently working on the application of machine learning to archaeological research using cloud computing and big data sources (mostly multisource multitemporal satellite data, drone imagery and lidar).

Selected publications

- Berganzo-Besga I, **Orengo HA**, Lumbreras F, et al. 2023, 'Curriculum learning-based strategy for low-density archaeological mound detection from historical maps in India and Pakistan', *Scientific Reports*, 13, 1.
- Garcia-Molsosa A, **Orengo HA** & Petrie CA, 2023, 'Reconstructing long-term settlement histories on complex alluvial floodplains by integrating historical map analysis and remote-sensing: an archaeological analysis of the landscape of the Indus River Basin' *Heritage Science*, 11, 1, 141.
- Conesa FC, **Orengo HA**, Lobo A & Petrie CA 2023, 'An Algorithm to Detect Endangered Cultural Heritage by Agricultural Expansion in Drylands at a Global Scale', *Remote Sensing*, 15(1), 53.

ICREA**MEMOIR2023**

Francisco Ortega
Universitat Rovira i Virgili (URV)
Humanities

I am ICREA Research Professor at the Medical Anthropology Research Center, Universitat Rovira i Virgili, Tarragona. I am also Visiting Professor at the Department of Global Health and Social Medicine of King's College, London. I received a MA from Universidad Complutense in Madrid and a PhD in Philosophy from Bielefeld University. Before joining ICREA, I was full professor at the Institute for Social Medicine of the State University of Rio de Janeiro (1999-2021); and Associate Professor at the Federal University of Goiás in Brazil (1996-1999). I was invited professor at Max Planck Institute for the History of Science in Berlin, visiting professor at Bielefeld University, Oldenburg University, University of Buenos Aires, CSIC, Universidad de Chile, University of Campinas, and Fluminense Federal University. I am member of the Advisory Board of the Movement for Global Mental Health and the Steering Committee of the Global Social Medicine Network.

Research interests

I am involved in interdisciplinary projects at the interface between the Health and the Human Sciences with several institutions across the world. My research combines medical anthropology, history and philosophy of science, transcultural psychiatry, cultural and disability studies, public health and global health to develop an interdisciplinary framework for investigating 1) the interactions between global biopsychiatry and local psychiatric epistemologies; 2) the revitalization of social medicine as a vital intersection of social sciences, medical practice and policy; 3) the interfaces between the brain sciences and the human and social sciences; 4) the role of neuroscientific theories in the construction of personal and social identities; 5) the pragmatic negotiation of psychiatric diagnosis; 6) the emergence of new forms of solidarity and mutual aid in the context of the health and economic crisis of the covid-19 pandemic.

Selected publications

- Martínez-Hernáez A & **Ortega F** 2023, 'Re-imaginar la salud global desde la antropología: Encrucijadas, desafíos, escenario', *Revista de Antropología social*, 32, 2, 95-102.
- **Ortega F** & Muller MR 2023, 'Rethinking structural competency: continuing education in mental health and practices of territorialisation in Brazil', *Global Public Health,* 1-16. DOI: 10.1080/17441692.2022.2157034
- **Ortega F** & Pele A 2023, 'Brazil's unified health system: 35 years and future challenges', *The Lancet Regional Health - Americas*, 28, 100631.
- Reis R & **Ortega F** 2023, 'The roots of trauma: a review of the history of psychotrauma', *Historia Ciencias Saude-manguinhos*, 30, e2023039.
- Ferreira RRdS & Ortega F 2023, 'The sovereignty of the visible: how traumatic memory becomes traumatic stress', *Cadernos De Saude Publica*, 39, 2, e00132622.

Selected research activities

(August- September 2023) Visiting professor at the State University of Rio de Janeiro

keynote panel at 9º Congresso Brasileiro de Ciências Sociais e Humanas em Saúde. Recife., Brazil

invited speaker at Università degli Studi di Bergamo , Italy

-Director of 1PhD and 3 Master; examiner of 5PhD and 2 Master

Ciara O'Sullivan
Universitat Rovira i Virgili (URV)
Engineering Sciences

Ciara O' Sullivan received a BSc in Analytical Chemistry from Dublin City University in 1992, a PhD in Biotechnology from Cranfield University in 1996 and then went on to lead the sensors group at University College Cork from 1996-99. She then took up a Marie Curie Fellowship at the Universitat Rovira i Virgili (1999-2001) and was then awarded a Ramón y Cajal Fellowship which she pursued for 1 year prior to taking up her current position as ICREA Research Professor and establishing the Nanobiotechnology and Bioanalysis Group at the Universitat Rovira i Virgili. She is group leader of the GENCAT funded Consolidated Group INTERFIBIO. Her group details can be found at www.interfibio.com.

Research interests

Her research interests lie in the development of electrochemical and optical biosensors exploiting advances in tailored biocomponents. Presently, her work focuses on reducing to practise cost-effective molecular diagnostics for screening and monitoring of disease, as well as on the development of aptamers for application in optical and electrochemical molecular aptamer beacons. The approaches for molecular diagnostics being developed include parallelised real-time electrochemical next generation sequencing, electrochemical array based primer extension and elongation for multiplexed SNP detection, multiplexed electrochemical miRNA detection and quantitative paper diagnostics as companion tools for the future paradigm of pharmacogenomics and personalised medicine.

Selected publications

- Yenice CP, Chahin N, Jauset-Rubio M, et al. 2023, 'Semiautomated Electrochemical Melting Curve Analysis Device for the Detection of an Osteoporosis Associated Single Nucleotide Polymorphism in Blood', *Analytical Chemistry*, 95, 38, 14192-14202.
- Ortiz M, Jauset-Rubio M, Trummer O, et al. 2023, 'Generic Platform for the Multiplexed Targeted Electrochemical Detection of Osteoporosis-Associated Single Nucleotide Polymorphisms Using Recombinase Polymerase Solid-Phase Primer Elongation and Ferrocene-Modified Nucleoside Triphosphates', *Acs Central Science*, 9, 8, 1591-1602.
- Kodr D, Ortiz M, Sykorova V, et al. 2023, 'Normalized Multipotential Redox Coding of DNA Bases for Determination of Total Nucleotide Composition', *Analytical Chemistry*, 95, 34, 12586-12589.
- Molejon NA, Lapada CM, Skouridou V, et al.. 2023, 'Selection of G-rich ssDNA aptamers for the detection of enterotoxins of the cholera toxin family', *Analytical Biochemistry*, 669, 115118.
- Torregrosa D, Jauset-Rubio M, Serrano R, et al. 2023, 'Ultrasensitive determination of ?-conglutin food allergen by means an aptamer assay based on inductively coupled plasma mass spectrometry detection', *Analytica Chimica Acta*, 1252, 341042.

Selected research activities

Associate Editor, Analytical Chemistry; Associate Editor ACS Measurement Science

ICREA**MEMOIR2023**

Sílvia Osuna Oliveras
Universitat de Girona (UdG)
Experimental Sciences & Mathematics

Sílvia Osuna received her PhD in 2010 from the University of Girona (UdG) at the Institut de Química Computacional (IQC). In 2010, she moved to the group of Prof. Houk at the University of California, Los Angeles (UCLA). Since then, Sílvia has worked in computational design of enzymes of medical and pharmaceutical interest. Sílvia has more than 100 research publications, and been recently awarded the 2023 Premio Nacional de Investigación – María Teresa Toral award, 2023 Societat Catalana de Química – talent jove award, 2021 EuChemS lecture award, the Catalan National Research Award – Young Talent 2019 from Fundació Catalana de Recerca i Innovació (FCRi), among others. Her group is currently funded by the European Research Council project – Consolidator Grant (ERC-2022-CoG-101088032), ERC-Proof of Concept (ERC-2022-POC-101112805), two I+D Spanish MINECO project (PID2021-129034NB-I00, PDC2022-133950-I00), and Human Frontier Science Program Grant.

Research interests

Sílvia's research lies at the interface between computational chemistry and biology. Her research focuses on the study of biochemical processes mainly related to enzyme catalysis. Her lab is developing new computational tools for predicting which amino acid changes are required to the enzyme structure for allowing novel function, enhancing a promiscuous side reaction, or expanding its substrate scope. Her goal is to enable the routine computational design of proficient enzymes to boost their use in industry for the synthesis of pharmaceutically relevant targets. She also applies the developed methodologies to the study of the recognition and assembly process of biomolecules with carbon-based materials.

Selected publications

- Busch M R, Drexler L, et al. 2023, 'Retracing the Rapid Evolution of an Herbicide-Degrading Enzyme by Protein Engineering', *ACS Catalysis,* 13, 15558-15571.
- Palone A, Casadevall G, Ruiz-Barragan S, et al. 2023, 'C-H Bonds as Functional Groups: Simultaneous Generation of Multiple Stereocenters by Enantioselective Hydroxylation at Unactivated Tertiary C-H Bonds', *Journal Of The American Chemical Society*, 145, 29, 15742 - 15753.
- Schneider A, Curado C, Lystbaek TB, **Osuna S** & Hauer B 2023, 'Harnessing the Structure and Dynamics of the Squalene-Hopene Cyclase for (-)-Ambroxide Production', *Angewandte Chemie-international Edition*, 62(22):e202301607.
- Casadevall G, Duran C & **Osuna S** 2023, 'AlphaFold2 and Deep Learning for Elucidating Enzyme Conformational Flexibility and Its Application for Design', *Jacs Au*, 3, 6, 1554-1562.

ICREA**MEMOIR2023**

Paolo Padoan
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Academic Degrees: PhD in Astrophysics, Niels Bohr Institute, Copenhagen, 1997 Degree in Astronomy, University of Padova, 1992 Academic Positions: ICREA Research Professor, University of Barcelona, March 2010 – present Associate Professor, UC San Diego, June 2007 – February 2010 Assistant Professor, UC San Diego, June 2003 – June 2007 Postdoctoral Fellow, Jet Propulsion Laboratory, Caltech, 2001 – 2003 Postdoctoral Fellow, Harvard University, 1999 – 2001 Postdoctoral Fellow, INOAE, Puebla, 1998 – 1999

Research interests

A major goal of my research is to understand the origin of stars. Star formation is a central problem in the study of galaxy evolution and cosmology. Stars are a dominant energy source to the interstellar medium of galaxies and control their chemical enrichment; the first massive stars in the universe contributed to its re-ionization. Because star-forming gas in galaxies is highly turbulent, the study of star formation involves the investigation of turbulence as well. A general theory of turbulence does not exist, but computer simulations provide valuable information on universal properties of turbulent flows. I conduct numerical experiments of super-sonic, self-gravitating magneto-hydrodynamic turbulence with physical parameters appropriate for describing star-forming gas in galaxies. Using adaptive mesh refinement methods, numerical simulations may span a huge range of scales, from the size of a galactic disk to that of an individual circumstellar disk.

Selected publications

- **Padoan P**, Pelkonen V-M, Juvela M, Haugboelle T & Nordlund AA 2023. 'Will ALMA reveal the true core mass function of protoclusters?', *Monthly Notices of the Royal Astronomical Society*, 522, 3548–3567.
- Takemura H, Nakamura F, Arce HG, Schneider N, Ossenkopf Okada V, Kong S, Ishii S, Dobashi K, Shimoikura T, Sanhueza P, Tsukagoshi T, **Padoan P**, Klessen RS, Goldsmith PF, Burkhart B, Dariusz CL, Sánchez-Monge A, Shimajiri Y, Kawabe R 2023, `CARMA-NRO Orion Survey: unbiased survey of dense cores and core mass functions in Orion A', *ApJS*, 264, 2, 35.

ICREA**MEMOIR2023**
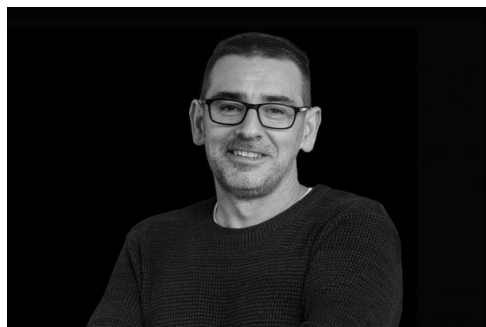
Emilio Palomares
Institut Català d'Investigació Química (ICIQ)
Experimental Sciences & Mathematics

Emilio Palomares (València,1974). He studied Biology at the UVEG (1997). After graduating he joined Prof. Hermenegildo García's group at the UPV where he got his PhD (2001). In 2001 he was awarded a "Marie Curie" Fellowship ICL(London,UK). There he began his work with molecular devices for energy conversion, under the direction of Prof. James R. Durrant. In 2004 Emilio got a "Ramón y Cajal" Fellowship at the ICMol. In April 2006 he took a position at ICIQ. In 2009 he was awarded an ERC starting grant to work on quantum dots for energy conversion devices and a ERC PoC in 2015. In 2006, Prof. Palomares got the Young Chemist Award by the Spanish Royal Society of Chemistry and in 2010, the INNOVA 2010 Award by the SusChem Spanish Association. In 2019 he has been awarded with Energy & Environmental Solutions International Chair (E2S) by the Université de Pau et des Pays de l'Adour (UPPA). Later in 2020, September, he has been elected ICIQ Director for the next 5 years.

Research interests

My research is focused on several aspects of light induced electron transfer reactions in supramolecular structures and nanostructured inorganic materials. Such research activity has evolved towards the control and improvement of the reactions that govern the efficiency on molecular and supramolecular optoelectronic devices such as molecular solar cells – strategy which holds the promise for the achievement of low cost light-to-energy conversion devices- and the creation of new hybrid nanomaterials for hydrogen production and molecular based sensing devices to detect toxic substance on the environment. I'm personally also involved in promoting science and education in our society through chemistry workshops for primary and secondary schools. Last but not least, during the last years our group has contributed with efforts towards the use of nanomaterials for biomedical applications in human rare diseases.

Selected publications

– Li W, Cariello M, Méndez M, Cooke G & **Palomares E** 2023, 'Self-Assembled Molecules for Hole-Selective Electrodes in Highly Stable and Efficient Inverted Perovskite Solar Cells with Ultralow Energy Loss', *Acs Applied Energy Materials*, 6(3):1239-1247.

– Moustafa E, Mendez M, Sanchez JG, Pallares J, **Palomares E** & Marsal LlF 2023, 'Thermal Activation of PEDOT:PSS/PM6:Y7 Based Films Leads to Unprecedent High Short-Circuit Current Density in Nonfullerene Organic Photovoltaics', *Advanced Energy Materials*, 13, 4, 2203241.

– Domingo-Tafalla B, Chatterjee T, Franco F, et al. 2023, 'Electro- and Photoinduced Interfacial Charge Transfers in Nanocrystalline Mesoporous TiO2 and TiO2/Iron Porphyrin Sensitized Films under CO2 Reduction Catalysis', *Acs Applied Materials & Interfaces*, 15(11):14304-14315.

– Corrente GA, González DA, Aktas E, Capodilupo AL, Ruighi F, Accorsi G, Imbardelli D, Rodriguez-Seco C, Martinez-Ferrero E, **Palomares E** & Beneduci A 2023, 'Reversible vis-NIR electrochromic/electrofluorochromic switching in dual-functional devices modulated by different benzothiadiazole-arylamine anodic components', *Journal of materials chemistry c*, 11 – 48 – 17115 – 17127.

– Domingo-Tafalla B, Chatterjee T & **Palomares E** 2023, 'Recent advances in the rational designing of metalloporphyrinoid-based CO_2 reduction catalysts: From molecular structural tuning to the application in catalysis', *Journal Of Porphyrins And Phthalocyanines*, 27, 1, 23 – 46.

ICREA**MEMOIR2023**

Soraya Pelaz Herrero
Centre de Recerca en Agrigenòmica (CRAG)
Life & Medical Sciences

Born in Bilbao, Soraya started Biology studies in the Basque Country University but moved to Madrid to follow the Molecular Biology and Biochemistry specialty. She obtained her BSc at Autonomous University of Madrid (UAM) in 1989. For her PhD studies she joined Dr. Morata's laboratory at the CBM where she performed research on Drosophila Developmental Genetics with a Basque Predoctoral fellowship and got the PhD in 1993 at UAM. For her postdoctoral research she moved from flies to flowers by joining Dr. Yanofsky's laboratory at the University of California at San Diego. There she performed Developmental Biology on Arabidopsis with fellowships from the Spanish MEC and from the HFSPO. In 2001 she got a "Ramón y Cajal" contract at INIA in Madrid to establish her own line of research in Flower Development. In 2003 she joined ICREA and moved to Barcelona. Along the years she has also performed stays at UNAM, Mexico; WUR, Netherlands; Max Planck, Germany and NYU and NYBG, USA.

Research interests

The connection among crop production, climate change, and demographic growth is progressively uncovering a profound impact in the food security throughout the world. Because plants are sessile organisms, they maximize their chances to survive adversities by reprogramming their development for adaptation to environmental changes. Under this scenario, integrative approaches to understand the specific role of essential genetic regulatory networks in plants are urgently needed. *RAV genes* configure a **potential hub to modulate plant development in response to adverse environmental conditions**, which are major limiting factors for plant survival, adaptation, and crop production. Therefore, we perform a **comprehensive functional study of *RAV* genes** along the green tree of life. We analyze their **gene regulatory networks in abiotic stress responses** and aim to decipher *RAV* gene **evolution and function acquisition** unravelling their roles from non-flowering plants to flowering plants.

Selected publications

– Dejahang A, Maghsoudi N, Mousavi A, Farsad-Akhtar N, Matias-Hernandez L, **Pelaz S**, Flota K & Mahna N 2023, 'TEMPRANILLO homologs in apple regulate flowering time in the woodland strawberry Fragaria vesca', *Scientific Reports*, 13, 1.

– Suárez-Baron H, Alzate JF, Ambrose BA, **Pelaz S**, González F & Pabón-Mora N 2023, 'Comparative morphoanatomy and transcriptomic analyses reveal key factors controlling floral trichome development in Aristolochia (Aristolochiaceae)', *Journal Of Experimental Botany*, .

Selected research activities

Managerial Activities
- CRAG Deputy Director.
- Head of the Molecular Genetics Department.

Funded Projects (PI)
- Evolution of *RAV* genes function in responses to abiotic stress in flowering and non-flowering plants. MICN**.**
- Arabidopsis Developmental Genomics. SGR. AGAUR.
- GI-RAV-SVP Gene Regulatory Network in abiotic stress tolerance in the Brassicaceae family. M2C&C2M call from CRAG Severo Ochoa Program.

Master Thesis
- Nikoleta Gavala. Evolutionary approach of interactions between RAV and other flowering proteins. Master on Plant Biology, Genomics and Biotechnology. UAB.

Editorial Board
- Handling Editor of Physiologia Plantarum.
- Editor of the Plantarum Special Issue "Roles of Volatiles and Colors in Eco-Environments".
- Academic Editor of Peer J.

Congresses Organization
- Member of the Organizing Committee of the "At the forefront of Plant research conference". Barcelona, Spain.
- Coordinator of the overlapping "At the forefront of Plant research" and "Genomics-assisted breeding for boosting crop and livestock improvement" international conferences. Barcelona, Spain.

Invited Talks
- Session speaker in the Iberian Plant Biology meeting. Evolutionary role of RAV genes in development and adaptive growth. Braga, Portugal.
- INUPRAG symposium. Unexpected NGATHA genes in gymnosperms. Umea, Sweden.

Outreach Activities
- 24th Dia de la Ciència a las Escoles. Las plantas tienen pelos, ojos y aprenden a leer! IES. Sant Feliu de Codines, Barcelona.

ICREA**MEMOIR2023**

Carles Pelejero Bou
Institut de Ciències del Mar (CSIC - ICM)
Experimental Sciences & Mathematics

Born in Barcelona in 1968, Carles Pelejero graduated in Chemistry at the Autonomous University of Barcelona in 1991, with a specialty in Organic Chemistry. He obtained his PhD in Chemistry at the University of Barcelona in 2000, doing research in the fields of paleoceanography and paleoclimatology through the study of molecular biomarkers in deep sea sediments. He then spent four years of postdoctoral research in Australia, at the Australian National University and Geoscience Australia. There, he developed new methodologies for the elemental and isotopic analysis of marine biogenic carbonates using MC-ICPMS and TIMS. In 2005 he moved to the Institut de Ciències del Mar (ICM-CSIC), in Barcelona, with a "Ramón y Cajal" contract. In October 2006 he was appointed ICREA Research Professor.

Research interests

I am interested in understanding and quantifying how the marine environment and climate are changing today, in which ways they have changed in the past, and how will they influence marine organisms and ecosystems in the future. To this end, I analyse deep sea sediments and corals as archives of changes in the past, use systems to monitor the present, and run manipulative experiments in aquaria to simulate the future. A main environmental issue that I am currently studying is the progressive acidification of the oceans that is occurring due to the marine absorption of part of the CO2 that humans are emitting to the atmosphere. I am also setting up culture-based systems to calibrate paleoceanographic proxies in corals, making use of the aquaria facilities at the ICM.

Selected publications

- Romera-Castillo C, Lucas A, Mallenco-Fornies R, Briones-Rizo M, Calvo E & **Pelejero C** 2023, 'Abiotic plastic leaching contributes to ocean acidification', *Science of The Total Environment*, 854, 158683.
- Galimany E, Lucas A, Maynou F, Solé M, **Pelejero C**, & Ramón M 2023, 'Experimental determination of differential seasonal response in seed of the Manila clam, *Ruditapes philippinarum*, in context of climate change', *Aquaculture*, 576, 739891.

Selected research activities

- PI of the MICINN Project ESCACS: Elucidating the Southern Ocean Control of Atmospheric CO_2 using a Selection of paleo-archives and proxies (PID2021-122451OB-I00).

- Supervisor of the MICINN Postdoctoral International Collaboration Project to Aurora M. Ricart for the project SEApHOREST: Role of sea forests in shaping the response of coastal calcifying organisms to past, present and future global change (PCI2021-122040-2B).

- Supervisor of the MICINN Postdoctoral Project awarded to Maribel García-Ibáñez, through the Severo Ochoa award to the ICM, for the project MEDALK: Mediterranean Sea natural alkalinisation: a mitigator for ocean acidification?

- Coordinator of the Research Group on Marine Biogeochemistry and Global Change. Generalitat de Catalunya 2021SGR00430).

- Supervising PhD students César Nicolás Rodríguez Díaz on paleo-pH reconstructions in the Mediterranean Sea, and Alejandra Sánchez Roda on paleo-pH and paleo-pCO$_2$ reconstructions in the Southern Ocean.

- Invited keynote lecture at the 33rd IFSCC Congress, Barcelona, Catalonia, Spain.

ICREA**MEMOIR2023**

Antonio Penta
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Antonio Penta is an economic theorist who joined ICREA in October 2018. He is also Professor of Economics at UPF and Affiliated Professor at the Barcelona School of Economics. Prior to that, he was Assistant Professor (2010-2016) and then tenured Associate Professor (2016-2018) at the University of Wisconsin-Madison. He graduated in Economics from Bocconi Univ (2004), and then he obtained a M.A. (2008) and a PhD (2010) in economics from the University of Pennsylvania. He is currently member of the Editorial Board of the American Economic Review and of the Review of Economic Studies, Associate Editor of the Journal of Economic Theory, Theoretical Economics and of Decisions in Economics and Finance, Associate Faculty at the Toulouse School of Economics, and a member of the TSE Digital Center. He has been awarded an ERC-Starting Grant in 2017, and an ERC-Consolidator Grant in 2022. Personal homepage: https://www.antoniopenta.eu/

Research interests

My research spans a range of areas within game theory, mechanism design, behavioral economics and auction theory. In game theory and mechanism design, most of my research has focused on questions of robustness with respect to various forms of model misspecification. I have also worked on more applied IO topics, concerning the market for online advertisement and online ad auctions, from both a theoretical and empirical perspective. Within behavioral economics, my work has been both theoretical and experimental. So far the main focus has been on understanding and modeling individuals' reasoning processes, and particularly the interaction between their cognitve abilities and incentives, in strategic settings as well as in individual decision problems. More recently, I started a new agenda on risk preferences.

Selected publications

- Ollar M & **Penta A** 2023, 'A Network Solution to Robust Implementation: The Case of Identical but Unknown Distributions', *Review Of Economic Studies*, rdac084.
- Decarolis F, Goldmanis M, **Penta A** & Shakhgildyan K 2023, 'Bid Coordination in Sponsored Search Auctions: Detection Methodology and Empirical Analysis', *Journal Of Industrial Economics*, 71, 2, 570-592.

Selected research activities

Organized Conferences, 2023:

- 2023 Workshop on the *Design of Strategic Interactions*, Venice (Italy)
- 2023 BSE Summer Forum, *Coordination and Social Interactions*, Barcelona (Spain)
- 2023 BSE Summer Forum, *Preferences and Bounded Rationality*, Barcelona (Spain)

Invited Conferences, 2023:

- Workshop on the *Design of Strategic Interactions*, Venice (Italy)
- *Keynote Speaker*, UNSW-UQ Economic Theory Festival (Univ. of Queensland, Brisbane, AU)
- Conference in Memory of Bill Sandholm (UW-Madison, USA).
- XXIII-SAET Conference on Mathematical Economics, Paris (FR)
- Third Catalan Economic Theory Conference, Barcelona (Spain).
- Economic Theory Conference in Honor of George J. Mailath's 65th Birthday (UPenn, USA)

Invited Seminars, 2023:

- NYU-Abu Dhabi, Center for Behavioral Institutional Design (UAE)
- Princeton University, Behavioral Economics Seminar)
- Heidelberg University, Econ. Departmental Seminar
- Univ. of Warwick, Economic Theory Seminar, Warwick (UK)

Scientific Committee, 2023:

- EWMES: Econometric Society European Winter Meeting, Maastricht (Netherlands); Committee Member
- Congress of the European Economic Association, Barcelona (Spain); Lead Committee Coordinator of the Economic Theory area.
- 2023 Third Catalan Economic Theory Conference, Barcelona (Spain); Committee Member

ICREA**MEMOIR2023**

Carlos Pérez García-Pando

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)

Experimental Sciences & Mathematics

I obtained a PhD in Environmental Eng. from the UPC in 2005. I was then appointed Mineral Dust Group Leader at the recently created Barcelona Supercomputing Center (BSC). Thereafter I worked in the US at NOAA/NCEP, IRI, Columbia University and NASA Goddard Institute for Space studies. After obtaining an AXA Chair on Sand and Dust Storms, I re-joined BSC as Head of the Atmospheric Composition Group, AXA Professor on Sand and Dust Storms and Ramon y Cajal Fellow in 2016. In 2017, I was awarded by the Spanish Royal Academy of Engineering the Agustín de Betancourt y Molina prize for young researchers in recognition for my contributions in the field of environmental risks, and I obtained a ERC Consolidator Grant that started in October 2018. I am Co-I of the Earth Surface Mineral Dust Source Investigation, one of the only two Earth Ventures-Instrument missions funded by NASA in 2018. I was appointed ICREA Research Professor in Dec. 2019.

Research interests

I am interested on understanding atmospheric aerosols and traces gases, from the physical and chemical processes affecting them, to their effects upon weather, climate, ocean biogeochemistry, air quality and health. My research group develops improved representations of pollutants within atmospheric and climate models to characterize their sources, sinks, atmospheric lifecycles and effects. I am known for my work on dust aerosols; in that context, I hold an AXA Chair that tackles both fundamental and applied research questions related to dust and I lead an ERC Consolidator Grant that investigates the role of the dust mineralogical composition in the climate effects of dust based on theory, experimental campaigns, remote spectroscopy and modeling.

Selected publications

- González-Romero A, González-Flórez C, Panta A, Yus-Díez J, Reche C, Córdoba P, Moreno N, Alastuey A, Kandler K, Klose M, Baldo C, Clark RN, Shi Z, Querol X & **Pérez García-Pando C**, 2023, 'Variability in sediment particle size, mineralogy, and Fe mode of occurrence across dust-source inland drainage basins: the case of the lower Drâa Valley, Morocco', *Atmos Chem Phys,* 23, 15815 –15834.
- Gonzalez-Florez C, Klose M, Alastuey A, et al. 2023, 'Insights into the size-resolved dust emission from field measurements in the Moroccan Sahara', *Atmospheric Chemistry And Physics*, 23, 12, 7177 - 7212.
- Panta A, Kandler K, Alastuey A, et al. 2023, 'Insights into the single-particle composition, size, mixing state, and aspect ratio of freshly emitted mineral dust from field measurements in the Moroccan Sahara using electron microscopy', *Atmospheric Chemistry And Physics*, 23, 6, 3861 - 3885.
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- Ageitos MG, Obiso V, Miller RL, et al. 2023, 'Modeling dust mineralogical composition: sensitivity to soil mineralogy atlases and their expected climate impacts', *Atmospheric Chemistry And Physics*, 23, 15, 8623 - 8657.
- Bergas-Masso E, Goncalves Ageitos M, Myriokefalitakis S, et al. 2023, 'Pre-Industrial, Present and Future Atmospheric Soluble Iron Deposition and the Role of Aerosol Acidity and Oxalate Under CMIP6 Emissions', *Earths Future*, 11, 6, e2022EF003353.
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ICREA**MEMOIR2023**

Iñaki Permanyer Ugartemendia
Centre d'Estudis Demogràfics (CED)
Social & Behavioural Sciences

Iñaki is an ICREA Research Professor at the Centre d'Estudis Demogràfics since 2021. Previously, he has been a Ramón y Cajal Research fellow at the same research center and a Fulbright visiting scholar at Cornell University. He is a demographer interested in the relationship between population dynamics and individuals' well-being. He has collaborated extensively with international institutions, like the United Nations Development Program (UNDP) and UN Women. Currently, he is the Head of the "Health and Demography" Unit at the Center for Demographic Studies and is the PI of an ERC Consolidator Grant (2020-2025).

Research interests

I will research the existence of new layers of health inequality that emerge because of the ageing process unfolding across most contemporary societies. I want to focus on the following research questions: what is the extent of inequality in the distribution of healthy and unhealthy lifespans across individuals? How do these inequalities vary across countries and socio-economic groups? Are the health improvements that generate populations that are more longevous also increasing the health gaps among those groups? Amid a swift ageing process with uncertain prospects for the health status of large population sectors, it is crucial to have good measures of population health that allow addressing the demographic challenges ahead. The results of this research can be extremely useful for the design of equitable pension schemes and retirement policies that are sensitive to the heterogeneous characteristics and needs of the underlying population, and for the public provision of medical care.

Selected publications

- **Permanyer I**, Villavicencio F & Trias-Llimós S 2023, 'Healthy lifespan inequality: morbidity compression from a global perspective', *European Journal of Epidemiology*, vol. 38, no. 5, pp 511-521.
- **Permanyer I** & Bramajo O 2023, 'The Race between Mortality and Morbidity: Implications for the Global Distribution of Health', *Population And Development Review*, 49, 4, 909-937.
- Trias-Llimós S & **Permanyer I** 2023, 'Cause-of-Death Diversity From a Multiple-Cause Perspective in the United States', *Demography*, Vol. 60, no. 1, pp 73 - 98.
- **Permanyer I**, Sasson I & Villavicencio F 2023, 'Group- and individual-based approaches to health inequality: towards an Integration', *Journal of the Royal Statistical Society Series A: Statistics in Society*, vol. 186, no. 2, pp 217–240.
- Almeida J & **Permanyer I** 2023, 'Levels, trends, and determinants of cause-of-death diversity in a global perspective: 1990–2019', *BMC Public Health*, vol. 23, article no. 650, pp 1-12.

Selected research activities

I have been closely involved with the United Nations Development Program (UNDP) and UN Women in the design and calculation of the so-called "Twin indices on women's empowerment and gender equality", which were launched in July 2023 (see https://hdr.undp.org/content/paths-equal).

ICREA**MEMOIR2023**

Maria Petrova
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Maria Petrova received PhD from Harvard University in 2008. She spent 2012 – 2013 as a Visiting Associate Research Scholar at the Center for the Study of Democratic Politics at Princeton University. In 2012-2013, she was Research Director at the Center for New Media and Society at the New Economic School, Russia. Her research interests include political economy, mass media economics, and Internet Economics. Maria has published in American Economic Review, Quarterly Journal of Economics, American Political Science Review, Proceedings of National Academy of Sciences, American Economic Journal: Applied Economics, Journal of Public Economics, Journal of Economic Behavior and Organization, among others. Since 2016, she is a member of the Editorial Board of the Review of Economic Studies and a Co-Editor of the Journal of Public Economics. Since 2019, she is the recipient of ERC Starting Grant.

Research interests

I am an applied microeconomist whose focus is information economics, political economy, and development. I seek to understand how information flows affect complex links between economic and political phenomena. Existing works traditionally underestimate the role of information provision in media for different aspects of development, and my research fills this gap. The main question that I address in my work is how information affects political, economic, and financial outcomes in different countries. My recent research is focused on the political economy of traditional and social media, and on causes of the growth and demise of populism and extremism.

ICREA**MEMOIR2023**

Mira Petrović
Institut Català de Recerca de l'Aigua (ICRA)
Experimental Sciences & Mathematics

I am ICREA Research Professor since 2005. I obtained PhD in Chemistry from the Faculty of Chemical Engineering and Technology at the University of Zagreb, Croatia, in 1995. From 1999 to 2011, I was a research scientist at the Institute for Environmental Assessment and Water Studies (IDAEA-CSIC), Barcelona. Since July 2011, I work as a senior researcher at the Catalan Institute for Water Research (ICRA) in Girona, Spain. At ICRA, I lead the Water Quality and Safety Area and am responsible for the research line focusing on contaminants in water treatment processes. I have published over 280 research papers and 30 book chapters, having edited 8 books. Currently, my H-index stands at 84, with more than 21,000 citations. I was included in the ISI Highly Cited in the fields of Chemistry and Environment/Ecology and ranked in the top 1% by citations in 2018 in the field of Environment/Ecology and in 2019 in the cross-field by Clarivate Analytics.

Research interests

My primary expertise lies in the field of environmental analytical chemistry, specifically focusing on the analysis of trace organic contaminants using advanced mass spectrometric techniques such as liquid chromatography with both low and high-resolution mass spectrometry (LC-(HR)MS). My research centers on understanding the fate and behavior of these contaminants in both the aquatic environment and engineered systems, including drinking and wastewater treatment. Specific research lines include: (i) advanced screening and characterization of organic substances in wastewater and the receiving environment; (ii) biotic and abiotic transformations of emerging contaminants, with a focus on elucidating transformation pathways; (iii) investigating the occurrence and distribution of emerging contaminants in aquatic environments and conducting environmental risk assessments; and (iv) utilizing sewage chemical information mining (SCIM) to assess human exposure to environmental contaminants.

Selected publications

- Gros M, Mas-Pla J, Sanchez-Melsio A, Čelić, M., Castaño, M., Rodríguez-Mozaz, S., Borrego, C., Balcázar, JL., **Petrović, M**., 2023, 'Antibiotics, antibiotic resistance and associated risk in natural springs from an agroecosystem environment', *Science Of The Total Environment*, 857, 1, 159202.

- Picone M, Russo M, Distefano GG, Baccichet, M., Marchetto, D., Volpi Ghirardini, A. Lunde Hermansson, A., **Petrovic, M**., Gros, M., Garcia, E., Giubilato, E., Calgaro, L., 2023, 'Impacts of exhaust gas cleaning systems (EGCS) discharge waters on planktonic biological indicators (vol 190, 114846, 2023)', *Marine Pollution Bulletin*, 193, 115152.

- Genitsaris S, Kourkoutmani P, Stefanidou N, Michaloudi, E., Gros, M., García-Gómez, E., Petrović, M., Ntziachristos, L., Moustaka-Gouni, M. 2023, 'Effects from maritime scrubber effluent on phytoplankton and bacterioplankton communities of a coastal area, Eastern Mediterranean Sea', *Ecological Informatics*, 77, 102154.

- E. García Gómez,
G. Gkotsis, M.C. Nika, I.M. Hassellöv, K. Salo, A. Lunde Hermansson, E. Ytreberg, N.S. Thomaidis, M. Gros, M. Petrović, 2023, Characterization of scrubber water discharges from ships using comprehensive suspect screening strategies based on GC-APCI-HRMS', *Chemosphere*, 343,140296.

- Rožman M, Lekunberri I, Grgić I, Borrego CM & **Petrović M** 2023, 'Effects of combining flow intermittency and exposure to emerging contaminants on the composition and metabolic response of streambed biofilm bacterial communities', *Science of the Total Environment,* 877,162818.

- Čelić M, Farré M, de Alda ML,Perez S, Barceló D & **Petrovic M** 2023, '
Environmental analysis: Emerging pollutants', *Liquid Chromatography (Third Edition)*,
Applications
Volume 2 in Handbooks in Separation Science
, 549-578.

Selected research activities

Editor-in-chief of TrEAC – Trends in Environmental Analytical Chemistry (Elsevier, IF:11.2, 3/86 category Analytical Chemistry).

ICREA**MEMOIR2023**
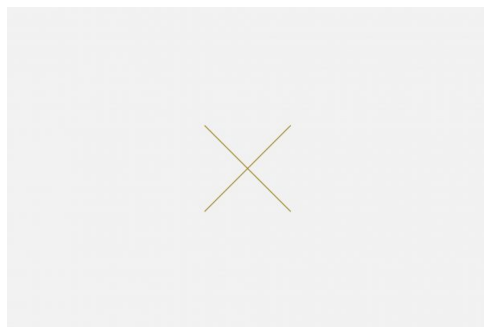
José Luis Peydró Alcalde
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Peydró is ICREA Professor at UPF and CREI, Professor at Barcelona School of Economics, Bundesbank Research Professor, CEMFI and CEPR Research Fellow, advisor of Bank of Spain, consultant in the European Central Bank, European Bank Authority and European Investment Bank, independent board member at Institut Català de Finances (ICF), and Member of the Group of Economic Advisers of the European Security Markets Authority (ESMA). He was board member at the European Systemic Risk Board and held visiting positions at Becker-Friedman Institute at Chicago University, MIT, IMF and World Bank. Peydró has had an ERC Consolidator grant until December 2021. As of December 2021, based on RePEc (Research Papers in Economics, main ranking for academic economists) Peydró is number 5 in the world for economists who finished their PhD in 2005, and, over the last 10 years, number 5 in the European Union and number 1 for economists in Spain or Spanish economists abroad.

Research interests

Peydró specializes in Finance and Macroeconomics, mainly on banking, financial crises, systemic risk, monetary policy, macroprudential policy, globalization, financial contagion, financial innovation, credit, fintech, networks, capital and liquidity. His recent work analyzes credit/finance and (i) political radicalization, (ii) inequality, (iii) climate risk, (iv) digital economy, (v) negative interest rates, (vi) rise of shadow banks and fintech, (vii) fiscal policy and taxes, (viii) state-owned banks, (ix) financial and production networks and (x) COVID crisis. His reseach has more than 10,000 citations. His research has been published in the top-5 journals in Economics: Econometrica (lead article), American Economic Review and Journal of Political Economy, and in the top-3 journals in Finance (Review of Financial Studies, Journal of Finance, and Journal of Financial Economics). He has also written the book Systemic Risk, Crises and Macroprudential Policy (MIT Press).

Selected publications

-Andersen AL, Johannesen N, Jorgensen M, **Peydro JL** 2023, 'Monetary Policy and Inequality', *Journal Of Finance*, Volume78, Issue5, Pages 2945-2989.
-Peydro JL, Rodriguez-Tous F, Tripathy J & Uluc A 2023, 'Macroprudential Policy, Mortgage Cycles, and Distributional Effects: Evidence from the United Kingdom', *Review Of Financial Studies*, 37(3), pp. 727-760.

ICREA**MEMOIR2023**

Jordi Poater Teixidor
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Born in 1977. I got my PhD in Chemistry in 2003 at the Universitat de Girona (UdG) with a thesis on the analysis of chemical bonding and aromaticity of organic systems with tools based on the electron-pair density. Next I moved to the Vrije Universiteit Amsterdam (VUA), with a Marie Curie postdoctoral fellowship, where I carried out research on the DNA replication mechanism by means of Kohn-Sham molecular orbital theory complemented with quantitative bond energy decomposition analyses. In 2008 I was awarded with a Ramón y Cajal tenure-track position at the Institute of Computational Chemistry and Catalysis of the UdG. Next I was appointed Senior Associate Researcher at the Department of Theoretical Chemistry and Amsterdam Center for Multiscale Modeling of the VUA. And in 2015 I became ICREA Research Professor at UB. I have published 186 scientific publications, with 8.000 citations. My H-Index is 46 and I am top 2% cited researcher (2022, Stanford Ranking).

Research interests

My research takes off from two main lines, which are interconnected and reinforce each other. First, the study of aromaticity in organic and metal systems, with tools derived from the electron-pair density, with the purpose of analyzing the electronic structure and molecular bonding in a wide range of molecular systems. The main focus now is the 3D aromaticity of boron clusters. I have also become an expert in the application of Kohn-Sham molecular orbital theory complemented with quantitative bond energy decomposition analyses to the analysis of non-covalent interactions. In particular, the study of DNA related systems has become my main research line. I have got closer to experiment by studying the selectivity in DNA replication mechanism taking into study the steric shape, hydrogen bonds, pi-stacking and solvent effects in natural and artificial DNA bases.

Selected publications

- Sun F, Tan S, Cao HJ, et al. 2023, 'Facile Construction of New Hybrid Conjugation via Boron Cage Extension', *Journal Of The American Chemical Society*, 145, 6, 3577 - 3587.
- Almacellas D, Fonseca Guerra C & **Poater J** 2023, 'Strengthened cooperativity of DNA-based cyclic hydrogen-bonded rosettes by subtle functionalization', *Organic & Biomolecular Chemistry*, 21, 41, 8403-8412.
- **Poater J**, Escayola S, Poater A, et al. 2023, 'Single–Not Double–3D-Aromaticity in an Oxidized Closo Icosahedral Dodecaiodo-Dodecaborate Cluster.', *Journal Of The American Chemical Society*, 145, 41, 22527-22538.
- **Poater J**, Vermeeren P, Hamlin TA, Bickelhaupt FM & Solà M 2023, 'On the existence of collective interactions reinforcing the metal-ligand bond in organometallic compounds', *Nature Communications*, 14, 1, 3872.
- Oberdorf K, Hanft A, Xie X, Bickelhaupt FM, **Poater J** & Lichtenberg C 2023, 'Insertion of CO2 and CS2 into Bi-N bonds enables catalyzed CH-activation and light-induced bismuthinidene transfer', *Chemical Science*, 14, 19, 5214 - 5219.
- Jian J, Hammink R, Tinnemans P, Bickelhaupt FM, **Poater J** & Mecinović J 2023, 'Probing Polar-pi Interactions Between Tetrazoles and Aromatic Rings', *Chemistry-an Asian Journal*, 18, 10.

Selected research activities

- PI Spanish research grant (125K€, 2023-26).

- María de Maeztu Grant to IQTCUB researcher (2M€, 2022-26).

- Achieved H-Index 46 (52 on Google Scholar) and confirmed as top 2% cited (Stanford Ranking 2022).

- Member of young forum of the Spanish Royal National Academy of Medicine.

- Delivered 4 lectures in international conferences.

- Member of 3 PhD commitees.
- Front cover in JACS and VIP article in CEJ.

- Reached 22 manuscript cited more than 100 times, and 8 of them with more than 200 citations.

- I appear as Best Scientists of Universitat de Barcelona (Research.com).

ICREA**MEMOIR2023**

Albert Pol
Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()
Life & Medical Sciences

Graduated in Biology by the University of Barcelona (UB) in 1993, I obtained my PhD in 1998 in the Department of Biomedical Sciences (Faculty of Medicine, UB) supervised by Professor Carlos Enrich. Next, I joined the laboratory of Professor Robert G Parton at the University of Queensland (Australia) as NHMRC Research Officer until 2001. Granted with a Ramón y Cajal contract (2002, MICINN) and recognized by the I3 program (2006, MICINN), I established the "Lipid Trafficking and Disease" group (IDIBAPS). Since 2007, I'm ICREA Research Professor in Fundació Clínic Barcelona-IDIBAPS and since 2011 Assistant Professor in the Dept of Biomedical Sciences (Faculty of Medicine, UB). Today I combine my research in IDIBAPS with teaching in the UB.

Research interests

Lipids, such as cholesterol or fatty acids, are essential molecules for building bilayers and the way eukaryotic cells store nutrients. Lipids are 10% of a cell's weight and 50% of the cell membranes. However, in excess, lipids can be toxic molecules. Indeed, lipotoxicity gives rise to, or aggravates, obesity, diabetes, atherosclerosis, cancer, and neurodegeneration. Statistics show that 100% of Europeans will develop at least one of these diseases during their lifetime. Our group strives to understand how cells solve this biological dilemma: store large amounts of nutrients while reducing lipotoxicity. Since 2001 we have studied the cell biology and physiology of lipid droplets (LDs); organelles designed for eukaryotic cells to achieve this key adaptative advantage. We study LDs from the time they are formed to the time they are consumed. We are also interested in the role of LDs in physio-pathological situations such as obesity, liver regeneration, cancer, and immunity.

Selected publications

- Safi R, Sánchez-Álvarez M, Bosch M, Demangel C, Parton RG & **Pol A** 2023, 'Defensive-lipid droplets: Cellular organelles designed for antimicrobial immunity', *Immunological Reviews*, 317(1):113-136.
- Arbaizar-Rovirosa M, Pedragosa J, Lozano JJ, et al. 2023, 'Aged lipid-laden microglia display impaired responses to stroke', *EMBO Mol Med,* 15, 2, e17175.
- Morales-Paytuví F, Fajardo A, Ruiz-Mirapeix C, et al. 2023, 'Early proteostasis of caveolins synchronizes trafficking, degradation, and oligomerization to prevent toxic aggregation', *J Cell Bio*, 222(9):e202204020.

ICREA**MEMOIR2023**

Antonio Postigo
Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()
Life & Medical Sciences

<u>CURRENT POSITIONS:</u>
* ICREA Professor of Life & Medical Sciences. FCRB-IDIBAPS Research Institute (Barcelona)
* Adjunct Visiting Professor, JG Brown Cancer Center, Univ. Louisville School of Medicine (USA)
<u>RESEARCH FUNDING</u>:
* <u>Public Agencies</u>: European Commission / National Research Agency – Spanish Ministry of Science & Innovation (AEI-MICINN) / Catalan Agency for University & Research Grants (AGAUR)
* <u>Private Foundations</u>: Leukemia Research Foundation / Duchenne Parent Project / Leo Fondet / AVON Breast Cancer Campaign / Spanish Association Against Cancer (AECC) / La Marató TV3 Foundation / Olga Torres Foundation / La Caixa Foundation / Catalan Academy of Medical & Health Sciences.
<u>OTHER WEBSITES</u>: IDIBAPS website
<u>SOCIAL MEDIA HANDLES</u>: Twitter/X: @GeneRegLab

Research interests

Our group studies the molecular mechanisms that regulate **cell and metabolic plasticity in health and disease**, with a particular focus on transcriptional regulation. Our ultimate goal is to define markers for tracking disease onset and progression and to inform new therapeutic approaches aimed at restoring normal gene expression and function. Ongoing projects investigate gene regulation and immunometabolism in inflammation, cancer initiation and progression, stem cell determination and differentiation, and tissue injury and regeneration.

We employ a wide range of technical approaches, including unique conditional transgenic mice, ex vivo culture and gene manipulation of normal and malignant primary cells, differentiation of human embryonic stem cells, and high-throughput Omics techniques (RNAseq, scRNAseq, spatial transcriptomics, metabolomics). As molecular models, we utilize the EMT transcription factors ZEB1 and ZEB2, which play key roles in the regulation of cell plasticity.

Selected publications

- Cortés M, A Brischetto, MC Martinez-Campanario, C Ninfali, V Domínguez, S Fernández, R Celis, A Esteve-Codina, JJ Lozano, G Garrabou, AM Siegert, C Enrich, B Pintado, M Morales-Ruiz, P Castro, JD Cañete, **A POSTIGO** * (2023) Inflammatory macrophages reprogram to immunosuppression by reducing mitochondrial translation. ***Nature Communications***. 14:7471. IF: 16.6 (* **corresponding author**).
- Martinez-Campanario MC, M Cortés, A Moreno-Lanceta, L Han, C Ninfali, V Domínguez, MJ Andrés-Manzano, M Farràs, A Esteve-Codina, C Enrich, FJ Diaz-Crespo, B Pintado, JC Escolà-Gil, PG de Frutos, V Andrés, P Melgar-Lesmes, **A POSTIGO** * (2023), Atherosclerotic plaque development in mice is enhanced by myeloid ZEB1 downregulation, ***Nature Communications***, 14:8316. IF: 16.6. (* **corresponding author**).
- Ninfali C, M Cortés, MC Martínez-Campanario, V Domínguez, Lu Han, E Tobías, A Esteve-Codina, C Enrich, B Pintado, G Garrabou & **A POSTIGO** * (2023) The adaptive antioxidant response during fasting-induced muscle atrophy is oppositely regulated by ZEB1 and ZEB2. ***Proc Nat Acad Sci USA (PNAS),*** 120:e2301120120. IF: 12.7 (* **corresponding author**)

- Ninfali, C, L Siles, A Esteve-Codina, **A POSTIGO** * (2023) The mesodermal and myogenic specification of hESCs depend on ZEB1 and are inhibited by ZEB2. ***Cell Reports***. 42:113222. IF: 9.9 (* **corresponding author**)
- Sánchez-Tilló E, L Pedrosa, I Vila, Y Chen, B Győrffy, L Sanchez-Moral, L Siles, JJ Lozano, A Esteve-Codina, DS Darling, M Cuatrecasas, A Castells, J Maurel, **A POSTIGO** * (2023) The EMT factor ZEB1 paradoxically inhibits EMT in BRAF-mutant carcinomas. ***JCI Insight***. 8:e164629. IF: 9.5 (* **corresponding author**). The article was highlighted with the cover of the issue

Selected research activities

<u>European Patent Application</u>. Title: Cancer informative biomarker signature. Inventors: Maurel J, M Cascante, L Pedrosa, C Foguet, T Thomson, **A POSTIGO**, D Benitez, J Camps. IDIBAPS, UB, CSIC, ICREA. Reference: EP4137585A1.

ICREA**MEMOIR2023**

Beatriz Prieto Simón
Institut Català d'Investigació Química (ICIQ)
Engineering Sciences

Beatriz obtained her PhD in chemistry (UAB), conducting part of her doctoral research on biosensors at AgResearch (New Zealand) and at the University of Ioannina (Greece). She conducted postdoctoral research at the University of Perpignan (UPVD) (2005–07), with stays at LISE (CNRS) and at the International Center of Biodynamics (Romania). In 2007, she joined the Tokyo University of Technology as Japan Society for the Promotion of Science Fellow. In 2009, she returned to the UPVD and then joined IBEC as Juan de la Cierva Fellow. In 2012, she moved to the University of South Australia where she won a Senior Research Fellowship. After four years, she joined Monash University as Senior Research Fellow. In 2018 she joined the URV as Ramón y Cajal Fellow, becoming ICREA Research Professor in 2020. In 2023 she joined ICIQ as group leader of the Bioinspired Nanotechnologies lab, funded by the AGAUR (2021 SGR 00223), which aims at engineering advanced materials for biosensing applications.

Research interests

Her research aims to deliver versatile nanoarchitectures to build bespoke diagnostics, by harnessing high-precision fabrication methods, and advances in engineering surface functionalities. Their assembly in hierarchical structures, with tuneable electrochemical properties and surface chemistry, and displayed bioreceptors, is strongly intertwined with the material's functions. Her interest lies in gathering new knowledge on the relationship between nanoarchitecture/displayed functionalities and function, to design sensors underpinning personalised clinical management of infections. The next generation of diagnostics is expected to meet the needs for host-immune response assessment, pathogen-associated and antibiotic resistance biomarkers detection, and monitoring of antibiotic levels. The potential of these tools to guide antibiotics choice is foreseen as a key driver toward effective treatment, protecting patients from antibiotics adverse effects, and dwindling antibiotic resistance.

Selected publications

– Ceto X, McRae JM, Miercynska-Vasilev A, Voelcker NH & **Prieto-Simón B** 2023, 'Towards the rapid detection of haze-forming proteins', *Talanta*, 268, 125305.

– Junga A, Pilmane M, Serstnova K, Lohova E, Melderis I, Gontar L, Kochanski M, Drutowska A, Maroti G & **Prieto-Simón B** 2023, 'Composition of mastitis causing microorganisms and cytokines in healthy cow's milk: Pilot study', *Proceedings of the Latvian Academy of Sciences, Section B: Natural, Exact and Applied Sciences*, 77, 169-177.

– Lazaro A, Villarino R, Lazaro M, Canellas N, **Prieto-Simon B** & Girbau D 2023, 'Recent Advances in Batteryless NFC Sensors for Chemical Sensing and Biosensing', *Biosensors-basel*, 13, 8, 775.

– Gontar L, Kochański M, Drutowska A, Pilmane M, Šerstnova K, Maróti G, Rajendran AA, Haji-Hashemi H, **Prieto-Simón B** 2023, 'Channel-based biosensors to support improved bovine mastitis management. International Coordination of Research on Infectious Animal Diseases (ICRAD) First Call', *GMPC Thesis & Opinions Platform,* 3, 2, 1-13.

Selected research activities

– Active grants: DIAG4AMR (PID2021) & Era-Net ICRAD (PCI2020) & 2021 SGR 00223
– Executive editor of Analytical Biochemistry
– Keynote speaker at the 2nd Annual Conference on Global Nanotechnology (Madrid) and XXVII Transfrontier Meeting on Sensors and Biosensors (France)
– Research contract with Arquimea (2023) to develop a microneedle-based wearable sensing patch
– Director of the PhD thesis defended by Grace Pei Chin: Electrochemical biosensing to unveil the role of exosomes as cancer biomarkers. Monash University (Australia)
– Member of two international (Australia, France) and one national (UAB) PhD thesis examination committees
– Rapporteur for the Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding

ICREA**MEMOIR2023**

Pilar Prieto Vives
Universitat Pompeu Fabra (UPF)
Humanities

Pilar Prieto is an ICREA Research Professor at the Department of Translation and Language Sciences at UPF (Universitat Pompeu Fabra), Barcelona, Catalunya. After obtaining her doctoral degree in Romance Linguistics at the University of Illinois at Urbana-Champaign, she worked as a postdoctoral fellow at Bell Laboratories (Murray Hill, New Jersey), where she continued working on the linguistic meaning of prosody across languages. Since 2008 she coordinates the "Prosodic Studies and Gesture Group" at the Department of Translation and Language Sciences, Universitat Pompeu Fabra.

Research interests

My main research goal is to understand the role of prosody and co-speech gestures in human communication from a crosslinguistic, developmental, and cognitive perspective. Three important strands of this research include: (a) to incorporate this knowledge into semantic models of language that model the interface areas with other components; (b) to empirically investigate how humans process prosodic and gestural patterns in combination with speech; and (c) to investigate the cognitive and developmental benefits of prosody and gesture in different areas, such as first and second language acquisition, as well as communication training for language impaired and non-impaired populations. The social significance of this research topic is high, as ICT training procedures based on prosodic and gestural awareness can be proven valuable to improve language abilities in populations with neurodevelopmental disorders characterized by impaired social interaction.

Selected publications

- Baills F & **Prieto P** 2023, 'Embodying Rhythmic Properties of a Foreign Language through Hand-Clapping Helps Children to Better Pronounce Words', *Lang Teach Res*, 27.6, 1576-1606.
- Castillo E, Pronina M, Hübscher I & **Prieto P** 2023, 'Narrative Performance and Sociopragmatic Abilities in Preschool Children are Linked to Multimodal Imitation Skills' *Journal of Child Language*, 50, 2, 52–77.
- Florit-Pons M, Rohrer P, Vilà-Giménez I, **Prieto P** 2023, 'Multimodal development in children's narrative speech: A longitudinal study of referential and temporal aspects of co-speech gesture', *J. Sp. Lang & Hear Res*, 66.3, 888-900.
- Ozakin AS, Xi X, Li P & **Prieto P** 2023, 'Thanks or tanks: A Brief Multisensory Training with Tactile Cues Facilitates the Pronunciation of Non-native English Interdental Consonants in a Discourse Reading Task', *Lang Learn and Dev,* 19, 4, 404-419.
- Pronina M, **Prieto P**, Bischetti L & Bambini V 2023, 'Expressive Pragmatics and Prosody in Young Preschoolers are More Closely Related to Structural Language than to Mentalizing', *Lang Learn and Dev,,* 19, 3, 323-344.
- Pronina M, Grofulovic H, Castillo E, **Prieto P** & Igualada A 2023. "Narrative Abilities at Age 3 Are Associated Positively With Gesture Accuracy but Negatively With Gesture Rate". *J. Sp. Lang & Hear Res*. 66(3):951-965.
- Rohrer PL, Delais-Roussarie E & **Prieto P** 2023, 'Visualizing prosodic structure: Manual gestures as highlighters of prosodic heads and edges in English academic discourses', *Lingua*, 293, 103583.
- Valls-Rates I, Niebuhr O & **Prieto P** 2023, 'Encouraging participant embodiment during VR-assisted public speaking training improves persuasiveness and charisma and reduces anxiety in secondary school students', *Frontiers In Virtual Reality*, 4, 1074062.
- Zhang Y, Baills F & **Prieto P** 2023, 'Singing Songs Facilitates L2 Pronunciation and Vocabulary Learning: A Study with Chinese Adolescent ESL Learners', *Languages*, 8, 3, 219.

Selected research activities

ICREA**MEMOIR2023**

Valerio Pruneri
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Valerio Pruneri is Corning Inc. Chair leading the Optoelectronics group at the Institute of Photonic Sciences (ICFO). Previously he worked for Avanex, Corning, Pirelli, and the University of Southampton. He is inventor in more than 60 patent families and has given more than 100 invited talks. With his group he has developed technologies for the photonics, quantum, sensing and display industries. These include multifunctional optical surfaces for antireflection and antimicrobial applications, low voltage integrated modulators and tunable lasers for DWDM, quantum random number generators, quantum phase imagers, quantum key distribution systems for cryptography, His work has led to numerous industrial collaborations (e.g. Corning Inc., Carl Zeiss and HP) and the creation of three spin offs, Quside, Sixsenso and Luxquanta.

Research interests

The Optoelectronics group (OptoGroup) at the Institute of Photonic Sciences (ICFO) studies and develops new advanced materials, devices and systems for optical telecommunication, sensing and quantum industry. In particular, the main driving is to carry out research which bridges academia and industry, by developing fundamental ideas which will have an impact on commercial products.

Selected publications

- Bareza NJr, Wajs E, Paulillo B, et al. 2023, "Quantitative Mid-Infrared Plasmonic Biosensing on Scalable Graphene Nanostructures", *Advanced Materials Interfaces*, 10, 2, 2201699.
- Camphausen R, Sansa Perna A, Cuevas Á, et al. 2023, 'Fast quantum-enhanced imaging with visible-wavelength entangled photons', *Optics Express*, 31, 4, 6039 - 6050.
- Martínez-Cercós D, Paulillo B, Barrantes J, et al. 2023, 'Tuning of Ultra-Thin Gold Films by Photoreduction', *Acs Applied Materials & Interfaces*, 15(12):16204-16210.
- Herzig Sheinfux H, Jung M, Orsini L, et al. 2023, 'Transverse Hypercrystals Formed by Periodically Modulated Phonon Polaritons', *Acs Nano*, 17(8):7377-7383.
- Stein A, López Grande IH, Castelvero L, **Pruneri V** 2023, 'Robust polarization state generation for long-range quantum key distribution', *Optics Express*, 31, 9, 13700-13707.
- Aldama J, Sarmiento S, Etcheverry S, et al. 2023, 'Small-form-factor Gaussian-modulated coherent-state transmitter for CV-QKD using a gain-switched DFB laser', *Opt. Express,* 31, 5414.
- Graham C, Marchena M, Paulillo B, et al. 2023, 'Highly doped graphene on ion-exchanged glass', *2d Materials*, 10, 3, 035037.
- Aldama J, et al. 2023, 'InP-based CV-QKD PIC Transmitter', *2023 Optical Fiber Communications Conference And Exhibition,* (OFC), San Diego, CA, USA, 1-3.
- Cuevas A, Tiemann D, Camphausen R, et al. 2023, 'Multipass wide-field phase imager', *Optics Express*, 31, 22, 37262-37274.
- Haegele S, Corrielli G, Hejda M, Duempelmann L, Terborg RA, Osellame R & **Pruneri V** 2023, 'Large field-of-view holographic imager with ultra-high phase sensitivity using multi-angle illumination', *Optics And Lasers In Engineering*, 161, 107315.

ICREA**MEMOIR2023**

Natasa Przulj
Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)
Life & Medical Sciences

Prof. Przulj is an elected member of Academia Europaea –The Academy of Europe (AE), The Serbian Royal Academy (SKANU), a Fellow of the British Computer Society (BCS), and a Scientific Advisor of the Mathematics Institute of the Serbian Academy of Sciences and Arts (SANU). She is an ICREA Research Professor at Barcelona Supercomputing Center as of January 1st, 2019. In 2014, she was awarded the British Computer Society Roger Needham Award. She received three prestigious European Research Council (ERC) grants: ERC Consolidator (2018-25), ERC PoC (2020-2022) and ERC Starting (2012-17). She held prestigious USA NSF Awards. Her research has also been supported by other large governmental and industrial grants. She has been a Full Professor (2016-now) at UCL, Assoc. Professor (2012-2016) and Assist. Professor (2009-2012) at Imperial College London and an Assistant Prof. at Univ. of California-Irvine (2005-2009). She obtained a PhD in Computer Science from Univ. of Toronto in 2005.

Research interests

Molecular and clinical data integration for precision medicine: patient stratification, biomarker discovery, drug re-purposing, drug discovery, disease re-classification. Data analytics, modeling, fusion, dynamics, applied to clinical, molecular and biological data. Algorithms for uncovering molecular mechanisms of disease from systems-level "omics" data. Molecular networks: interactome evolution, dynamics, alignment, function prediction. Large-scale economic data analysis, fusion and modeling the dynamics of economic systems. Computational graph theory, algorithms, artificial inteligence, models.

Selected publications

– Doria-Belenguer S, Xenos A, Ceddia G, Malod-Dognin N & **Pržulj N** 2023, 'A functional analysis of omic network embedding spaces reveals key altered functions in cancer', *Bioinformatics*, 39, 5, btad281.
– Gureghian V, Herbst H, Kozar I, et al. 2023, 'A multi-omics integrative approach unravels novel genes and pathways associated with senescence escape after targeted therapy in NRAS mutant melanoma', *Cancer Gene Therapy*, **30**, pages1330–1345 .
– Malod-Dognin N, Ceddia G, Gvozdenov M, et al. 2023, 'A phenotype driven integrative framework uncovers molecular mechanisms of a rare hereditary thrombophilia', *Plos One*, 18, 4, e0284084.
– Xenos A, Malod-Dognin N, Zambrana C & **Pržulj N** 2023, 'Integrated Data Analysis Uncovers New COVID-19 Related Genes and Potential Drug Re-Purposing Candidates', *International Journal of Molecular Sciences*, 24, 2, 1431.

Selected research activities

Invited Talks:
Gave 6 keynote / invited talks at prestigious places, e.g. keynotes at the NetSci´23, ISMB NetBio COSI´23 and German Bioinformatics Conference´23.
Competitive Research Funding:
Artificial Intelligence Research Alliance (AIRA) Ramon Llull Post-doctoral Programme
Title: RAMON LLULL-AIRA Postdoctoral Programme
Co-PI: Natasa Przulj, Barcelona Supercomputing Center (BSC)
Funding Organization: European Commission, Horizon Europe (HORIZON-MSCA-COFUND-2022) and the Catalan Government
Funding period: 2024 – 2027
Funds received: €9,455,811 (out of which four post-doc positions to BSC)
Spanish State Research Agency and the Ministry of Science and Innovation MCIN grant PID2022-141920NB-I00
Title: Towards a Better Understanding of Omic Data and Disease (TOBUODAD)
PI: Natasa Przulj,
Barcelona Supercomputing Center (BSC)
Funding period: 2024 – 2027
Funds received: ≈ €300,000
Student Supervisio*n*
Ph.D. Alumni:
Carme Zambrana, Ph.D., 2023
Sergio Doria, Ph.D., 2023
Daniel Tello, Ph.D., 2023
She served on Advisory Boards, organized conferences, reviewed international grants and papers for prestigious journals.

ICREA**MEMOIR2023**

Josep Puigmartí Luis
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Prof. Josep Puigmartí-Luis is the head of the ChemInFlow group located at the University of Barcelona and he is also affiliated with Institut de Química Teòrica i Computacional (IQTC) that was honored with the "Maria de Maeztu" Unit of Excellence, in 2021. He completed his PhD in supramolecular chemistry at the Institut de Ciències dels Materials de Barcelona (2008), and right after, he received a competitive postdoctoral ETH fellowship. In 2012, he was nominated as a Ramón y Cajal researcher, but after two years, he decided to move back to Switzerland where in 2015 was awarded an ERC Starting Grant, a Chair of Excellence (France) in 2018, and a Visiting Professor at the University of Valencia in 2019. In 2021, Prof. Puigmartí-Luis received the emergent consolidated research group recognition from the Catalan research system, earned a favorable Accreditation as Full Professor from AQU Catalunya in 2023, and the same year he was also honored with the Rising Star Award from IEEE 3M-NANO.

Research interests

Self-assembly can be described as a dynamic process present in nature that has long been used for the evolution of living organisms, but is still scarcely understood by modern science. The main reason being that self-assembly is generally studied under equilibrium conditions. Despite the remarkable progress made in materials engineering, the quest for a technology to study and kinetically control self-assembled processes is still incomplete. Like in nature, only through kinetic controlled conditions we can achieve materials with a rationalized function and efficiency; a result that will open new horizons in nanotechnology. Therefore, the research activities of my group are centered on accomplishing an extraordinary kinetic control over self-assembly by controlling the fluid flow phenomena of reagents at the micro and nanoscale.

Selected publications

- Llauradó-Capdevila G, Veciana A, et al. 2023, '*Tailored design of a water-based nanoreactor technology for producing processable sub-40 nm 3D COF nanoparticles at atmospheric conditions*', *Adv Mater*, 2306345.
- S. Royuela, S. Sevim, G. Hernanz, D.Rodríguez-San-Miguel, C. Franco, S. Pané, J. Puigmartí-Luis*, F. Zamora, '3D Printing of Covalent Organic Frameworks: A Microfluidic-Based System to Manufacture Binder-Free Macroscopic Monoliths', Adv. Funct. Mater. 2023, 2314634.

Selected research activities

In 2023, I received the Rising Star Award at the IEEE 3M-NANO, gained a Full Professor Accreditation from AQU, and joined the Management and Steering Committees of the EU4MOFS COST project (Action CA22147). I organized a special session at MARSS in Abu Dhabi, served as a Visiting Professor at Changchun University of Science and Technology (CUST) (China) and I have attended 13 international conferences, 12 of them as an Invited speaker.

In the same period, the ChemInFlow group published 15 articles with an Impact Factor exceeding 16. Gemma Llauradó secured an FPI scholarship, James Nicholas successfully completed his PhD with honors, and Dr. Albert Aragonès accepted a Serra Hunter Lecturer position at Universitat de Barcelona after declining a Ramón y Cajal Fellowship. We also welcomed new members, including a Master student, Sílvia Veglioni, a Industrial PhD, Natalia Salvat Lozano, and visiting PhD students Maria Aurora Guarducci from La Sapienza di Roma and Xu Huang from China.

ICREA**MEMOIR2023**

Aurora Pujol Onofre
Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)
Life & Medical Sciences

Dr Aurora Pujol received her MD from the Autonomous University of Barcelona and her PhD at the University of Heidelberg/ German Cancer Research Center. She trained in Human Genetics at the IGBMC, Strasbourg, generating and characterizing mouse models for a rare neurometabolic disorder, adrenoleukodystrophy (X-ALD), combined with residency in Medical Genetics. In 2005, she became Director of the Neurometabolic Diseases Lab at IDIBELL/ICREA. She is also board certified in Clinical Genomics by the American Board of Genetics and Genomics at the NIH, USA. Her lab is a member of the Spanish Network of Rare Diseases CIBERER, and the Undiagnosed Diseases International Network of NIH (UDNI). Dr Pujol serves at prestigious Editorial Boards, patients associations, the European Society of Human Genetics scientific committee, and is an international key opinion leader for brain white matter diseases and genomic medicine.

Research interests

Our mission is to improve disease management of rare brain disorders through precision medicine. This spans the whole spectrum from genomic diagnosis to disease-modifying treatments. A first research line revolves around adrenoleukodystrophy (ALD), made popular by the movie "Lorenzo's Oil". We are integrating multiomic approaches to gain insights into pathomechanisms for drug target and biomarker identification. These involve the control of redox, metabolic and mitochondrial homeostasis. Preclinical tests using mouse models for ALD yielded four licensed patents, four phase II/III clinical trials, and four Orphan Drug Designations. Currently, a phase II-III against placebo clinical trial is funded by the Spanish National Institutes of Health. A second research line applies clinical and functional genomics, including development of computational algorithms, for solving undiagnosed cases of brain rare disorders and expanding scientific knowledge by discovering novel genetic causes of brain malfunction.

Selected publications

- Lee D, Le Pen J, Yatim A, (65 authors), **Pujol A**, Silverman RH, Zhang SY & Casanova JL 2023,"Inborn errors of OAS-RNase L in SARS-CoV-2-related multisystem inflammatory syndrome in children", *Science,* Vol 379, Issue 6632.

- Planas-Serra L, Launay N, Goicoechea L, et al. 2023, 'Sphingolipid desaturase DEGS1 is essential for mitochondria-associated membrane integrity', *Journal Of Clinical Investigation*, 133, 10, e162957.
- Launay N, Ruiz M, Planas-Serra L, et al. 2023, 'RINT1 deficiency disrupts lipid metabolism and underlies a complex hereditary spastic paraplegia', *Journal Of Clinical Investigation*, 133, 14, e162836.
- Schlüter A, Vélez-Santamaría V, Verdura E, et al. 2023, 'ClinPrior: an algorithm for diagnosis and novel gene discovery by network-based prioritization', *Genome Medicine*, 15, 1, 68 - 68.
- Lee, D et al. 2023, 'Inborn errors of OAS-RNase L in SARS-CoV-2-related multisystem inflammatory syndrome in children', *Science*, 379 - 6632 - 554 - +

ICREA**MEMOIR2023**

Víctor F. Puntes
Vall d'Hebron Institut de Recerca (VHIR)
Experimental Sciences & Mathematics

Prof. Dr. Victor Puntes is Group Leader at the Catalan Institute of Nanoscience and Nanotechnology (ICN2) (2005-), with joint appointment at Vall Hebron Institute de Recerca (VHIR) (2015-). He received his Ph.D. degree in Physics from the University of Barcelona and his M.S. degree in chemical engineering from University Louis Pasteur in 1994. Between 1999 and 2003 he held a postdoc position as postdoctoral researcher at the University of California–Berkeley (UCB) and the LBNL. In 2003 obtained a Ramón y Cajal position at the UB. He also acted as scientific consultant and actively contributed to several R&D management activities and scientific committees.   Besides, he is normally engaged in dissemination lectures and activities broadcasting his research and that of his community.

Research interests

Prof. Víctor Puntes works on the synthesis, characterisation and applications of engineered inorganic nanoparticles (NPs) in the fields of energy harvesting, environmetnal remediation and medicine. By controlling the size, structure and shape of the inorganic core, and manipulating the linking of organic molecules to the nanoparticle surface, the group aims to design nanoparticles that interact with a variety of systems (biological, medical, materials, etc.) providing controlled electromagnetic and molecular heterogenicities useful to manipulate materials and biological states at both, the molecular and the electron transport scales . This allows for the deliberate modification of these systems, or the use of NPs for manipulating and reporting states.

Selected publications

- Badia A, Duarri A, Salas A, et al. 2023, 'Repeated Topical Administration of 3 nm Cerium Oxide Nanoparticles Reverts Disease Atrophic Phenotype and Arrests Neovascular Degeneration in AMD Mouse Models', *Acs Nano*, 17, 2, 910–926.
- Chen YF, Soler L, Cazorla C, Oliveras J, Bastús NG, **Puntes VF** & Llorca J 2023, 'Facet-engineered TiO_2 drives photocatalytic activity and stability of supported noble metal clusters during H_2 evolution', *Nature communications*, 14 - 1.
- Ernst LM, Mondragón L, Ramis J, et al. 2023, 'Exploring the Long-Term Tissue Accumulation and Excretion of 3 nm Cerium Oxide Nanoparticles after Single Dose Administration', *Antioxidants*, 12, 3, 765.

ICREA**MEMOIR2023**

Josep Quer Villanueva
Universitat Pompeu Fabra (UPF)
Humanities

As ICREA Research Professor, I am member of the "Grup de Lingüística Formal" (GLiF) at the Department of Translation and Language Sciences (UPF) since January 2009 and head of the LSC Lab (Laboratori de llengua de signes catalana). In 2007-2008 I was professor and chair of Romance Linguistics at the University of Amsterdam and previously I was ICREA Research Professor at the Department of General Linguistics of the University of Barcelona (2002-2006). In that period I set up a new research project on the formal study of sign languages, both with a focus on the morphosyntax and semantics of Catalan Sign Language (LSC) and on crosslinguistic and crossmodal research. I led the research group that published the first comprehensive grammatical description of LSC. I obtained my PhD in Linguistics at Utrecht University in 1998 with a dissertation on the semantics of mood. I was co-editor of the journal Sign Language & Linguistics (2007-2020).

Research interests

Research into natural language can no longer ignore sign languages as manifestations of the same innate human faculty realized in a different perceptual-articulatory modality. As a formal linguist, my research has focused on the analysis of a range of phenomena (negation, agreement, quantification, etc.) that hinge on the interaction between different grammar components (morphosyntax, semantics, prosody) both in spoken and sign languages. The goal is to better understand the division of labour across different grammar modules.

Selected publications

– Barberà G & **Quer J** 2023, 'Studying microdiachronic change with the Catalan Sign Language corpus A case study on anaphoric chains in narratives', *Advances in sign language corpus linguistics*, 108 – 219

ICREA**MEMOIR2023**

Rodrigo Quian Quiroga

Institut Hospital del Mar d'Investigacions Mèdiques (IMIM)

Life & Medical Sciences

Rodrigo Quian Quiroga studied Physics at University of Buenos Aires and did a PhD in Applied Mathematics at the University of Luebeck, Germany. He was a postdoc at the Research Center Juelich, Germany and a Sloan Fellow at Caltech. In 2004, he got a lectureship at Leicester University, was promoted to Reader in 2006 and to full Professor and Head of Bioengineering in 2008. In 2012 he was awarded a Research Chair and founded the Centre for Systems Neuroscience. Since 2023 he is an ICREA Research Professor, working at the IMIM. He has published more than 120 papers and 5 books (Borges and memory, The forgetting machine, Neurocience Fiction, Imaging brain function with EEG, and Principles of neural coding). He is a fellow of the Academy of Medical Sciences in the UK and was selected as one of the 10 UK leaders in Science and Engineering by the Royal Academy of Engineering and the Engineering and Physics Research Council.

Research interests

Given my initial background in Physics and Applied Mathematics, I have developed Signal Processing methods for the analysis of complex electrophysiology data. In particular, I developed a 'spike sorting' algorithm to identify the activity of single neurons that outperformed previous algorithms and that is currently used by several laboratories worldwide [Neural Comp 2004]. The use of this algorithm allowed me to discover a new type of neuron in the human brain, so called "Concept Cells" or "Jennifer Aniston neurons", which fire selectively to specific concepts [Nature 2005]. In following studies, we showed that these neurons form and store memories [Neuron 2015; Nat. Comm. 2016; Nat. Comm. 2018; Cell 2019], and based on these data, I have proposed that memory coding in the human hippocampus is completely different to what has been described in other species and can be the basis of cognitive abilities uniquely developed in humans [Cell 2017; Science 2019; Cell 2019; TiCS 2020].

Selected publications

– **Quian Quiroga R** 2023, 'An integrative view of human hippocampal function: Differences with other species and capacity considerations', *Hippocampus*, 33, 5, 616-634.

– Quian Quiroga R, Boscaglia M, Jonas J, et al. 2023, 'Single neuron responses underlying face recognition in the human midfusiform face-selective cortex.', *Nature Communications*, 14, 1, 5661 – 5661.

– Boscaglia M, Gastaldi C, Gerstner W, **Quian Quiroga R**. 2023, 'A dynamic attractor network model of memory formation, reinforcement and forgetting', *PLOS Computational Biology,* 19, 12, e1011727.

ICREA**MEMOIR2023**

Jelena Radjenović
Institut Català de Recerca de l'Aigua (ICRA)
Engineering Sciences

Graduated in Biochemical Engineering and Biotechnology from the University of Belgrade´s Faculty of Technology and Metallurgy, Serbia, in 2004. PhD in Environmental Chemistry from the University of Barcelona in July 2009 with "cum laude" distinction. 2009-2014: Advanced Water Management Centre (AWMC), University of Queensland, Australia. November 2014-onwards: Catalan Institute for Water Research (ICRA), Girona, Spain. Awarded with several prestigious fellowships: Queesland Early Career Smart Future Fellowship, Marie Curie International Incoming Fellowship, Ramon y Cajal fellowship. 2017-2023: ERC Starting Grant ELECTRON4WATER. 2023: ERC Proof of Concept Grant GRAPHEC, ERC Consolidator Grant ELECTROmonoLITH. Awarded with the Catalan National Research Award for Young Talent for 2021.

Research interests

I am an expert in chemical and electrochemical advanced (waste)water treatment, with a focus on the fate of chemical and microbial contaminants and resource recovery. My research aims to increase the efficiency and resilience of water treatment and reuse through the development of sustainable, energy-efficient and renewable energy-driven technologies. My core expertise is the development of low-cost, nanostructured electrode materials, their implementation in electrochemical systems for (waste)water treatment, as well as elucidation of the mechanism of contaminant degradation at the nano-scale level. My group has developed several patented, low-cost nanostructured electrodes that overcome major limitations of existing, commercial electrode materials and are capable of efficient contaminant degradation and recovery of valuable byproducts.

Selected publications

- Sergienko N, Cuervo Lumbaque E, Duinslaeger N & **Radjenovic J** 2023, 'Electrocatalytic removal of persistent organic contaminants at molybdenum doped manganese oxide coated TiO_2 nanotube-based anode', *Applied Catalysis B Environmental*, 334, 122831.
- Duinslaeger N, Doni A & **Radjenovic J** 2023, 'Impact of supporting electrolyte on electrochemical performance of borophene-functionalized graphene sponge anode and degradation of per-and polyfluoroalkyl substances (PFAS)', *Water Research*, 242, 120232.

ICREA**MEMOIR2023**

Javier Ramón Azcón
Institut de Bioenginyeria de Catalunya (IBEC)
Engineering Sciences

Since 2017, ICREA Professor Javier Ramon has been a Group Leader at the Institute of Bioengineering of Catalonia (IBEC) in Barcelona, Spain. After his doctorate, he performed a post-doc stay under professor Mizutani's direction at Hyogo University in Japan on lithography fabrication, microfluidics, and dielectrophoresis technic (2009-2011). After this post-doctoral stay at Hyogo University (2011), he was hired by the Advanced Institute for Materials Research (AIMR) at Tohoku University as Assistant Researcher. The AIMR-WPI institute is the third most relevant institute in Japan and one worldwide reference in material science. He joined the group of Prof. Matsue in the device/ systems group, and in April 2013, he was promoted to Assistant Professor. In this position, he worked to integrate biosensor technology with stem cells, biomaterials, and tissue engineering research (2011-2014).

Research interests

My group 'Biosensors for Bioengineering' is focused on a new line of research that has become of extreme importance in the last years. My idea is to integrate biosensor technology and nanotechnology with stem cell research and tissue engineering. Engineered tissues are integrated with biosensing technology to obtain microdevices (microtissues and 'Multi-Organ-on-a-Chip' (multi-OOC)) to detect cellular responses to external stimuli, monitor the quality of the microenvironment, and support diverse cellular requirements. This research on 3D-functional engineered tissues is expected to develop tissue construction knowledge and their functions and relation to some human diseases. Integration of fully functional tissues with microscale biosensor technology allowed us to obtain OOC. These chips could be used in pharmaceutical assays. They could be a step toward the ultimate goal of producing in vitro drug testing systems crucial to the medicine and pharmaceutical industry.

Selected publications

- Tejedera-Villafranca A, Montolio M, **Ramón-Azcón J** & Fernández-Costa JM 2023, 'Mimicking sarcolemmal damage *in vitro*: a contractile 3D model of skeletal muscle for drug testing in Duchenne muscular dystrophy', *Biofabrication*, 15, 4, 045024.
- Ramon, Javier; Fernandez Costae, Juan M.; Rodriguez Comas, Julia; Lopez Munoz, Gerardo; Yeste, Jose; Mangas Florencio, Lluis; Fernandez Gonzalez, Miriam; Martin Lasierra, Eduard; Tejedera Villafranca, Ainoa; Alejandra Ortega, Ma 2023, 'Training-on-a-Chip: a multi-organ device to study the effect of muscle exercise on insulin secretion in vitro', *Advanced Materials*, 8, 7
, 2023
2200873.

- Fernández-Costa JM, Tejedera-Vilafranca A, Fernández-Garibay X & **Ramón-Azcón J** 2023, 'Muscle-on-a-chip devices: a new era for in vitro modelling of muscular dystrophies', *Disease Models & Mechanisms*, 16, 6, dmm050107.
- Fernández-Garibay X, Gómez-Florit M, Domingues RMA, Gomes ME, Fernández-Costa JM & **Ramón-Azcón J** 2023, 'Xeno-free bioengineered human skeletal muscle tissues', *Tissue Engineering Part A*, 29, 13-14.
- Rodriguez-Comas J, Castano C, Ortega MA, et al. 2023, 'Immunoaffinity-Based Microfluidic Platform for Exosomal MicroRNA Isolation from Obese and Lean Mouse Plasma', *Advanced Materials Technologies*, 8, 15, 2300054.
- van Aalen EA, Rosier BJHM, Jansen T, et al. 2023, 'Integrated Bioluminescent Immunoassays for High-Throughput Sampling and Continuous Monitoring of Cytokines', *Analytical Chemistry*, 95, 23, 8922 - 8931.

ICREA**MEMOIR2023**

Ángel Raya Chamorro
Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)
Life & Medical Sciences

Ángel Raya is an ICREA Research Professor at the Bellvitge Biomedical Research Institute (IDIBELL). He obtained his MD in 1990 from the University of Valencia, Spain and a PhD degree from the same university in 1995 for studies carried out at the Department of Physiology and at the Department of Neurology, Mayo Clinic, Rochester, MN. He pursued postdoctoral training at the Instituto de Investigaciones Citológicas (currently, Centro de Investigación Príncipe Felipe) in Valencia, from 1995-2000. He then was a Research Associate (2000-2004) and a Senior Research Associate (2004-2006) in the Gene Expression Laboratory of the Salk Institute for Biological Studies, La Jolla, CA. He returned to Spain in 2006 and was the Scientific Coordinator at the CMRB until 2009, when he joined the Institute for Bioengineering of Catalonia (IBEC) as Group Leader of the Control of Stem Cell Potency group, until 2015. From 2014 to 2019 he was Director at CMRB.

Research interests

Our research work aims to understand the tissue, cellular and molecular mechanisms that determine the regenerative response in certain species of vertebrates, as well as the genetic and epigenetic mechanisms that control cellular reprogramming. This phenomenon provides a link between the traditional study of epimorphic regeneration and the induced pluripotency strategies of regenerative medicine.

Selected publications

- Escribá R, Larrañaga-Moreira JM, Richaud-Patin Y, ..., **Raya A**. 2023, 'iPSC-Based Modeling of Variable Clinical Presentation in Hypertrophic Cardiomyopathy', *Circ Res*, 133, 2, 108 - 119.
- Siguero-Álvarez M, Salguero-Jiménez A, ..., **Raya A**, Gimeno-Blanes JR, de la Pompa JL. 2023, 'A Human Hereditary Cardiomyopathy Shares a Genetic Substrate With Bicuspid Aortic Valve', *Circulation*, 147, 1, 47 - 65.
- Tristán-Noguero A, Fernández-Carasa I, ..., **Raya A**, García-Cazorla A, Consiglio A. 2023, 'iPSC-based modeling of THD recapitulates disease phenotypes and reveals neuronal malformation', *EMBO Mol Med*, 15, 3, e15847.
- Pesce M, Duda G, Forte G, Girao H, **Raya A**, Roca-Cusachs P, Sluijter J, Tschöpe C, Van Linthout S. 2023, 'Cardiac fibroblasts and mechanosensation in heart development, health and disease', *Nat Rev Cardiol*, 20:309–324.
- Kuebler B, ... **Raya A**, Giner SQ & Veiga A 2023, 'Generation of a bank of clinical-grade, HLA-homozygous iPSC lines with high coverage of the Spanish population', *Stem Cell Res Ther*, 14 - 1.
- Reinal I, Ontoria-Oviedo I, ..., **Raya A**, Sepúlveda P. 2023, 'Modeling Cardiotoxicity in Pediatric Oncology Patients Using Patient-Specific iPSC-Derived Cardiomyocytes Reveals Downregulation of Cardioprotective microRNAs', *Antioxidants*, 12, 7, 1378.

Selected research activities

Co-organizer

First RegenBell symposium on Stem Cells and Regenerative Medicine, Institut d'Estudis Catalans, Barcelona, Nov

Keynote speaker

Kick-off meeting COST Action CA21151-HAPLO-iPS, Barcelona, Jan

Invited speaker

Ciclo de Conferencias Científicas – Universitat de Valencia, Feb

35è Congrés de la Societat Cat Cardiologia, Barcelona, Jun

CIBER-BBN-EHD Annual Conference, Santander, Nov

ICREAMEMOIR2023

Mar Reguant Rido
Institut d'Anàlisi Econòmica ()
Social & Behavioural Sciences

Mar Reguant (PhD in Economics, MIT, 2011) is an expert in the areas of electricity market design and climate policy. She has previously worked at Stanford GSB and the Toulouse School of Economics, and Northwestern University. She is now an ICREA researcher at IAE-CSIC and a professor (part-time) at Northwestern. She has received numerous awards, including a Presidential Early Career Award for Science and Engineering (PECASE, 2019), an ERC Consolidator grant in 2021, and the Catalan National Prize of Research (Young Talent) in 2023.

Research interests

Prof. Reguant's research agenda is focused on the study of energy markets (and other energy-intense industries) and how they interact with environmental and climate policies. She develops quantitative models and tools to study and quantify the impacts of various policies. She has examined the impact of carbon prices on electricity markets, the exercise of market power by power plants in the presence of dynamic costs, the interaction between market power and leakage in cap-and-trade regulations, and the impacts of market power in sequential markets. She also studies the unequal impacts of climate policies.

I put special emphasis on how machine learning tools can contribute to our analysis of these markets. For example, over the last years, she has published work studying the impact of energy efficiency policies using a diff-in-diff machine-learning framework which she studies in her ERC grant, "ENECML: Understanding the Energy Transition with a Machine Learning Toolbox".

Selected publications

– Gonzales LE, Ito K & **Reguant M** 2023, 'The Investment Effects of Market Integration: Evidence From Renewable Energy Expansion in Chile', *Econometrica*, 91, 5, 1659 – 1693.
– Bergheimer S, Cantillon E & **Reguant M** 2023, 'Price and quantity discovery without commitment*', *International Journal Of Industrial Organization*, 90, 102987.

Selected research activities

– Keynote at the Bank of England and the London School of Economics Environment Week on "Challenges and successes of the energy transition".
– Inaugural lecture at UAB PhD program IDEA and at BSE incoming master's class.
– Director of the master's in Energy, Climate Change and Sustainability at the Barcelona School of Economics.
– Vicepresident of Climate Change at the Center for Economic Policy Research.
– Co-editor at the Journal of the Association of Environmental and Resource Economists and Associate Editor at RAND and Board member at ReStud, AEJ:Applied and JEL.

ICREA**MEMOIR2023**

Victoria Reyes García
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

Victoria Reyes-García (PhD in Anthropology, 2001, U of Florida) is ICREA Research Professor at the Institut de Ciència i Tecnologia Ambientals de la Universitat Autònoma de Barcelona (ICTA-UAB). Her research focuses on Indigenous and local knowledge systems, particularly in relation to the natural environment, and on the relevance of these knowledge systems to understand and deal with the climate and environmental crises. She co-directs the Laboratory of Analysis of Social-Ecological Systems in a Global World (LASEG), a research group that analyzes the impacts of global change on socio-ecosystems. Her current ERC-funded project (LICCI) studies local perceptions of climate change impacts. She participates in the Transformative Change Report of the Intergovernmental Science and Policy Platform on Biodiversity and Ecosystem Services (IPBES). She is member of the National Academy of Science, USA (2021) and the Academie d'Agriculture de France (2022).

Research interests

My research encompasses the interdisciplinary study of the dynamic relations among peoples, biota, and environments. I use a multidisciplinary perspective (working with ecologists, economists, psychologists, agronomists, archaeologists, and computer scientists) and empirical data to analyse 1) the effects of global change on rural livelihoods and local environments and 2) social responses to environmental changes. My research draws on insights from anthropology and the behavioural sciences to work at multiple levels- from the views of villagers in developing nations to those of policy-makers in industrial nations. My current areas of research include 1) local indicators of climate change impacts, 2) public participation in the documentation of local knowledge, 3) the adaptive nature of local environmental knowledge, 4) Indigenous peoples and cultural change, and 5) local participation in biodiversity conservation.

Selected publications

- **Reyes-García V** & Li X 2023, '*Mapping the structure of a cultural domain: Cultural domain analysis*', In A. Ruth, A. Wutich, and H.R. Bernard (Ed), The Handbook of Teaching Qualitative and Mixed Research Methods, 64, 308-311, Oxford, England: Routledge.
- **Reyes-García V** & Junqueira AB 2023, '*Postface*', In J.A. Whitaker, C.G. Armstrong, and G. Odomme (Ed), Climatic and Ecological Change in the Americas: A Perspective from Historical Ecology. Routledge, 229-238.
- **Reyes-García, V** 2023, '*Indigenous and Local Knowledge Contributions to Social-Ecological Systems'* Management. In S. Vilamayor-Tomas and R. Mudarian (Eds). *The Barcelona School of Ecological Economics and Political Ecology.* Springer, 7, 71-81.
- **Reyes-Garcia V**, et al. 2023, 'Biocultural vulnerability exposes threats of culturally important species', *PNAS*, 120, 2, e2217303120.
- **Reyes-Garcia V** 2023, 'Beyond artificial academic debates: for a diverse, inclusive, and impactful ethnobiology and ethnomedicine', *Journal of Ethnobiology and Ethnomedicine*, 19, 36.
- **Reyes-García V**, Álvarez-Fernández S, Benyei P, et al. 2023, 'Local indicators of climate change impacts described by indigenous peoples and local communities: Study protocol', *Plos One*, 18, 1, e0279847.
- Scheidel A, et al., **V. Reyes-García**, et al. 2023, 'Global impacts of extractive and industrial development projects on Indigenous Peoples' lifeways, lands, and rights', *Science Advances*, 9, 23, eade9557.

Selected research activities

Member, Scientific Advisory Board, Ernst Strüngmann Forum, 2023-2026.

Member, Advisory Panel "Climate Actions for Safeguarding Intangible Cultural Heritage", UNESCO 2003 Intangible Cultural Heritage Convention. 2023-2024.

Member, Consensus study on Co-Production of Environmental Knowledge, Methods, and Approaches, National Academy of Sciences. 2023-2024.

Coordinating Lead Author, Chapter 5,Transformative change assessment, IPBES. 2022-2024
Member, Scientific Commitee, Earth Network, UNESCO. 2023-2024

ICREA**MEMOIR2023**

Marta Reynal-Querol
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Marta Reynal-Querol is an ICREA Research Professor at the Department of Economics and Business at Universitat Pompeu Fabra (UPF), Research Professor and Affiliated Professor of the BSE, and Director of the Master in Economics at UPF. She is the Director of IPEG. She is a Research Fellow at the CEPR, and at the CEsifo and a Full Member at the EUDN. She is Fellow of the EEA. She was member of the Council of the EEA between 2011 and 2015. She is member of the Editorial Board of the Journal of Conflict Resolution. She won an ERC-Advanced grant in 2022, and ERC-Consolidator grant in 2014 and also an ERC-Starting grant obtained in the first call. She is "Premio Jaume I de Economía 2022". She won the Banco Herrero prize 2011 awarded annually to a Spanish Social Scientist under 40 years old. She worked at the World Bank between 2001 and 2005. She holds a Ph. D. in Economics from the LSE (2001) and a Master with Honors from UPF.

Research interests

My main research interest is the study of the causes and consequences of conflict. I analyzed the relationship between religious and ethnic fractionalization, polarization, and conflict and development. I have also worked on the effectiveness of foreign aid and on the relationship between poverty and civil war and on the study of the institutional designs that may prevent or mitigate, such social conflicts. In particular I construct a database on the characteristics of leaders over the 20th century and I investigated whether there are systematic differences in the type of leaders that can explain the economic development of countries. More recently I am using administrative data on the first colonizers of Latin America to reexamine the issue of institutions versus human capital in the explanation of economic development and conflict. Moreover I am starting a line of research on the analysis of Development and Conflict using Big Data. In particular I am working on the construction of new measures of inequality.

Selected research activities

Member of the IEA Executive Committee, June 2017-December 2023
Research Professor, BSE, since December 2016;
Fellow of the EEA since 2015;
Research Fellow CEPR since 2012;
Full Member EUDN (European Development Network) since 2012;
Research Fellow CESifo, since 2013;
Editorial Board, *Journal of Conflict Resolution,* March 2007-present.
ERC-Advanced Grant (2022-2027)
Co-PI of the Spanish National Science Foundation Grant, PID2020-120118GB-I00
Co-organizer of the workshop "Political Economy of Development and Conflict"
Invited: State of the Art Session, in the EEA annual Meeting, Barcelona
Key Note at the CESC, Barcelona.
Invited speaker at the 11th Economics day on "Political leaders", Lyon.
Invited speaker at the ERC workshop, LISER, Belval, Luxembourg.
Director of IPEG, since December 2016
Director of the Master in Economics (BSE-UPF), since September 2012

ICREA**MEMOIR2023**

Paul Reynolds
Universitat de Barcelona (UB)
Humanities

Institute of Archaeology-UCL BA (1980) & PhD (1991) (*Settlement and Pottery of the Vinalopo Valley (Alicante), AD 400-700*), providing a detailed review of ceramics and trade in W Mediterranean ports (published as BAR 588 & 604 in 1993, 1995). Have studied-published Hellenistic, Roman and Islamic ceramics from excavations in Spain (Alicante, Cartagena, Valencia), Roman Syria (Beirut, Chhim, Homs, Basit, Zeugma), Albania (Butrint, Durres), Greece (Athens, Corinth, Thesprotia, Nicopolis, Patras), Bulgaria (Nicopolis, Dichin) and N Africa (Carthage, Utica, Leptis Magna).
Author of *Trade in the Western Mediterranean AD 400-700: the ceramic evidence, BAR 604 (*1995); *Hispania and the Roman Mediterranean, AD 100-700: Ceramics and Trade* (2010) and *Butrint 6, Volume 3. The Roman and Late Antique Pottery from the Vrina Plain Excavations* (2020). Co-editor of the series *Roman and Late Antique Mediterranean Pottery* (Archaeopress, Oxford).

Research interests

The principal aim of my research is the study of trade networks and economies of the Classical-Late Antique Mediterranean, Black Sea & Atlantic through the definition of regional ceramic typologies and analysis of the regional-long distance distribution of ceramics in major ports (table-wares, amphorae & cooking wares). I am interested in all factors that contributed to the supply of goods: private, state, city, ecclesiastical & administrative structures. Other interests include Hellenistic-Roman cuisine-cultural interaction in the Roman East; typologies and archaeometry of local ceramics in the Roman-Byzantine East; analysis of organic residues in amphorae (Spanish Ministry RACA-Med I and II projects); typologies, archaeometry, dating, function of Islamic pottery in Utica and N Africa (ongoing Barakat Trust project).

Selected publications

- Salinas E, **Reynolds P** & Pradell T 2023, 'Continuity and innovation in glazed tableware consumption in North Africa from the Fatimid to Zirid periods: the case of Islamic Utica'. In F. Colangeli and V. Sacco (eds,), *Le Forme del Vetro*, *Tecnologie a confronto. Produzioni vitree e invetriate in Sicilia, Italia peninsulare e al-Andalus tra IX e XII secolo, Mélanges de l'École française de Rome*, 135, 2, 285-300.
- Bonifay M, Cau MA & **Reynolds P** (eds.) 2023, *Roman and Late Antique Mediterranean Pottery 19*, Archaeopress, Oxford, 2, 974.
In Rizzo MS, Parello MC, Giannitrapani M & Caminecci, V (eds.), *LRCW 6. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry. Land and Sea: Pottery Routes.*
- Bonifay M, Cau MA & **Reynolds P** (eds.), '*Roman and Late Antique Mediterranean Pottery 18*'. In Peeters D, *Shaping Regionality in Socio-Economic Systems: Late Hellenistic - Late Roman Ceramic Production, Circulation, and Consumption in Boeotia, Central Greece (c. 150 BC–AD 700),* Archaeopress, Oxford, 394.

Selected research activities

Lectures

Invited Speaker. 'Beirut and the West: Comparing western amphora imports and distribution networks beyond Greece and the Aegean'. Workshop, *Living and consuming as a westerner: Central and western Mediterranean goods and peoples in Greece and Asia Minor (5th century BC to 7th century A).* Austrian Archaeological Institute (ÖAW), 15-16th February 2023.

Invited speaker. 'Changing maritime networks: the circulation of pottery and other goods over the 5th to 7th centuries'. Workshop, *GlassRoutes: Systems of exchange in the medieval world,* Les Treilles (Tourtour, France), 9th - 14th October 2023.

Research stays

Carthage (Tunisia) (June 2023)

Pompeii (Italy) (July 2023)

Ephesus (Turkey)
(July 2023)

Co-directed PhD awarded to Nikoula Kougiá (University of Patras) (December 2023) on Pottery workshops, typologies and archaeometry in Roman Patras.

ICREA**MEMOIR2023**

Lluís Ribas de Pouplana
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Born in Girona. He studied Biology at the University of Barcelona, and Biochemistry at Edinburgh University, where he obtained a PhD in 1992 with the help of a fellowship from La Caixa/British Council. He then joined the Biology department of the Massachusetts Institute of Technology as a postdoc. In 1997 he moved to The Scripps Research Institute where he became assistant professor of Molecular Biology in 2001. In 2003 he joined ICREA, and became Principal Investigator at the Institute for Research in Biomedicine, where he heads the Laboratory of Gene Translation. He is the founder of two biotechnology companies and has acted as Chief Scientific Officer of Omnia Molecular SL. (2010-2015). In addition, Dr. Ribas serves as Editor-in-Chief of the journal Life and is an elected member of the 'Institut d'Estudis Catalans'.

Research interests

Our laboratory investigates the process of protein synthesis, its evolution, and its connections to human health. We are preoccupied by two fundamental questions: what are the functional limits of the protein synthesis apparatus, and how is protein synthesis regulated and integrated within the context of the cell. We want to understand what defines the boundaries of the proteomes, and how alterations to the machinery that turns genes into proteins affect human health and aging. In addition, we are studying protein synthesis in the mitochondria, with a particular emphasis on the mechanisms that coordinate mitochondrial protein synthesis to mitochondrial dynamics and cell cycle. How these biosynthetic routes are coordinated, and how are they synchronized with the cell cycle is unknown.

Selected publications

- Murillo-Recio M, Martínez de Lejarza Samper IM, Tuñí i Domínguez C, **Ribas de Pouplana L** & Torres AG 2023, 'tRNAstudio: facilitating the study of human mature tRNAs from deep sequencing datasets', *Bioinformatics*, 38, 10, 2934 - 2936.

- **Ribas de Pouplana L** 2023, 'Archeal tRNA meets biotechnology: From vaccines to genetic code expansion', *J Biol Chem,* 299(1), 102755.
- Xie SC, Griffin MDW, Winzeler EA, **Ribas de Pouplana L** & Tilley L 2023, 'Targeting Aminoacyl tRNA Synthetases for Antimalarial Drug Development', *Annual Reviews of Microbiology,* 77, 111-129, 37018842.

ICREAMEMOIR2023

Jose Luis Riechmann Fernández

Centre de Recerca en Agrigenòmica (CRAG)

Life & Medical Sciences

Born in Madrid in 1964. Studied Biological Sciences at the Universidad Autónoma de Madrid (UAM, 1987), where he also obtained his PhD (1991; Molecular Biology and Biochemistry), in the field of plant molecular virology. Postdoctoral training in the laboratory of Dr. Elliot Meyerowitz, at the California Institute of Technology (Caltech), studying Arabidopsis flower development. Joined a start-up company in the field of plant functional genomics (Mendel Biotechnology, Hayward, CA), in 1998, studying Arabidopsis transcription factors. In 2002, joined Caltech as Director of the Millard and Muriel Jacobs Genetics and Genomics Laboratory, continuing studies on genome-wide analyses of gene expression, gene expression in Arabidopsis flower development, microRNAs, and microarray technology. Since 2007, ICREA Research Professor at the Center for Research in Agricultural Genomics (CRAG), Barcelona. Director of CRAG from 2013 to 2022.

Research interests

We study transcriptional regulation and development, using Arabidopsis thaliana as a model system. In particular, studies on the floral transition and flower development, genomic analyses of transcription factors, and global gene expression analyses. The focus of the laboratory is the study at a global level of some of gene regulatory networks that control flower development in Arabidopsis. More recently, we have concentrated our efforts on the chronology of protein expression throughout early Arabidopsis flower development and its correlation to unbiased transcript expression data, and the definition and characterization of the Arabidopsis 'non-conventional' peptidome (sORF-encoded peptides and hidden coding sequences in the Arabidopsis genome), and of the possible roles of these small proteins in flower development and other processes.

Selected publications

- Álvarez R, Borràs E, Valverde F, Matus JT, Sabidó E & **Riechmann JL** 2023, 'Peptidomics methods applied to the study of flower development', *Methods in Molecular Biology,* vol 2686, pp 509-536. Humana Press, Springer, New York.
- Álvarez R, Matus JT & **Riechmann JL** 2023, 'Multi-omics methods applied to flower development', *Methods in Molecular Biology*, vol 2686, pp 495-508. Humana Press, Springer, New York.
- Álvarez R, Bustamante M, Ribes J & **Riechmann JL** 2023, 'Gene expression analysis by quantitative real-time PCR for floral tissues', *Methods in Molecular Biology*, vol 2686, pp 403-428. Humana Press, Springer, New York.
- **Riechmann JL** & Ferrándiz C (*editors*) 2023, *Flower Development-Methods and Protocols,* 2nd edn, -- *Methods in Molecular Biology*, vol 2686, Humana Press, Springer, New York.
- **Riechmann JL** 2023, 'A new negative link in flower development: Repression of ABC genes by Z factors-ZP1/ZFP8', *Proceedings Of The National Academy Of Sciences Of The United States Of America*, 120, 27, e2307429120.

Selected research activities

Member of the Board of Directors of the European Technology Platform 'Plants for the Future' (Plant ETP).

ICREAMEMOIR2023

Florent Rivals
Institut Català de Paleoecologia Humana i Evolució Social (IPHES)
Humanities

After my graduate degree in Biology, I obtained my PhD in Prehistory from the University of Perpignan in 2002. In 2004, I completed a postdoc at the American Museum of Natural History and in 2005, I received a fellowship from the Humboldt Foundation at the Universität Hamburg (Germany). I was appointed ICREA Junior Researcher (2007 to 2012) at the Institut Català de Paleoecologia Humana i Evolució Social and since 2013, I am ICREA Research Professor at the same institution. I am principal investigador of a coordinated research project on Neanderthal behaviour and paleoecology funded by the Ministerio de Ciencia e Innovación. Additionally, I am involved in several national and international projects (COST Action, Palarq, ERC). I co-direct the excavations of the Toll and Teixoneres caves and I have supervised six PhD dissertations and five Master thesis. To date, I have authored about 160 papers in peer-reviewed journals, serving as the first author in 56 of them.

Research interests

My primary area of research centers on evolutionary paleoecology. I primarily utilize the analysis of mammalian fauna found in Plio-Pleistocene sites as a foundational framework for investigating the evolution of hominins. My research places a strong emphasis on understanding how climate-induced environmental changes influenced hominins, with a specific focus on Neanderthals. By examining mammal teeth, including species like bison, deer, horse, and mammoth and using a multiproxy approach, I gain valuable insights into their diet and the landscapes these animals inhabited shortly before their death. These insights are instrumental in reconstructing ancient environments, tracing alterations linked to shifts in climate, and comprehending the behavioral strategies adopted by hominins in diverse ecological settings. In addition to Europe, my research also extends to regions such as the Near East (Israel), Africa (Tanzania, Morocco), and South America (Chile, Argentina, Brazil).

Selected publications

- **Rivals F**, Cohen J & Desclaux E 2023, 'Dietary traits of the ungulates from the Middle Pleistocene sequence of Lazaret Cave: palaeoecological and archaeological implications', *Archaeological and Anthropological Sciences*, vol. 15, no. 3, pp 23.
- Uzunidis A, **Rivals F**, Rufa A, Blasco R & Rosell J 2023, 'The exceptional presence of *Megaloceros giganteus* in North-Eastern Iberia and its palaeoecological implications: The case of Teixoneres Cave (Moià, Barcelona, Spain)', *Diversity*, vol. 15, no. 2, 299.
- Martinez-Polanco MF & **Rivals F** 2023, 'Browsing into a Panamanian tropical rainforest: micro- and mesowear study of Central American red brocket deer', *Mammal Research*, vol. 68, pp 203-214.
- **Rivals F**, Belyaev RI, Basova VB & Prilepskaya NE 2023, 'Hogs, hippos or bears? Paleodiet of European Oligocene anthracotheres and entelodonts', *Palaeogeography Palaeoclimatology Palaeoecology*, vol. 611, 111363.

Selected research activities

- PI of the project "Neanderthal behaviour and paleoecology in Mediterranean ecosystems 2" funded by the Ministerio de Ciencia e Innovación.

- Member of the management committee and Grant Awarding Coordinator in the COST Action "Integrating Neandertal Legacy: From Past to Present".

- Co-director of the field work at Toll and Teixoneres caves, Moià (Barcelona), Spain.

- Associate editor for *Frontiers in Ecology and Evolution* and *Environmental Archaeology.*

- Associate Professor at the Universitat Rovira i Virgili in the Master in Quaternary and Prehistory.

ICREA**MEMOIR2023**

Stephan Roche
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

ICREA Prof. Stephan Roche is working at the Catalan Institute of Nanosciences and Nanotechnology-ICN2. He leads the "Theoretical & Computational Nanoscience" group which focuses on physics of Topological Quantum Matter (graphene & topological insulators,...) and 2D materials-based van der Waals heterostructures. He pioneered the development of linear scaling quantum transport approaches enabling simulations of billion atoms-scale disordered models (www.lsquant.org). He studied Theoretical Physics at ENS, got PhD (1996) at Grenoble University (France); worked in Japan, Spain & Germany; appointed assistant Prof. in 2000, CEA Researcher in 2004 and ICREA in 2009. Award: Friedrich Wilhelm Bessel prize from the Alexander von Humboldt Foundation (Germany).

Research interests

S. Roche explores quantum transport in Topological Quantum Matter including graphene & topological insulators, and 2D materials-based van der Waals heterostructures and amorphous structures (amorphous boron-nitride & graphene). Topics (i) topological physics & entanglement (ii) Artificial Intelligence applied to Condensed Matter (ii) spin transport phenomena (iii) quantum decoherence mechanisms (iv) thermal transport at nanoscale (v) quantum devices simulation (vi) use of Artificial Intelligence techniques to boost materials design in advanced electronics, quantum technologies and energy harvesting technologies

Selected publications

- Kaya O, Colombo L, Antidormi A, Lanza M & **Roche S** 2023, ´*Revealing Improved Stability of Amorphous Boron- Nitride upon Carbon Doping´ Nanoscale Horizons* 8, 361 - 367
- Aguado R, Cervera-Lierta A, Correia A et al. 2023, 'When matter and information merge into "Quantum"'. *Commun Phys,* 6, 266.

Selected research activities

Division leader of the Graphene Flagship

WP2 "Spintronics" leader of the Graphene Flagship

Member of the Executive Editorial Board of 2D Materials (Institute of Physics)

Editor in Chief of J. Phys. Materials (Institute of Physics)

Committee member of the ERC Consolidator Grant (PE3)

ICREA**MEMOIR2023**

Xavier Rodó i López
Institut de Salut Global Barcelona (ISGlobal)
Experimental Sciences & Mathematics

Head of the CLIMA (Climate & Health Program, ISGlobal, ORCID ID: 0000-0003-4843-6180). Founding director of the IC3 climate institute and former head of the LRC-PCB. UVIC Prof. MSc in engineering, completed his PhD in 1997 (UB) on the simulation of extreme ecosystems under climate forcing. Visiting fellow at Princeton and UCSD, and COLA-IGES associated scientist. Background in numerical ecology, climate dynamics and climate impact modeling. Taught ecology, advanced statistics, climate dynamics and sustainability and led/participated in >50 research projects. Over 20 postdoct fellows. Co-chair of CLIVAR-Spain (-2007), SSC of the MEDCLIVAR-ESF, CA and ER of the AR4-WGII and ER of AR6 (IPCC2007, 2021). SCM of the DIG of the World Climate Research Program and of the ISIMIP Health Impact Models for IPCC AR6. EBM: PLoS NTD, PLoS Clim and of the OPCC-Pyrenees. TT of the WMO climate & COVID-19. EG Health & Climate for UfM and EU Parliament.

Research interests

The interplay between climate and health, where I attempt to uncover how climate impacts a wide range of diseases. I also work on climate dynamics, particularly the origin and predictability of El Niño and towards improving translational climate services for health, in particular for extremes. I am interested in the development of new statistical techniques and on improving computational models with different levels of complexity. The former to disentangle the interplay between intrinsic (e.g. immunity, demography, malnutrition) and extrinsic factors (e.g. climate, environment). For instance, the modeling of climate-driven infectious diseases (from waterborne, to foodborne, vectorborne and airborne diseases such as COVID-19 and flu). An emerging area of my research entails understanding the interaction between climate, air pollution and the aerial microbiome for their effects on human health, with metagenomics, nanotechnology and laser fluorimetry.

Selected publications

- López L, Dommar C, San José A, Meyers L, Fox S, Castro L & **Rodó X** 2023, 'Changing risk of arboviral emergence in Catalonia due to higher probability of autochthonous outbreaks', *Ecol Model*, 477, 110258.
- Dommar CJ, López L, Paul R & **Rodó X** 2023, 'The 2013 Chikungunya outbreak in the Caribbean was structured by the network of cultural relationships among islands', *Royal Society Open Science*, 10, 9, 230909-230909.
- San-José A, Mayor P, ..**Rodó, X**. et al. 2023, 'Climate determines transmission hotspots of Polycystic Echinococcosis, a life- threatening zoonotic disease, across Pan-Amazonia', *Proceedings of the National Academy of Sciences of the United States of America*, 120, 33, e2302661120.
- **Rodó X**, Navarro-Gallinad A, Kojima T, Morguí J-A, Borràs S and Fontal A 2023, 'Sub-weekly signatures relate ultrafine aerosols enriched in metals from intensive farming and urban pollution to Kawasaki disease'. *Environ. Res. Lett.* 18, 7, 074011.
- Cvijanovic I, Mistry M, Gasparrini A & **Rodó X** 2023, 'Importance of humidity for characterization and communication of dangerous heatwave conditions', npj *Climate and Atmospheric Science,* 6, 1, 33.

Selected research activities

Specially Appointed Visiting Professor, Osaka University (Japan) and Ass. Prof. Univ. Vic (Climate Change and Health). ANR Committee Member PREZODE 'Global Change, Human Practices and Emergence of Zoonotic Diseases'.BRONZE LEAF Medal awarded to AIRLAB by University College London.Reviewer for ACS Nano, Env. Intl., Proc. Roy. Soc.Lond., Nature Medicine, PLoS NTD, Em. Inf. Dis. Editor (PLoS NTD, PLoS Climate). Panel expert: Horizon Europe Call HORIZON-MISS-2023-CLIMA-01:HORIZON-MISS-2023-CLIMA-01 and Task Team member of the WMO Committe on the MAQ factors for COVID-19 pandemic. UfM Expert Committee Member. 19 participations in international meetings as invited or keynote speaker. Advisor to the 'GeoSeeq Watchtower System by BIOTIA. Wellcome Trust Discovery Award for ARBOTHAI.

ICREA**MEMOIR2023**

César Rodriguez Emmenegger

Institut de Bioenginyeria de Catalunya (IBEC)

Engineering Sciences

César was born in Salto, Uruguay. After studying Chemical Engineering (2001—2006) in the Universidad de la República, Uruguay, he was awarded a research UNESCO-IUPAC internship (2006-2007) in the Institute of Macromolecular Chemistry in Prague where he got hooked in the topic of polymers and biointerfaces. There he pursued his PhD (2007—2012) working on optical biosensors and antifouling surfaces under the mentorship of Eduard Brynda and Aldo Bologna. Following a postdoctoral work (A. von Humboldt postdoctoral fellowship, 2012-2013), and research stays in Melville Laboratory in Cambridge (2009), Univ. of Pennsylvania (2013, 2015), and Pasteur Institute in Lille (2015), César returned to Prague to start his independent group. In January 2016, his group joined DWI-Leibniz Institute for Interactive Materials in Aachen and expanded the research to adaptive interfaces and synthetic cells. Currently, he is an ICREA Research Professor at the Institute of Bioengineering of Catalonia.

Research interests

We want to uncover design rules to develop materials capable of communicating with living matter and directing its behavior in a self-regulated manner to enable new biomaterials, therapeutics, and medical devices. Research lines: (1) Molecular Engineering. We imitate nature blueprints to synthetize macromolecules that like "Lego" pieces assemble into structures with totally new functions. (2) Stealth and adaptive biointerfaces. We are developing adaptive coatings that interact and direct the biological surrounding in a self-regulated manner and their translation to medical and diagnostic applications. This includes hemocompatible surfaces, wound dressings, etc. (3) Cell membrane mimics and protocellular systems. We working on "quasi-living" synthetic cells by assembling non-living modules into micro-compartments displaying similar functionality and adaptivity as found in natural cells and beyond. An example are synthetic macrophages to fight antibiotic-resistant pathogens

Selected publications

- Englert J, Witzdam L, et al. 2023, 'Synthetic evolution of a supramolecular harpooning mechanism to immobilize vesicles at antifouling interfaces',
Macromolecular Chemistry and Physics, 224, 24, 2300306.
- Englert J, Palà M, et al. 2023, 'Green Solvent-Based Antifouling Polymer Brushes Demonstrate Excellent Hemocompatibility',
Langmuir, 39, 50, 18476–18485.
- Wagner AM, Kostina NY, Xiao Q, Klein ML, Percec V & **Rodriguez-Emmenegger C** 2023, 'Glycan-Driven Formation of Raft-Like Domains with Hierarchical Periodic Nanoarrays on Dendrimersome Synthetic Cells', *Biomacromolecules*, 25 - 1 - 366 - 378.
- Witzdam L, Garay-Sarmiento M, Gagliardi M, Meurer YL, Rutsch Y, Englert J, Philipsen S, Janem A, Alsheghri R, Jakob F, Molin DGM, Schwaneberg U, van den Akker NMS & **Rodriguez-Emmenegger C** 2023 'Brush-Like Coatings Provide a Cloak of Invisibility to Titanium Implants', *Macromolecular bioscience*, - - -
- Witzdam, Lena; Vosberg, Berlind; Grosse-Berkenbusch, Katharina; Stoppelkamp, Sandra; Wendel, Hans Peter; Rodriguez-Emmenegger, Cesar 2023, 'Tackling the Root Cause of Surface-Induced Coagulation: Inhibition of FXII Activation to Mitigate Coagulation Propagation and Prevent Clotting', *Macromolecular Bioscience*, .
- Zhang D, Xiao Q, Rahimzadeh M, et al. 2023, 'Self-Assembly of Glycerol-Amphiphilic Janus Dendrimers Amplifies and Indicates Principles for the Selection of Stereochemistry by Biological Membranes', *Journal Of The American Chemical Society*, 145, 7, 4311-4323.

ICREA**MEMOIR2023**

Antoni Rodríguez Fornells

Institut d'Investigació Biomèdica de Bellvitge (IDIBELL) &
Universitat de Barcelona (UB)
Social & Behavioural Sciences

I got my PhD at the University of Barcelona (UB, 1996) and afterwards, I worked at the University of Magdeburg (Germany, 1999-2002) as a post-doctoral researcher. My main topics of research are language learning, executive functions and the brain correlates of error and reward monitoring. In 2002, I got a "Ramón y Cajal" research position and afterwards I joined ICREA as a Research Professor. Since then, I have created a interdisciplinar research group (Cognition and Brain Plasticity Unit, CDBU), at ICREA-IDIBELL-UB devoted to the study of learning process and brain plasticity effects in healthy and brain damaged patients. The group is located at the Hospital of Bellvitge – IDIBELL biomedical institute. Our research is inherently interdisciplinary and requires expertise in interfacing research fields as brain plasticity, brain development and learning and memory mechanisms. Recently I was a visitant resercher at Columbia University (2018-2019).

Research interests

My recent interests have been on the cognitive neuroscience of language learning and error monitoring. I have tried to combine the use of different neuroimaging techniques (electrophysiological – magnetic resonance imaging), crucial to better understand human cognitive functions. Recently, my research has been focused on the investigation of the neural mechanisms involved when adults and infants learn a new language (an specially its interface with executive functions and the reward system). This approach has been recently applied to understand preserved learning mechanisms in aphasic people. We explored also the inherent relationship between brain structure and brain function (to which extent individual differences in white-matter connectivity constraint cognitive processing). Finally, we have focused on the possible neurorehabilitation effects of learning specific skills (music training) in stroke patients.

Selected publications

– Vavra P, Sokolovič L, Porcu E, Ripollés P, **Rodriguez-Fornells A** & Noesselt T 2023. 'Entering into a self-regulated learning mode prevents detrimental effects of feedback removal on memory'. *Science of Learning*.8, 1, 2.

– Gomez-Andres A, Cerda-Company X, Cucurell D, Cunillera T & **Rodríguez-Fornells A** 2023, 'Decoding agency attribution using single trial error-related brain potentials.', *Psychophysiology*, ,e14434.

– Olive G, Penaloza C, Vaquero L, Laine M, Martin N & **Rodriguez-Fornells A** 2023, 'The right uncinate fasciculus supports verbal short-term memory in aphasia', *Brain Structure & Function*, 228, 875-893.

– Mas-Herrero E, Ferreri L, Cardona G, et al. 2023. 'The role of opioid transmission in music-induced pleasure'. *Annals of the New York Academy of Sciences***,** 1520, 1, 105-114.

– Elmer S, Besson M, **Rodriguez-Fornells A** & Giroud N 2023, 'Foreign speech sound discrimination and associative word learning lead to a fast reconfiguration of resting-state networks', *Neuroimage*, 271, 120026.

– Gurtubay-Antolin A, Bruña R, Collignon O & **Rodríguez-Fornells, A.** 2023, 'Tactile expectancy modulates occipital alpha oscillations in early blindness'. *Neuroimage,* 265, 119790.

– Gasa-Roqué A, Rofes A, Simó M, et al. 2023, 'Understanding language and cognition after brain surgery – Tumour grade, fine-grained assessment tools and, most of all, individualized approach', *Journal Of Neuropsychology.*

– Navarrete-Orejudo L, Cerda-Company X, Olivé G, Martin N, Laine M, **Rodríguez-Fornells A** & Peñaloza C 2023, 'Expressive recall and recognition as complementary measures to assess novel word learning ability in aphasia' *Brain and Language,* 243, 105303.

ICREAMEMOIR2023

Alejo Rodriguez Fraticelli

Institut de Recerca Biomèdica (IRB Barcelona)

Life & Medical Sciences

Alejo Rodriguez-Fraticelli received his PhD from the Universidad Autonoma de Madrid in 2014, working with Miguel Alonso and Fernando Martin-Belmonte on epithelial morphogenesis. In 2015, Alejo moved to Harvard University to train as a postdoc with Fernando Camargo in hematopoietic development and lineage tracing. During this time, Alejo began a long-lasting collaboration with Caleb Weinreb and Allon Klein at Harvard Medical School, characterizing blood stem cells using single-cell lineage tracing. In 2021, Alejo was recruited as a junior group leader at IRB Barcelona, expanding the Programme of Aging and Metabolism. During his career, Alejo received major grants and awards, including the LSRF "Merck" Fellowship, the ASH Scholar Award, the LLS Special Fellowship, the NHLBI K99/R00 Award, the Cris Excellence Award, and the ERC Starting Grant. Since 2023, Alejo is an ICREA Research Professor.

Research interests

Hematopoiesis has long been modeled as a stepwise hierarchical process, where all blood arises from a group of rare multipotent stem cells. In recent years, we have made major contributions that have challenged this paradigm, revealing an extensive heterogeneity among individual stem cells and their differentiation trajectories. To study heterogeneity, our lab develops advanced genetic tools that allow us to simultaneously record the progeny and state of thousands of single cells at a time. Using these single-cell lineage tracing methods, we have uncovered distinct gene regulatory states linked with heritable fates during regeneration. More recently, we have been focused on how these differences in fate behaviors arise during development and how they influence cellular responses to leukemic mutations and aging. We propose that mapping cellular phylogenetics across systems will lead to a revolution in the ways we understand and treat most diseases.

Selected publications

– **Rodriguez-Fraticelli AE** 2023, 'HSCs "shift and drift" during transplantation'. *Blood*. 142(1):3-4.
– Bloom M, Malouf C, **Rodriguez-Fraticelli A,** Wilkinson AC, Sankaran VG & Cvejic A 2023, 'Exploiting somatic mutations to decipher human blood production: a natural lineage-tracing strategy', *Exp Hematol,* 121, 2-5.

Selected research activities

In 2023, Alejo welcomed a new daughter to his family, Shira! After coming back from the parental leave, Alejo co-organized the Barcelona Hub of the European Developmental Biology Conference. The conference had a very inclusive fee, allowing it to bring the whole community of developmental biology researchers in Barcelona together to share our science and participate in a hybrid format. It was a resounding success. Then, Alejo presented the lab's work at a prestigious conference in Melbourne, Australia, OZ Single Cell, which brought together the community of clonal tracing. Alejo then participated in the stem cell school at Institut Curie, and then he presented a lecture at the Karolinska Institute (where he was also invited as a thesis opponent for the lab of Jonas Frisen, a pioneer of lineage tracing and developmental neurobiology). Finally, Alejo was selected for the ASEICA Junior Award in Basic Research, an important recognition from the Spanish community of cancer researchers.

ICREAMEMOIR2023

Angel Rodriguez Nebreda
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Angel R. Nebreda obtained his PhD in Molecular Biology from the University of Salamanca (Spain) and then worked as a postdoc at the National Institutes of Health in Bethesda (USA) and the Cancer Research-UK Clare Hall Laboratories in South Mimms (UK). In 1995, he started his own group at the European Molecular Biology Laboratory in Heidelberg (Germany) where he worked for 9 years and then moved to the newly created Centro Nacional de Investigaciones Oncológicas in Madrid. He is currently an ICREA Research Professor at the Institute for Research in Biomedicine in Barcelona, where he leads a multidisciplinary team with expertise in biochemistry and molecular and cellular biology techniques, genetically modified mice and preclinical cancer models. He was elected EMBO member in 2003 and has obtained ERC Advanced and Proof of Concept grants.

Research interests

The group investigates how external signals are interpreted by cells to modulate their proliferation, differentiation and survival, focusing on protein kinases. Current work addresses the role of the p38 MAPK pathway in tumor development and chemoresistance mechanisms, either by regulating the fitness of the cancer cell or by controlling the cross talk between cancer cells and stromal cells in the tumor microenvironment. The experimental approach combines biochemical techniques and chemical tools with studies in established cell lines and primary cell cultures, as well as in vivo analyses using mouse models. Our goal is to identify therapeutic opportunities based on the modulation of p38 MAPK signaling. We are also performing screenings to find actionable targets that can be used to boost current therapeutic approaches and to design new targeted therapies for heterogeneous and chemoresistant tumors.

Selected publications

- Pous, J., Baginski, B., Martin-Malpartida, P., González, L., Scarpa, M., Aragon, E., Ruiz, L., Mees, R.A., Iglesias-Fernández, J., Orozco, M., **Nebreda, A.R.*** and Macias, M.J.* 2023, 'Structural basis of a redox-dependent conformational switch that regulates the stress kinase p38α', *Nature Communications* 14, 7920.

- González L, Díaz L, Pous J, Baginski B, Duran-Corbera A, Scarpa M, Brun-Heath I, Igea A, Martín-Malpartida P, Ruiz L, Pallara Ch, Esguerra M, Colizzi F, Mayor-Ruiz C, Biondi RM, Soliva R, Macias MJ, Orozco M & **Nebreda AR** 2023, 'Characterization of p38a autophosphorylation inhibitors that target the non-canonical activation pathway', *Nature Communications,* 14, 3318.

- Dan, Y., Radic , N., Gay , M., Fernández-Torras , A., Arauz , G., Vilaseca , M., Aloy, P., Canovas , B. and **Nebreda, A.R.** 2023, 'Characterization of p38a signaling networks in cancer cells using quantitative proteomics and phosphoproteomics', *Molecular & Cellular Proteomics* 22, 100527

- Cubillos-Rojas M, Loren G, Hakim YZ, Verdaguer X, Riera A* and **Nebreda AR*** (2023). 'Synthesis and Biological Activity of a VHL-Based PROTAC Specific for p38 alpha', *Cancers* 15, 611.

- Gonzalez, L., Domingo-Muelas, A., Duart-Abadía, P., Nuñez, M., Mikolcevic, P., Llonch, E., Cubillos-Rojas, M., Canovas, B., Forrow, S.M.A., Morante-Redolat, J.M., Fariñas, I.* and **Nebreda, A.R.*** (2023) 'The atypical CDK activator RingoA/Spy1 regulates exit from quiescence in neural stem cells', *iScience* 26, 106202.

- Sugioka, S., Yamada, H., Ishii, A., Kato, Y., Mori, K.P., Ohno, S., Handa, T., Ikushima, A., Ishimura, T., Osaki, K., Tokudome, T., Matsusaka, T., **Nebreda, A.R.**, Yanagita, M., Yokoi, H. 2023, 'Dual deletion of guanylyl cyclase-A and p38 MAPK in podocytes with aldosterone administration causes glomerular intracapillary thrombi', *Kidney International* 104, 508-525.

ICREA**MEMOIR2023**

César Rodríguez Ranero

Institut de Ciències del Mar (CSIC - ICM)

Experimental Sciences & Mathematics

PhD degree in 1993 awarded by Barcelona University for work at the CSIC Earth Sciences Institute. Postdoc (93-99) and tenured (2000) at GEOMAR (Germany). I joined ICREA in 2005 at CSIC Marine Sciences Institute. I have >150 papers in the Scopus with ~8500 citations and h-index = 52. I have >600 contributions to international congresses and >50 invited talks, keynote and seminars at universities, research centers, and congresses. I organized or convened of >30 international scientific meetings. I was (Co)PI of over 20 projects, and several research cruises. I supervised more than 30 graduated and postdoctoral researchers. Since 2007 I lead the Barcelona Center for Subsurface Imaging, currently with ~30 scientists. I have been awarded Fellow of the American Geophysical Union 2018, Premi Ciudat de Barcelona 2019 in Environmental and Earth Sciences, and elected member of Academia Europaea in 2020.

Research interests

My scientific goal is to conceptually advance our understanding of fundamental processes of rifting, passive margins evolution, seafloor spreading, and subduction systems. I am particularly interested on the processes that govern the relations between the behaviour of earthquakes, long-term tectonics, and fluid flow. For this end, I strive to obtain the best quality observations by personally leading field acquisition, analysis, and processing of data. I have specialized in complex, multi-disciplinary experiments, coordinating teams of multi-national scientists to acquire data during cruises that have produced major breakthroughs, and leading drilling projects for ground-truthing to test competing models. With my group, I work on the development of bleeding-edge geophysical methods that yield novel observations of interest for basic science as well as for technological transfer to industry stake holders.

Selected publications

- Neres M & **Ranero CR** 2023, 'An appraisal using magnetic data of the continent-to-ocean transition structure west of Iberia', *Geophysical Journal International*, 234, 3, 1819 - 1834.
- Ugalde A, Seguí A, de Ortuzar M, de Ortuzar JM & **Ranero CR** 2023, 'Subfluvial tunnel layout design: Mapping recent sediment fill in Bilbao Estuary using H/V spectral ratio', *Engineering Geology*, 327, 2023, 107338.
- Perez-Gussinye M, Collier JSS, Armitage JJ, et al. 2023, 'Towards a process-based understanding of rifted continental margins', *Nature Reviews Earth & Environment*, 4, 166-184.
- Morgan JP & **Ranero CR** 2023, '
Roles of serpentinization in plate tectonics and the evolution of Earth's mantle', in *Dynamics of Plate Tectonics and Mantle Convection*, 12, 511-537.
- Zhang J, Zhao M, Ding W, et al., 'New Insights Into the Rift-To-Drift Process of the Northern South China Sea Margin Constrained by a Three-Dimensional Wide-Angle Seismic Velocity Model', *Journal Of Geophysical Research-solid Earth*, 128, 4, e2022JB026171. 2023
- Loreto MF, Zitellini N, **Ranero RC**, Palmiotto C & Prada M 2023, 'Reply to the comment of Torrente et al on Extensional tectonics during the Tyrrhenian back-arc basin formation and a new morpho-tectonic map', *Basin Research*, 35, 2409–2416 2023

Selected research activities

Chief Scientist in the Ionian Sea of cruise POSEIDON with Italian R/V Laura Bassi funded by Eurofleets+

Convener *European Geoscience Union Assembly 2023*
Session: Initiation and evolution of subduction: dynamics, volatiles and melts from the surface to the deep mantle. Vienna. Austria.

ICREA**MEMOIR2023**

Diana Roig Sanz
Universitat Oberta de Catalunya (UOC)
Humanities

Diana Roig-Sanz is an ICREA Research Professor and an ERC Starting Grant holder at the IN3 (UOC). She is the coordinator of the Global Literary Studies Research Lab and the principal investigator (with Laura Fólica) of the research line Global Translation Flows. She is also the principal investigator of the ERC StG project "Social Networks of the Past. Mapping Hispanic and Lusophone Literary Modernity, 1898-1959" (Grant Agreement: 803860). She has been a Ramón y Cajal Research Fellow and a visiting professor at the Oxford Internet Institute, at the University of Oxford, and has developed research residencies and postdoctoral fellowships at top-ranked institutions like the Centre for Translation Studies (KU Leuven), the IHMC (École Normale Supérieure), the Department of European and Intercultural Studies (La Sapienza), or the Amsterdam School for Cultural Analyses (Amsterdam).

Research interests

Her research interests deal with cultural and global literary history and sociology of translation from a digital humanities approach and her successive projects have been based on a consistent and fruitful research line on cultural transfer and the circulation of cultural goods, in which she has strived to challenge and revise former scholarly interpretations and develop new original approaches.

Selected research activities

ICREA**MEMOIR2023**

Xavier Ros Oton
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Xavier is an ICREA Research Professor since 2020. He is a mathematician who works on PDE. He has been the PI of an ERC Starting Grant (2019-2024) and an ERC Consolidator Grant (2024-2029), and has received several awards for young mathematicians in Spain, including the 'Premio Nacional de Investigación' for researchers under 40 in Mathematics and Computer Science. He also received the Scientific Research Award from the Fundación Princesa de Girona, as well as the Stampacchia Gold Medal, an international prize awarded every three years in recognition of outstanding contributions to the Calculus of Variations. In 2022, he was elected member of the Spanish Royal Academy of Sciences.

Research interests

My research interests are on Partial Differential Equations (PDE), a vast and very active field of research in both pure and applied mathematics. PDE are used in essentially all sciences and engineering, and have important connections with several branches of pure mathematics. I work mainly on topics related to the regularity of solutions to nonlinear elliptic/parabolic PDE. This is one of the most basic and important question in PDE theory: to understand whether all solutions to a given PDE are smooth or if, instead, they may have singularities. Some of my main contributions have been in the context of free boundary problems. These are PDE problems that involve unknown/moving interfaces, such as ice melting to water (phase transitions). From the mathematical point of view, they give rise to extremely challenging questions, and their study is closely connected to geometric measure theory. In particular, the study of free boundary problems has a strong geometrical flavor.

Selected publications

- Ros-Oton X & Torres-Latorre C 2023, 'Optimal regularity for supercritical parabolic obstacle problems', *Communications On Pure And Applied Mathematics*, Volume77, Issue3
March 2024
Pages 1724-1765

- Audrito A, Felipe-Navarro JC & **Ros-Oton X** 2023, 'The Neumann problem for the fractional Laplacian: regularity up to the boundary', *Annali Della Scuola Normale Superiore Di Pisa-classe Di Scienze*, 24, 2, 1155 - 1222.
- Figalli A, **Ros-Oton X** & Serra J 2023, 'The singular set in the Stefan problem', *Journal Of The American Mathematical Society*, .

Selected research activities

- ERC Consolidator Grant, 2024 - 2029
- Premio Nacional de Investigación para Jóvenes en Matemáticas y Tecnologías de la Información y las Comunicaciones 2023
- Frontiers of Science Awards 2023
- Ferran Sunyer i Balaguer Prize 2023 for the book ``Integro-Differential Elliptic Equations''

ICREAMEMOIR2023

Joan Rosell-Llompart
Universitat Rovira i Virgili (URV)
Engineering Sciences

He graduated in physics in 1987 from Universitat Autònoma de Barcelona. Before and during his PhD (Yale University, 1994), he worked with Prof. J. Fernández de la Mora on aerodynamic focusing, electrospray atomization, and differential mobility analysis. As postdoc associate with Prof. John B. Fenn at Virginia Commonwealth University, he did research on electrospray ionization mass spectrometry. In 1996 he joined Aradigm Corporation (California, USA) to develop liquid micro-jet technology for inhalation drug delivery. There, he co-discovered with Prof. A. Gañán-Calvo (University of Sevilla, Spain) the Flow Blurring liquid atomizer. Since joining Universitat Rovira i Virgili (URV) in 2004 as ICREA Research Professor, his research has focused on electrospray and electrospinning for the manufacturing of nanomaterials; and recently also on COVID transmission in schools. He currently leads the Droplets, intErfaces, and floWs (DEW) lab at URV.

Research interests

I am interested in designing nanomaterials by means of fluid dynamics and electrostatics. We use electrostatic fields to force liquid bodies to eject tiny jets, which can be directly printed or used for making nanodroplets (electrospray) or nanofibers (electrospinning). Both by experiment and by computer modeling, we aim to 1) understand the precise mechanisms underlying the fluid dynamic processes involved, 2) devise new nano-fluidic strategies to create functional structures (e.g., 'smart' particles for nanobiomedicine), 3) characterize the properties of such structures, 4) engineer ways to assemble them into larger functional supra-structures, e.g. high resolution 3D printing for assembling tissue-engineering scaffolds, and (5) scale up these processes so they can ultimately benefit humankind. Since COVID-19, I have also become interested in the study of contextual variables in school classrooms to predict and reduce the transmission of respiratory diseases in schools.

Selected publications

- Barbero-Colmenar E, Bodnár E & **Rosell-Llompart J** 2023, 'Natural extract-polymer monodisperse submicron particles from Plateau-Rayleigh microjets' *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 676, A, 132055.
- Elm J, Czitrovszky A, Held A, Virtanen A, Kiendler-Scharr A, Murray BJ, McCluskey D, Contini D, Broday D, Goudeli E, Timonen H, **Rosell-Llompart J**, Castillo JL, Diapouli E, Viana M, Messing, ME, Kulmala M, Ziková N & Schmitt, SH 2023, 'Editorial: Aerosol Research -- a new diamond open-access journal covering the breadth of aerosol science and technology', *Aerosol Research*, 1, 13–16.
- Batista E, Villanova O, **Rosell-Llompart J,** Huera-Huarte FJ, Martínez-Ballesté A & Solanas A 2023, 'On the Deployment of Low-Cost Sensors to Enable Context-Aware Smart Classrooms', In: Berta, R., De Gloria, A. (eds) *Applications in Electronics Pervading Industry, Environment and Society*. ApplePies 2022. Lecture Notes in Electrical Engineering, vol 1036. Springer, Cham.

Selected research activities

*Doctoral thesis defenses (All Cum Laude), as director Reyda Akdemir, Univ. Rovira i Virgili; and as codirector Alberto Ramón Ferrer (with ICREA Prof. Andreu Cabot), Univ. Barcelona, and Yaride Pérez Pacheco, Univ. Rovira i Virgili (with Prof. Ricard Garcia Valls and by Dr. Bartosz Tylkowski).

*Member of the Scientific and Organizing Committee for ESEE2023.

*Plenary addresses: "A brief long walk through electrospray physics research" at the ESEE2023 (AGH University of Science and Technology, Kraków, Poland, May 10, 2023); and "Electrosprays, the unique aerosols emitted by conical liquid menisci" at the EAC-2023 (Málaga, Spain, September 7, 2023).

* Editorial Board member for Journal of Aerosol Science (Elsevier), and for Aerosol Research (Copernicus). Also, Topical Editor for the latter.

*Various contributions to congresses: NanoSpain Conference 2023, Tarragona, Spain; ESEE2023, Krakow (Poland); EAC-2023, Málaga, Spain; ApplePies2023, Genova, Italy.

ICREA**MEMOIR2023**

Sven Rosenkranz
Universitat de Barcelona (UB)
Humanities

Sven received his PhD from the University of St Andrews in 1999. After a postdoc at UNAM, he worked at FU Berlin, receiving his senior doctorate (habilitation) in 2004. From 2005 until 2008 he was a DFG Heisenberg Fellow. Sven joined ICREA in 2008. He coordinated the ITNs *PETAF* (EC-GA-238128, 2010-13) and *Diaphora* (H2020-MSCA-ITN-2015-675415, 2016-19) and served on the EC of the Consolider-Ingenio *PERSP* (CSD2009-00056, 2010-15). He was PI of the I+D projects *Fallibility, Rational Belief and Knowledge* (2014-16) and *Justification, its Structure and Grounds* (2019-22) and is currently PI of *Methods: Epistemology Beyond Belief* (2022-25). Since 2014 he coordinates the consolidated research group LOGOS. In 2018 he was elected member of the *Academia Europaea*. He is one of the *investigadores garantes* of the María de Maeztu grant recently awarded to the *Barcelona Institute of Analytic Philosophy*.

Research interests

Sven's main research interests lie in metaphysics and epistemology. He is particularly interested in realism, objectivity, fallibility, the logic of justification, epistemic paradoxes, the limits of thought and knowledge (if any), and the philosophy of time and existence. Recently, Sven published a co-authored monograph on tensed theories of time with Springer. His latest book, *Justification as Ignorance*, concerns the nature and logic of epistemic justification and was published by Oxford University Press in 2021.

Selected publications

- **Rosenkranz S** 2023, 'Justification and being in a position to know: reply to Waxman', *Analysis*, vol. 83, pp 269-76
- **Rosenkranz S** 2023, 'Problems for factive accounts of assertion', *Noûs,* vol. 57, pp 128–143.
- Correia F & **Rosenkranz S** 2023, 'Replies to critics', *Disputatio*, 13, 445-93.

Selected research activities

Research management
- Coordinator of LOGOS, Research Group in Analytic Philosophy (2021-SGR-00276)
- Investigador garante and work package leader for the Barcelona Institute of Analytic Philosophy, María de Maeztu unit of excellence (CEX2021-001169-M)

Invited talks

- 'Moving Down the Growing Block: Two Types of Temporal Operators', Dipartimento di Studi Umanistici, Università di Macerata (Italy), December 2023
- 'Safety, Closure, and Counter-Closure', Kolloquium für Theoretische Philosophie, Philosophisches Seminar, Universität Zürich (Switzerland), May 2023

Conference organization

- Conception and organisation of the LOGOS 30th Anniversary, Universitat de Barcelona, June 2023
- Conception and organisation of the BIAP Workshop on Evidence, Knowledge and Scientific Theory, Universitat de Barcelona, June 2023

ICREA**MEMOIR2023**

Barbara Rossi
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

Before joining UPF, Prof. Rossi was Associate Professor (with tenure) at Duke University. She held visiting positions at the Philadelphia Fed, Berkeley, U. of Montreal, Atlanta Fed, ECB, Norges Bank, UCSD, etc. Prof. Rossi is the Editor of the Journal of Applied Econometrics. She has been a coeditor of the International Journal of Central Banking and served as associate editor of the Journal of Business and Economic Statistics, Quantitative Economics and JEDC, and member of the CEPR Business Cycle Dating Committee. She is a fellow of the Econometric Society and IAAE, the Council of the EEA and the European Standing Committee of the Econometric Society, the Chair of the Scientific Committee of the EABCN and a director of the International Association for Applied Econometrics. She is also a research associate at CREI and a Barcelona GSE Research Professor. Her past or present grants include NSF, ERC, MICINN, BBVA, La Caixa and Marie Curie CIG.

Research interests

Specializing in time series econometrics and empirical applications in international finance and macroeconomics, her current research has both a theoretical and an empirical focus. It encompasses theoretical analyses of the forecasting ability of economic models as well as model selection in the presence of instabilities. Her empirical works range from model comparisons of DSGE models, forecasting exchange rates, purchasing power parity analysis, to impulse response functions. She teaches applied time series econometrics as well as graduate econometrics and macroeconometrics courses.

Selected publications

- Odendahl F, et al. 2023, 'Evaluating forecast performance with state dependence', *Journal of Econometrics*, 237, 2.
- Hoesch L, et al. 2023, 'Has the Information Channel of Monetary Policy Disappeared? Revisiting the Empirical Evidence', *American Economic Journal: Macroeconomics*, 15, 3.
- Florens O, **Rossi B** & Sekhposyan T 2023, 'Regime-Switching Rationality',In Chang Y, Lee S & Miller JI, *Essays in Honor of Joon Y. Park: Econometric Methodology in Empirical Applications (Advances in Econometrics*, 45B), Emerald Publishing Limited, Bingley, 35-64.

Selected research activities

-ERC Advanced Grant Award on: Advances in Empirical Methods for Time Series and Forecasting in Unstable Environments (2023-2028)

-Invited Keynote speaker, *Society for Financial Econometrics* (SoFiE), Seoul 2023

ICREA**MEMOIR2023**

Carme Rovira Virgili
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Dr. Rovira is ICREA Research Professor at the University of Barcelona (UB). She did part of her PhD in USA (NC State U. and Southern Illinois U.) and obtained her PhD degree in Chemistry from the UB in 1995. She performed postdoctoral stays at the Max-Planck-Institut für Festkörperforschung (Stuttgart, Germany, 1996-1998) and the UB (1999-2001). In 2002 she obtained a Ramón y Cajal position and started her research group at the Parc Científic de Barcelona (PCB). She was appointed ICREA Research Professor in 2007 (first at PCB, moving to UB in 2012). Dr. Rovira has received research awards from the Catalan Government (Distinció de la Generalitat 2003), the Barcelona City Council (2016) and the European Carbohydrate Organization (Emil Fisher Award 2019) and the European Research Council (ERC-SyG-2020). She is the author of 190 publications, mainly in the fields of theoretical chemistry and computational biology.

Research interests

The research at Dr. Rovira's group is focused on the computer simulation of biological processes at atomic-electronic detail, i.e. using computers to understand how biomolecules work. Her goal is to simulate the molecular mechanisms underlying ligand-protein interactions and enzymatic reactions, guiding the design of more efficient enzymes and drugs. Her research is currently focused on unveiling chemical reactions in glycoprocessing enzymes for biomedical and biotechnological applications.

Selected publications

- Piniello B, Macias-Leon J, Miyazaki S, et al. 2023, 'Molecular basis for bacterial *N*-glycosylation by a soluble HMW1C-like *N*-glycosyltransferase', *Nature Communications*, 14, 1, 5785.
- Calvelo M, Males A, Alteen MG, et al. 2023, 'Human *O*-GlcNAcase Uses a Preactivated Boat-skew Substrate Conformation for Catalysis. Evidence from X-ray Crystallography and QM/MM Metadynamics', *Acs Catalysis*, 13, 20, 13672-13678.
- Males A, Kok K, Nin-Hill A, et al. 2023, 'Trans-cyclosulfamidate mannose-configured cyclitol allows isoform-dependent inhibition of GH47 α-d-mannosidases through a bump-hole strategy', *Chemical Science*, 14, 13581-13586.
- Borg AJE, Esquivias O, Coines J, **Rovira C** & Nidetzky B 2023, 'Enzymatic C4-Epimerization of UDP-Glucuronic Acid: Precisely Steered Rotation of a Transient 4-Keto Intermediate for an Inverted Reaction without Decarboxylation', *Angewandte Chemie-international Edition*, 62, 4, e202211937.
- Alfonso-Prieto M, Cuxart I, Potocki-Veronese G, Andre I & **Rovira C** 2023, 'Substrate-Assisted Mechanism for the Degradation of N-Glycans by a Gut Bacterial Mannoside Phosphorylase', *Acs Catalysis*, 13, 7, 4283 - 4289.
- Morais MAB, Nin-Hill A & **Rovira C** 2023, 'Glycosidase mechanisms: Sugar conformations and reactivity in endo- and exo-acting enzymes', *Current Opinion In Chemical Biology*, 74, 102282.

Selected research activities

PhD Thesis of Oriol Esquivias. "Computational insights into carbohydrate epimerase mechanisms". Nov 2023.

Master Thesis of David Delima. "The catalytic mechanism of maltodextrin phosphorylase". Jul 2023.

President of the Computational Chemistry Group of the Spanish Royal Chemical Society (GEQC-RSEQ). Oct 2023-current.

Invited talks/keynotes at: Gordon Research Conference on Carbohydrate-Active Enzymes for Glycan Conversions (USA), Digitally Driven Biotechnology Symposium (DK), Present and future of ZCAM and CECAM (ES), Trends in Enzyme Catalysis (ES)
.

ICREA**MEMOIR2023**

Joan-Pau Rubiés Mirabet
Universitat Pompeu Fabra (UPF)
Humanities

Joan-Pau Rubiés graduated in Early Modern History at the University of Barcelona (1987), where he received the extraordinary degree prize. He went on to do a PhD at the University of Cambridge, funded with an external studentship from King's College (1987-1991). He was subsequently Research Fellow at Queens's College, Cambridge, and Jean Monnet Fellow at the European University Institute in Florence. In 1994 he became Lecturer in Modern History at the University of Reading, and in 1999 he joined London School of Economics and Political Science, where he was Reader in International History. In 2012 he accepted the offer of a Research Professorship at ICREA, which he holds at Universitat Pompeu Fabra. He has been visiting professor at the École des Hautes Études (Paris and Marseille), Corpus Christi College (Oxford) and Villa I Tatti (Florence). He is currently leading a Research Project on Ethnographies, Religious Missions and Cultural Encounters in the Early Modern World.

Research interests

I am a historian specialized in the study of cross-cultural encounters in the early modern world, from a perspective combining the contextual analysis of ethnographic sources with the intellectual history of early modern Europe. My focus in the last few years has been analyzing early modern ethnography and its intellectual impact in the period 1500-1800. This has involved developing various parallel lines of analysis, including travel writing, cross-cultural diplomacy, religious missions, early orientalism, race and racism, and the history of cosmopolitanism. A growing concern has been to develop a global comparative perspective on these various topics (including Asia and the New World) that might help interrogate critically the eurocentric categories of the Renaissance and the Enlightenment. I coordinate the Research Grup on Ethnographies, Cultural Encounters and Religious Missions in the Iberian World (ECERM) at UPF, which has received funding from the ERC, AGAUR (SGR) and MINECO.

Selected publications

- **Rubiés JP** & Safier N 2023, 'Cosmopolitanism and the Enlightenment', Cambridge: Cambridge University Press. Includes Rubiés JP & Safier N, 'Introduction', pp. 1-33.
- **Rubiés JP** 2023, 'The Cosmopolitan Paradox: Travel, Anthropology and the Problem Cultural Diversity in Early Modern Thought'. In J. P. Rubiés & N. Safier (Eds.), *Cosmopolitanism and the Enlightenment,* Cambridge: Cambridge University Press, pp. 55-90.
- **Rubiés, JP** 2023, 'Pietro della Valle: Christian pilgrimage, antiquarianism and cosmopolitanism in the age of the baroque', *Mediterranean Historical Review* 38/2, 221-250.
- **Rubiés JP** 2023, 'Foreword: The Jesuit Antoni de Montserrat, European interpreter of Emperor Akbar'. in João Vicente Melo (ed.) *The Writings of Antoni de Montserrat at the Mughal Court,* Brill: Leiden and Boston, VII-XXVII.
- **Rubiés JP 2023**, 'Sovereignty and democratic legitimacy in Spain: The case of Catalonia', in Julia Rone, Nathalie Brack, et alii. eds. *Sovereignty in Conflict: Political, Constitutional and Economic Dilemmas in the EU.* Palgrave Studies in European Union Politics, pp. 67-94.

Selected research activities

The highlight of the year was the publication of Cosmopolitanism and the Enlightenment, the culmination of a project of many years with some of the leading scholars in the field. The book was successfully launched in Cambridge in June. In 2023 I was visiting Fellow at Corpus Christi College, and in the fall visitng professor in the Harvard Centre for the Study of the Italian Renaissance at Villa I Tatti, developing a new project on Rethinking the Global Renaissance. I gave a keynote lecture in York on 'The Marvellous, the Wonderful and the Credible: Text and Authority in Early Sixteenth-Century Travel Accounts', and various other talks, including 'Reading Histories of the Indies in the Sixteenth Century and Today' (Oxford) and 'Religion and Sacrifice in the early modern ethnography of Africa' (Bologna).

ICREA**MEMOIR2023**

Iñaki Ruiz Trillo
Institut de Biologia Evolutiva (CSIC - IBE)
Life & Medical Sciences

Iñaki Ruiz-Trillo is an ICREA Research Professor at the Institut de Biologia Evolutiva (CSIC-UPF). His educational background includes a B.S. and a Ph.D. in Biology from the University of Barcelona. Funded by grants from EMBO and the Canadian Institutes of Health Research, he completed a post-doctoral fellowship at Dalhousie University (Canada). He has also performed short term research projects at the Joint Genome Institute, the University of Arkansas and the Kavli Institute for Theoretical Physics. Iñaki has published more than 80 peer-reviewed articles, most of them in high impact journals, such as Cell, Nature, Science, eLife, PNAS. He has lead several research projects, including 2 ERC grants. He is an EMBO member and has served on the editorial board of several journals. His current research interests include the origin of multicellular animals, the evolution of complex life forms, and the diversity of eukaryotes.

Research interests

The lab addresses one of the most important evolutionary transitions in the history of life: the origins of multicellularity. To this aim, we focus on the origin of multicellular animals. We perform comparative and functional genomic analyses between animals and their closest unicellular relatives. We reconstruct the nature of the unicellular ancestor that gave rise to animals. We have also developed the first "functional platform" to address animal origins, establishing several new model organisms specific to this question. Finally, we also unravel the hidden diversity of eukaryotes using metabarcoding data.

Selected publications

- **Ruiz-Trillo I,** et al. 2023.
'The Origin of Metazoan Multicellularity: A Potential Microbial Black Swan Event'.
Annual Review of Microbiology, 77:499-516.
- Ros-Rocher N, Kidner RQ, Gerdt C, Davidson WS, **Ruiz-Trillo I** & Gerdt JP 2023, 'Chemical factors induce aggregative multicellularity in a close unicellular relative of animals', *Proceedings Of The National Academy Of Sciences Of The United States Of America*, 120, 18, e2216668120.
- Boeynaems S, Dorone Y, Zhuang Y, et al. 2023, 'Poly(A)-binding protein is an ataxin-2 chaperone that regulates biomolecular condensates', *Molecular Cell*, 83, 12, 2020-2034.
- Mitsi K, Richter DJ, Arroyo AS, et al. 2023, 'Taxonomic composition, community structure and molecular novelty of microeukaryotes in a temperate oligomesotrophic lake as revealed by metabarcoding', *Scientific Reports*, 13, 1, 3119.
- Zhang P, Zhu Y, Guo Q, et al. 2023, 'On the origin and evolution of RNA editing in metazoans', *Cell Reports*, .
- Shabardina V, Charria PR, Saborido GB, et al. 2023, 'Evolutionary analysis of p38 stress-activated kinases in unicellular relatives of animals suggests an ancestral function in osmotic stress', *Open Biology*, 13, 1, 220314.

ICREA**MEMOIR2023**

Verena Ruprecht
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Verena Ruprecht is a Group Leader and ICREA Research Professor at the Centre for Genomic Regulation (CRG) Barcelona, Spain. She studies how dynamic processes at the single cell level control tissue development and homeostasis. The research of her group builds on a cross-disciplinary approach that combines quantitative methods from physics and biology and bridges in vivo and synthetic bottom-up in vitro systems. She received an HFSP Young Investigator grant (2019), funding from the European Innovation Council (2021), the European Research Council (2022) and was elected as an EMBO Young Investigator (2020).

Research interests

Our research is motivated by the fundamental question how the complex multicellular architecture of our body is robustly established and maintained from a single fertilized cell. This requires to understand how dynamic processes at the single level are controlled by mechanical, physical and biochemical information in the tissue environment and how they instruct cellular behaviour and cell fate. We combine various methods from physics, biology and engineering to gather quantitative data and build mathematical models of cell and tissue dynamics.
We recently identified a mechano-transduction pathway in the nucleus that controls cell mechanics and migration (Venturini et al. Science 2020), offering new insight how cells adapt to shape changes. We also found that vertebrate embryos can trigger an innate immune response via epithelial phagocytosis, enabling cellular error correction in the earliest stages of development (Hoijman et al. Nature 2021).

ICREA**MEMOIR2023**

Jorge G. Russo
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

In 1983 JG Russo obtained a fellowship to study physics at the Instituto Balseiro, Bariloche, Argentina, where he obtained the degree (Licenciatura) in Physics (12/1986). He was awarded a SISSA fellowship to follow the PhD programme at SISSA, Trieste, Italy, where he finished his PhD (10/1990) under the supervision of Daniele Amati on Quantum gravity and String theory. As a postdoc at Stanford University, USA, he collaborated with Lenny Susskind on black hole physics. He continued his research on black holes and string theory first at the University of Texas at Austin, USA, and then at CERN, Geneva. In 1998 JG Russo moved to the University of Buenos Aires as a Professor and in 04/2003 joined ICREA as a Research Professor.

Research interests

A major challenge of theoretical physics is unveiling the fundamental laws that govern the universe. The microscopic world, governed by quantum mechanics, is fuzzy, uncertain and involves three forces among elementary particles: electromagnetic, weak nuclear and strong nuclear. The gravitational force, described by Einstein general relativity, is instead observed at large scales. But this theory is incompatible with quantum mechanics. Superstring theory is presently the best candidate to reconcile gravity with quantum mechanics and thus to provide a unifying framework for the four forces of nature.
My research interests include Superstring theory, Cosmology and Particle Physics.

Selected publications

- **Russo JG** & Townsend PK 2023, 'Nonlinear electrodynamics without birefringence', *Journal Of High Energy Physics*, 1, 39.
- **Russo JG** 2023, 'New exact solutions in multi-scalar field cosmology', *Journal Of Cosmology And Astroparticle Physics*, 7, 066.
- Bolla IC, Rodriguez-Gomez D & **Russo JG** 2023, 'RG flows and stability in defect field theories', *Journal Of High Energy Physics*, 5, 105.
- Bolla IC, Rodriguez-Gomez D & **Russo JG** 2023, 'Defects, rigid holography, and C-theorems', *Phys.Rev.D* 108 (2023) 4, L041701.

Selected research activities

- Keynote speaker in Workshop "New Perspectives on Quantum Field Theory with Boundaries, Impurities, and Defects" (31 Jul -11 Aug 2023) NORDITA, Stockholm, Sweden.

- Keynote speaker in Workshop "Thermalisation in Conformal Field Theories" (10 Jul 2023 - 4 ago 2023) MITP - Mainz Institute for Theoretical Physics, Johannes Gutenberg University Mainz, Germany.

- Committee member in PhD thesis at University of Barcelona.

- Member of Evaluation Panel appointed by Fund for Scientific Research - FNRS, Belgium.

- Management Committee of COST action "Fundamental challenges in theoretical physics" for European Cooperation in Science and Technology.

ICREA**MEMOIR2023**

Neus Sabaté
Institute of Microelectronics of Barcelona - Centre Nacional de Microelectrònica (CSIC - IMB-CNM)
Engineering Sciences

I obtained my Degree in Physics in 1998 at the University of Barcelona (UB). After that, I joined UB Electronics Dep. to develop ionizing radiation detectors. After that I stayed at the LAAS-CNRS in Toulouse, where I discovered my passion for silicon-based microsystems (MEMS) technologies. In 1999, I started my PhD at the Microelectronics Institute of Barcelona (CSIC) where I developed silicon-based flow and gas sensors for industrial applications. After the obtaining of my PhD, in 2004 I joined the IZM Fraunhofer in Berlin where I played a key role in the development of a new technique for stress measurements in thin films for the microelectronics industry. In 2006 I started a research line in silicon microfabricated fuel cells at IMB-CSIC that has evolved until the biodegradable electrochemical power sources I develop today. In 2015 I founded the spin-off Fuelium, aimed to commercialize disposable paper batteries for single use applications, and became ICREA Professor.

Research interests

Since 2006, I have focused on the development of microfuel cells, with the final goal of integrating them within microdevices requiring power autonomy. After many years of development using silicon-related technologies I decided to approach printed electronics technology that allows to build devices entirely made of polymer-based and paper materials at a very competitive cost. The main goal of my research line is to obtain single-use electrochemical power sources that can provide with power autonomy the new generation of single use smart devices while being environmentally friendly. The creation of greener electronic devices to decrease the global electronic waste is one of the key aspects that drives my research. Moreover, I am highly motivated in transferring the devices I create to the "real world" in order to contribute to the enhancement of the industrial local ecosystem.

Selected publications

- Galyamin, Dmitry; Liebana, Susana; Esquivel, Juan Pablo; Sabate, Neus 2023, 'Immuno-battery: A single use self-powered immunosensor for REASSURED diagnostics', *Biosensors & Bioelectronics*, 220, 114868.

ICREA**MEMOIR2023**

Xavier Salvatella Giralt
Institut de Recerca Biomèdica (IRB Barcelona)
Experimental Sciences & Mathematics

I was born in Barcelona, Spain. I obtained my first degree in Chemistry at the University of Barcelona followed by a MSc in Chemical Research at the University of London and a PhD in Organic Chemistry at the University of Barcelona. In 2003, I moved to the University of Cambridge to work as a Research Fellow with Christopher Dobson on the structural and dynamical characterization of proteins. In 2008 I joined ICREA as a Researcher and the IRB as a Group Leader and in 2013 I became ICREA Research Professor.

Research interests

A high resolution description of the structure and dynamics of intrinsically disordered proteins is a very useful tool to study the properties and the function of these important biomacromolecules and, most importantly, to understand how changes in sequence or environment can lead to disease. My research work aims, on the one hand, at developing approaches to probe the conformational heterogeneity of intrinsically disordered proteins and, on the other hand, at understanding how changes in such motions relate to the molecular recognition of proteins, to their multimerization properties, to their function and to disease.

Selected publications

- Basu S, Martínez-Cristóbal P, Frigolé-Vivas M, Pesarrodona M, Lewis M, Szulc E, Bañuelos CA, Sánchez-Zarzalejo C, Bielskutė S, Zhu J, Pombo-García K, Garcia-Cabau C, Zodi L, Dockx H, Smak J, Kaur H, Batlle C, Mateos B, Biesaga M, Escobedo A, Bardia L, Verdaguer X, Ruffoni A, Mawji NR, Wang J, Obst JK, Tam T, Brun-Heath I, Ventura S, Meierhofer D, García J, Robustelli P, Stracker TH, Sadar MD, Riera A, Hnisz D, **Salvatella X,** 2023, 'Rational optimization of a transcription factor activation domain inhibitor', *Nat Struct Mol Biol* , 30, 1958–1969.

- Sanfeliu-Cerdan N, Catala-Castro F, Mateos B, Garcia-Cabau C, Ribera M, Ruider I, Porta-de-la-Riva M, Canals-Calderon A, Wieser S, **Salvatella X**, Krieg M, 2023, 'A MEC-2/stomatin condensate liquid-to-solid phase transition controls neuronal mechanotransduction during touch sensing', *Nat Cell Biol*, 25, 1590-1599.

- Piol D, Tosatto L, Zuccaro E, Anderson EN, Falconieri A, Polanco MJ, Marchioretti C, Lia F, White J, Bregolin E, Minervini G, Parodi S, **Salvatella X**, Arrigoni G, Ballabio A, La Spada AR, Tosatto SCE, Sambataro F, Medina DL, Pandey UB, Basso M, Pennuto M, 2023, 'Antagonistic effect of cyclin-dependent kinases and a calcium-dependent phosphatase on polyglutamine-expanded androgen receptor toxic gain of function', *Sci Adv*, 9, 1, eade1694.

- Mensah MA, Niskanen H, Magalhaes AP, Basu S, Kircher M, Sczakiel HL, Reiter AMV, Elsner J, Meinecke P, Biskup S, Chung BHY, Dombrowsky G, Eckmann-Scholz C, Hitz MP, Hoischen A, Holterhus PM, Hülsemann W, Kahrizi K, Kalscheuer VM, Kan A, Krumbiegel M, Kurth I, Leubner J, Longardt AC, Moritz JD, Najmabadi H, Skipalova K, Snijders Blok L, Tzschach A, Wiedersberg E, Zenker M, Garcia-Cabau C, Buschow R, **Salvatella X**, Kraushar ML, Mundlos S, Caliebe A, Spielmann M, Horn D & Hnisz D. 2023, 'Aberrant phase separation and nucleolar dysfunction in rare genetic diseases', *Nature*, 614, 564 – 571.

ICREA**MEMOIR2023**

Samuel Sánchez Ordónez
Institut de Bioenginyeria de Catalunya (IBEC)
Engineering Sciences

Samuel (Chemistry, UAB, 2008) is Group Leader and Deputy Director.at the Institute for Bioengineering of Catalonia. In 2009, he worked at NIMS, Japan, from 2010-2013 he was Group Leader at the Institute for Integrative Nanosciences, IFW Dresden, Germany. From 2013-2018 he was Group Leader at the Max Planck Institute for Intelligent Systems, Stuttgart. He was one of the first selected members of the Young Academy of Spain in 2020. He received several awards: Guinness World Record® 2010 and 2017 for smallest jet engine; MIT TR35 "Innovator of the year U35" Spain 2014; Princess of Girona Scientific Award 2015; National Research Award for Young Talent by FCRi, in 2016, Banco Sabadell Award 2022 and RSEQ Reseach Excellence Award 2022. He obtained the ERC Starting Grant 2012, 3 ERC PoC 2016, 2018 and 2023, and the ERC-Consolidator Grant in 2019. He holds 8 patents, >200 publications, h-index 72 and >18000 cites.

Research interests

Samuel Sánchez is leader of the "Smart Nano-Bio-Devices" group, working in the multidisciplinary field of Nanosciences with interest in developing hybrid robotics systems across different length-scales, from the nano- to the macroscale. Research interest spans from fundamental science, translational approach of nanodevices to the clinic to the exploitation of the protected intellectual property developed by the group. Currently, the main research lines in the group are: 1. Nanofabrication of nanobots as smart drug delivery systems for biomedical applications.; 2. Study of collective phenomena of active nanosystems; 3. Development of personalized medicine based on multifunctional biocompatible nanobots for patient-derived tumors and other diseases, 4. Use of medical imaging tools to track self-propelled nanobots in vivo and 4. 3D Printing living systems based on skeletal muscle tissues for tissue engineering, drug screening and living soft robotics.

Selected publications

- Fraire JC, Guix M, Hortelao AC, et al. 2023, 'Light-Triggered Mechanical Disruption of Extracellular Barriers by Swarms of Enzyme-Powered Nanomotors for Enhanced Delivery', *Acs Nano*, 17, 8, 7180 - 7193.
- Webster-Wood VA, Guix M, Xu N, et al. 2023, 'Biohybrid robots: recent progress, challenges, and perspectives', *Bioinspiration & Biomimetics*, 18, 1, 015001.
- Mestre R, Fuentes J, Lefaix L, Wang J, Guix M, Murillo G, Bashir R & **Sánchez S** 2023, 'Improved Performance of Biohybrid Muscle-Based Bio-Bots Doped with Piezoelectric Boron Nitride Nanotubes', *Advanced Materials Technologies*, 8, 2, 2200505.
- Dolci M, Wang Y, Nooteboom SW, Soto Rodriguez PE, **Sánchez S**, Albertazzi L & Zijlstra P 2023, 'Real-Time Optical Tracking of Protein Corona Formation on Single Nanoparticles in Serum', *ACS nano*, vol. 17, no. 20, pp 20167-78.

Selected research activities

- CoFounder and CSO of the spin-off Nanobots Therapeutics S.L.
- 12 invited talks
- Scientific Commitee of MARSS conference
- Constantes y Vitales "Young Research Talent in Biomedicine" Award

ICREAMEMOIR2023

María Victoria Sánchez-Vives

Fundació de Recerca Clínic Barcelona-Institut d'Investigacions Biomèdiques August Pi i Sunyer ()

Life & Medical Sciences

Mavi Sanchez Vives, MD, PhD in Neurosciences, has been ICREA Research Professor at the Institut d'Investigacions Biomèdiques August Pi i Sunyer since 2008, where she leads the Systems Neuroscience group. She is also co-Director of the Event Lab (Experimental Virtual Environments in Neuroscience and Technology). Previously she was Associate Professor of Physiology and Group Leader at the Instituto de Neurociencias de Alicante (UMH-CSIC). She was postdoctoral fellow at Rockefeller University and at Yale University.

Research interests

Neuronal and network properties determining the emergent activity in the cerebral cortex. Brain states and rhythms: regulating mechanisms, information encoding, neuromodulation.Using experimental and computational approach, with an interest in neurotechnology. The integration of the cortical information giving rise to bodily representation, combining brain activity and virtual reality for understanding these processes and VR medical applications.

Selected publications

- DallaPorta L, Barbero-Castillo A, Sanchez-Sanchez JM and **Sanchez-Vives MV** 2023, 'M-current modulation of cortical slow oscillations: network dynamics and computational modeling'. *Plos Computational Biology*, 19, 7, e1011246.
- Rodríguez-Urgellés et al (2023). 'Thalamic Foxp2 regulates output connectivity and sensory-motor impairments in a model of Huntington's Disease', *Cellular and molecular life sciences : CMLS*, 80(12), 367
- Covelo J, Cortada M, Vinci GV, Mattia M & **Sanchez-Vives MV** 2023, 'Modulation of cortical dynamics with alternating current stimulation: a multiscale phenomenon', Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation, 16, 1, 394.
- Seinfeld S, Hortensius R, Arroyo-Palacios J, Iruretagoyena G, Zapata LE, de Gelder B, Slater M & **Sanchez-Vives MV** 2023, 'Domestic violence from a child perspective: impact of an immersive virtual reality experience on men with a history of intimate partner violent behavior', *Journal of interpersonal violence,* 38(3-4):2654-82.
- Johnston, T., Seinfeld, S., Gonzalez-Liencres, C., Barnes, N., Slater, M., & **Sanchez-Vives, M. V.** (2023). Virtual reality for the rehabilitation and prevention of intimate partner violence. From brain to behavior: A narrative review. *Frontiers in psychology*, *13*, 788608
- Świdrak, J., Arias, A., de la Calle, E. R., Collado Cruz, A., & **Sanchez-Vives, M.** V. 2023, 'Virtual embodiment in fibromyalgia', *Scientific Reports,* 13, 10719.

Selected research activities

Defense of two directed PhD Theses

Organizer of EBRAINS and Human Brain Project conference in Barcelona

Collaborations with Fundaciones Telefónica and Bankinter, Global Impact Summit, Brain Innovation Days, Immersive Tech Week, Mobile World Congress and Oficina C

Four keynote talks

Fifteen presentations at conferences and co-author of additional twelve presentations at the Human Brain Project summit

ICREA**MEMOIR2023**

Anna Sanpera Trigueros
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics

I obtain my Physics degree from the Universitat Autòmoma de Barcelona 1986. From 1988 to 1992 I was a doctoral fellow (FPI) of the Ministry of Education and Science at the Autonomous University of Barcelona and defended my PhD in 1992. In 1993, I moved to Oxford University, fas a research fellow and 1994-1995 as a Fleming Fellow. In 1996, I was European postdoctoral research fellow in CEA-Saclay. In 1998, I was research fellow at Leibninz University, Hannover (Germany), where I habitlitated in 2002 and became assistant professor. Since 2005 I am an ICREA research professor. My research interests involve quantum information theory, in particular entanglement theory, but also to quantum gases, condensed matter, out-of-equilibrium open quantum systems and quantum neural networks. I am also interested and involved in education and the popularization of science to society. Otherwise, I am fond of literature, sports and children.

Research interests

My research interest cover quantum information, atomic physics, condensed matter and statistical physics. I study the properties that atoms frozen to very low temperatures display. Ultracold atomic gases permit to study, in a very clean way, a rich variety of systems which appear in Nature but whose exotic properties are difficult to understand. I am also involved in the mathematical description of entanglement, arguably the most distinct feature of quantum physics. Taking advantage of the quantum properties of matter, we engineer more powerful ways to process and distribute information in order to build, in a near future, quantum computers and simulators able to perform tasks that classical computers cannot. I am also working in quantum thermodynamics, open quantum systems, quantum learning and quantum metrology to exploit the advantatges quantum physics offers us to improve machine learning tasks as well as the determination of unknown parameters with a precission that classical physics cannot achieve.

ICREA**MEMOIR2023**

Edouard Schaal
Centre de Recerca en Economia Internacional (CREI)
Social & Behavioural Sciences

Edouard Schaal received his PhD in Economics from Princeton University in 2011. Schaal is an ICREA research professor at the Centre de Recerca en Economia Internacional (CREI), Adjunct Professor at Universitat Pompeu Fabra (UPF) and Associate Research Professor at the Barcelona Graduate School of Economics (BGSE). He is also a Research affiliate of the Center for Economic Policy Research (CEPR). He is Editor at the Review of Economic Dynamics, Associate Editor at the Economic Journal and member of the editorial board of the Review of Economic Studies. He has previously held research and academic positions at New York University and the United States Federal Reserve Bank of Minneapolis. His work has been published in leading academic journals such as Econometrica and the Quarterly Journal of Economics.

Research interests

My main research interests are in macroeconomics, with a focus on business cycles, labor markets, information economics and economic geography. My research on business cycles has focused on studying the impact of various frictions, for instance search frictions in the labor market or informational frictions. A broad unifying theme in this latter strand has been to study of how imperfections in the way people form expectations contribute to economic fluctuations. Examples include the role of uncertainty, coordination frictions and herding. I am also interested in economic geography with a particular focus on networks (transport, social) and how they contribute to the spatial distribution of economic activity and inequalities.

Selected publications

-**Schaal E** & Taschereau-Dumouchel M 2023, 'Herding Through Booms and Busts', *Journal of Economic Theory,* 210, 105669

ICREA**MEMOIR2023**

Arnau Sebé-Pedrós
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

I am an evolutionary biologist interested in how genome sequence and its regulation translate into diverse cellular phenotypes. I obtained a Ph.D. in Genetics from the University of Barcelona and I then was a postdoctoral fellow at the Weizmann Institute of Science. In my group, we investigate the evolution of cell type programs and associated genome regulation. When did major animal cell types like neurons emerge? How do gene regulatory networks evolve? And how these genetic changes translate into cellular novelties? To answer these questions, we combine single-cell genomics, chromatin profiling, and comparative genomics methods in a phylogenetically diverse array of animals and unicellular eukaryotes.

Research interests

My general research interests are related to two major biological questions. First, how genome sequence and its regulation translate into specific cellular phenotypes; and, second, how this genotype-phenotype link evolves. These interests include multiple specific topics at the crossroads of genomics, epigenetics, transcriptomics, ontogeny, and evolution. My ultimate goal is to advance our understanding of the evolutionary patterns and general principles explaining the genotype-(cellular)phenotype relationship through the eyes of genome regulation and at macro and micro-evolutionary timescales.

Selected publications

– Najle SR, Grau-Bové X, Elek A, et al. 2023, 'Stepwise emergence of the neuronal gene expression program in early animal evolution', *Cell*, 186, 21, 4676-4693.

ICREA**MEMOIR2023**

Joan Seoane Suárez
Vall d'Hebron Institut d'Oncologia (VHIO)
Life & Medical Sciences

Preclinical and Translational Research program Director at the Vall d'Hebron Institute of Oncology (VHIO) within the Vall d'Hebron Hospital since 2011. In 1998, he obtained his PhD from the University of Barcelona. Previously, in 1993, he obtained his BSc degree in Chemistry. Joan joined the Memorial Sloan-Kettering Cancer Center (MSKCC) in New York as a post-doctoral fellow in 1998 (first as a Research Fellow and then Research Associate since 2001). He was appointed ICREA Research Professor in 2004 and joined VHIO. In 2008, he was the recipient of a European Research Council (ERC) grant. He obtained two ERC Proof of Concept grants (2011, 2013). In 2008, he became Board member of the European Association of Cancer Research (EACR) and Associate Prof. at Universitat Autònoma de Barcelona. In 2012, founded Mosaic Biomedicals as a spin-off company from his lab and, in 2013, he was the recipient of the Dr. Josef Steiner Award. In 2016, he became Secretary General of the EACR.

Research interests

Our main objective is to understand the molecular mechanisms involved in the initiation and progression of cancer. Specifically, our research is focused on the study of brain tumours, including glioma and brain metastasis. Both glioblastoma (the most aggressive form of glioma) and brain metastasis are dismal diseases with limited therapeutic options. The understanding of the molecular mechanisms that govern these types of cancer is required in order to design rational, specific and successful therapeutic approaches.

Selected publications

- Hallett RM, Bonfill-Teixidor E, Iurlaro R, et al. 2023, 'Therapeutic Targeting of LIF Overcomes Macrophage-mediated Immunosuppression of the Local Tumor Microenvironment', *Clinical Cancer Research*, 29, 4, 791 - 804.
- **Seoane, J.** Patient-derived preclinical models to develop immunotherapies. **Molecular Oncology.** 2023; 17(7):1169- 1172.

- Hernando-Calvo A, Vila-Casadesús M, Bareche Y, et al. 2023, 'A pan-cancer clinical platform to predict immunotherapy outcomes and prioritize immuno-oncology combinations in early-phase trials', *Med*, 4, 10, 710-727.
- Le Rhun E, Weller, M. et al. 2023, 'Leptomeningeal metastasis from solid tumours: EANO-ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up', *ESMO Open*, 8, 5, 101624.
- Pecharromán I, Solé L, Álvarez-Villanueva D, et al. 2023, 'I?B kinase-a coordinates BRD4 and JAK/STAT signaling to subvert DNA damage-based anticancer therapy', *Embo Journal*, , e114719.

ICREA**MEMOIR2023**

M. Ángeles Serrano
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

M. Ángeles Serrano is an ICREA Research Professor at the Dept. of Condensed Matter Physics of the University of Barcelona, UB. She holds a Ph.D. in theoretical physics from UB and a master in mathematics for finance from the Centre de Recerca Matemàtica, CRM. She spent several years in the private sector and returned to academia in 2004 to work in network science. She conducted postdoctoral research at IU (USA), the EPFL (Switzerland), and IFISC Institute (Spain) util 2009, when she was awarded a Ramón y Cajal Fellowship. M. Ángeles obtained the Outstanding Referee Award of the American Physical Society and a James McDonnell Foundation Scholar Award for the Study of Complex Systems. She serves as a Board member of the Statistical and Nonlinear Physics Division of the European Physical Society and belongs to the Editorial Board of the APS journal Physical Review Research. She is a founding member of Complexitat and a promoter member of the UB Institute of Complex Systems.

Research interests

Complex systems -e.g., the human brain, the Internet, molecular networks in the cell, international trade, and many more- are ubiquitous and around us. All of them, regardless of their origin, talk a common language that we are starting to understand. A major challenge for a better comprehension of the relation between their structure and function is the characterization of their multiscale nature in space and time. At the Mapping Complexity Lab, we are using networks to model and predict the evolution and adaptation capabilities of complex systems. We produce models and maps in a latent hyperbolic geometry where distances measure the likelihood of interactions and reveal their multiscale nature, nested architecture, dimensionality, and hidden symmetries. Our applications cover a wide variety of real systems, from biological to economic and socio-technological, and AI systems, that we characterize using massive data.

Selected publications

- Jankowski R, Allard A, Boguñá M & **Serrano MA** 2023, 'D-Mercator: multidimensional hyperbolic embedding of real networks', *Nature Communications*, vol. 14, 7pp 585.
- 2Allard A, **Serrano MA** & Boguñá M 2023, 'Geometric description of clustering in directed networks', *Nature Physics*, 20, 150-156.
- van der Kolk J, García-Pérez G, Kouvaris NE, **Serrano MA** & Boguna M 2023 'Emergence of Geometric Turing Patterns in Complex Networks', *Physical Review X*, vol. 13, pp 021038.

Selected research activities

- Plenary Speaker at the ***VIth Interdisciplinary International Conference on Applied Mathematics, Modeling and Computational Science*** AMMCS- 2023, Waterloo, Canada.
- Invited Speaker at the 28th ***International Conference on Statistical Physics Statphys28***, Tokyo, Japan.
- Invited Speaker at the ***International Conference on Statistical Physics SigmaPhi 2023***, Chania, Crete, Greece.
- Invited Speaker at the Complex Networks: Hidden Geometry and Dynamics **Workshop3@SigmaPhi 2023**, Chania, Crete, Greece.
- Invited Speaker at the **III Conference of the Italian Society of Statistical Physics** SIFS, Parma, Italy.

- Appointed Member of the **Board of the Statistical and Nonlinear Physics Division of the European Physical Society**.
- Member of the **International Advisory Committee of STATPHYS28**.
- Member of the I**nternal Scientific Board** of the University of Barcelona Institute of Complex Systems **UBICS**.
- Member of the **Editorial Board** of the **APS Physical Review Research** journal.

- Invited to the **City and Science Biennal Barcelona**, for the Conversation "*Reaching the Complexity of the World*".

- **Publication in online press**: "*Shake and divide: the cocktail formula for global consensus*", publisehd in **The Conversation** (ISSN 2201-5639), dated Feb 16 2023.

ICREA**MEMOIR2023**

Luis Serrano Pubul
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

I did my PhD at the CBM in Madrid on the role of the carboxy-terminal region of tubulin on polymerization and MAP binding. Then I moved to the UK to work on protein folding. In 1993 I moved to the EMBL as a GL and started a new activity related to Protein design. After 6 years I was promoted to Senior Scientist. 2 years later I was appointed head of the Structural & Computational Biology programme. At that time we moved into the field of protein misfolding and amyloidoses diseases. We also started a new area of research on Systems Biology, designing small gene networks, doing computer simulations on them and performing experiments to test the predictions. After 14 years at the EMBL I moved to Spain to lead a programme working on Systems Biology. I was appointed vice-director before finally becoming the CRG director in July 2011. My group is focused on Synthetic Biology, engineering and designing of biological systems using our knowledge on protein design and gene networks.

Research interests

The group of Luis Serrano is interested in the quantitative understanding and in the rational design of Biological Systems. To achieve this goal they combine theoretical and experimental approaches and develop appropriate software. Of particular interest for the group is the combination of protein design and network analysis to understand signal transduction and gene regulation. As a more ambitious project our group is now using Synthetic biology to engineer Mycoplasma pneumoniae as a living pill for human lung therapy. We also continue developing the software for protein design ModelX and FoldX, to engineer proteins with immunomodulatory activity. Finally we are exploiting the role of codon usage and codon conservation in oncogenic proteins.

Selected publications

- Hernandez-Alias X, Katanski CD, Zhang W, et al. 2023, 'Single-read tRNA-seq analysis reveals coordination of tRNA modification and aminoacylation and fragmentation', *Nucleic Acids research*. 51(3):e17.
- Montero-Blay A, Blanco JD, Rodriguez-Arce I, et al. 2023, 'Bacterial expression of a designed single-chain IL-10 prevents severe lung inflammation', *Molecular Systems Biology*, 19, 1, e11037.
- Mazzolini R, Rodríguez-Arce I, Fernández-Barat L, et al. 2023, 'Engineered live bacteria suppress Pseudomonas aeruginosa infection in mouse lung and dissolve endotracheal-tube biofilms', *Nature Biotechnology*, 41, 8, 1089-1098.
- Hernandez-Alias X, Benisty H, Radusky LG, **Serrano L** & Schaefer MH 2023, 'Using protein-per-mRNA differences among human tissues in codon optimization', *Genome Biology*, 24, 1, 34.
- Benisty H, Hernandez-Alias X, Weber M, et al. 2023, 'Genes enriched in A/T-ending codons are co-regulated and conserved across mammals', *Cell Systems*, 14, 4, 312-323.
- Weber M, Sogues A, Yus E, Burgos R, Gallo C, Martinez S, Lluch-Senar M & **Serrano L** 2023, 'Comprehensive quantitative modeling of translation efficiency in a genome-reduced bacterium', *Molecular Systems Biology*, 19, 10.
- Najle SR, Grau-Bové X, Elek A, et al. 2023, 'Stepwise emergence of the neuronal gene expression program in early animal evolution', *Cell*, 186, 21, 4676-4693.
- Pascual-Reguant L, Serra-Camprubí Q, Datta D, et al. 2023, 'Interactions between BRD4S, LOXL2, and MED1 drive cell cycle transcription in triple-negative breast cancer', *EMBO Mol Med*, 15, 12, e18459.
- Burgos R, Garcia-Ramallo E, Shaw D, Lluch-Senar M & **Serrano L** 2023, 'Development of a Serum-Free Medium To Aid Large-Scale Production of Mycoplasma-Based Therapies', *Microbiology Spectrum*, 11, 3, e04859-22.

ICREA**MEMOIR2023**

Joshua Shepherd
Universitat Autònoma de Barcelona (UAB)
Humanities

In May of 2023 I began as ICREA Research Professor at Universitat Autónoma de Barcelona.
Leading up to this, I did a PhD in Philosophy at Florida State University, working with Al Mele on consciousness and action. I then took a postdoctoral fellowship at the University of Oxford's Uehiro Centre for Practical Ethics. While at Oxford, I was subsequently a Junior Research Fellow at Jesus College, and a Wellcome Trust Fellow. And I published my first book, *Consciousness and Moral Status*. I left Oxford to become Assistant Professor at Carleton University in Ottawa, Canada, and in 2020 I became Associate Professor at Carleton. Simultaneously, I began a stint at the University of Barcelona, where from 2018-2023 I was the PI on an ERC funded project, Rethinking Conscious Agency. During this time my second book, *The Shape of Agency: Control, Action, Skill, Knowledge*, was published.

Research interests

My research interests target a number of issues at the intersection of philosophy of mind and action, psychology, neuroscience, and practical ethics.
Lately, I have become increasingly interested in the mechanisms and capacities that enable control over aspects of the mind – capacities for cognitive control and metacognition, for example. I am also interested in how we manage to produce behavior that sits on the edge of control, like creativity and improvisational behavior.
I also maintain an interest in the moral significance of consciousness. My first book Consciousness and Moral Status develops an account of the moral value of phenomenal consciousness. In subsequent work, some of it in collaboration with bioethicists, I am exploring difficult moral issues surrounding the moral status of non-humans, and the ethics of research using cerebral organoids.

ICREA**MEMOIR2023**
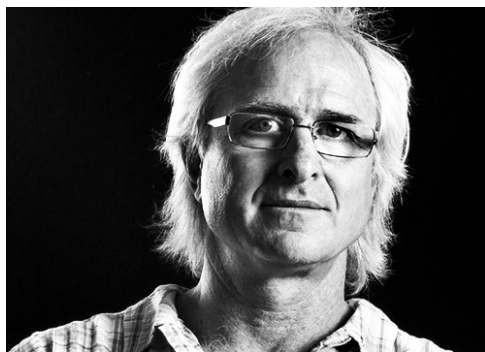
Gustavo A. Slafer Lago
Universitat de Lleida (UdL)
Life & Medical Sciences

Gustavo A. Slafer (PhD University of Melbourne) is Research Professor of ICREA at AGROTECNIO-CERCA Center, and the University of Lleida (Catalonia-Spain). His research has focused on studying the mechanisms underlying the responses of grain crops (mainly but not only wheat and barley) to environmental and genetic factors, with lines of research focused on understanding traits determining yield physiology and their plasticity. He published more than 200 papers, more than 40 chapters and 7 books by International Publishers. His h-index is 67 (Web of Science, Core Collection) or 90 (Google Scholar). He is Honorary Professor of the Universities of Nottingham (UK, since 2005) and Buenos Aires (Argentina, since 2018); Editor/Associate Editor of several journals; and "Fellow" of the Crop Science Society of America

Research interests

My research is focused on Crop Physiology: a relatively novel branch of science linking more fundamental physiological knowledge with realistic crop-breeding and crop-management developments through a genuine translational research approach. In this context, I study the mechanisms underlying the responses of field crops to environmental and genetic factors at the crop level of organisation. The environmental factors include management practices (e.g. irrigation or fertilization) and less manageable environmental factors (e.g. radiation, photoperiod and temperature). Genetic factors include from diverse genotypes through specific populations to particular genes (NILs). I study in this context the physiology of yield; carbon and nitrogen relationships and crop developmental processes with the aim of identifying alternatives to traditional farming and breeding practises to enhance the efficiency of resource use.

Selected publications

- **Slafer GA**, Foulkes MJ, Reynolds MP, et al. 2023, 'A 'wiring diagram' for sink strength traits impacting wheat yield potential', *Journal Of Experimental Botany*, 74, 1, 40 - 71, erac410.
- **Slafer GA**, Savin R & Sadras VO 2023, 'Wheat yield is not causally related to the duration of the growing season', *European Journal Of Agronomy*, 148, 126885.
- Sanchez-Bragado R, Molero G, Araus JL & **Slafer GA** 2023, 'Awned versus awnless wheat spikes: does it matter?', *Trends In Plant Science*, 28, 3, 330 - 343.
- Serrago RA, Garcia GA, Savin R, Miralles DJ & **Slafer GA** 2023, 'Determinants of grain number responding to environmental and genetic factors in two- and six-rowed barley types', *Field Crops Research*, 302, 109073.
- Parrado JD, Savin R & **Slafer GA** 2023, 'Photoperiod sensitivity of Ppd-H1 and ppd-H1 isogenic lines of a spring barley cultivar. Exploring extreme photoperiods', *Journal Of Experimental Botany*, 74, 6608–6618.
- **Slafer GA** & Savin R 2023, 'Comparative performance of barley and wheat across a wide range of yielding conditions. Does barley outyield wheat consistently in low-yielding conditions?', *European Journal Of Agronomy*, 143, 126689.

Selected research activities

Invited Talks:

- Traits determining sink strength for improving wheat yield. Resource allocation to juvenile spikes, efficiency in its use and floret development. Iberian Plant Biology 2023. Braga, Portugal, 12 July 2023
- Wheat yield physiology as affected by N-fertilization. 2nd Workshop Argentina – UK Partnership Wheat. School of Agronomy-Univ Buenos Aires, Argentina, 27 November 2023.

Editor/Associate Editor

- *Euphytica* (The Netherlands)
- *Food Energy Security* (UK)
- *Spanish Journal Agricultural Research* (Spain)
- *Scientific Reports* (UK)
- *International Journal of Molecular Sciences* (Switzerland)
- *Frontiers in Plant Science* (Switzerland)
- *The Crop Journal* (Crop Science Society of China and Elsevier, The Netherlands)

ICREAMEMOIR2023

Ricard Solé
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences

I am ICREA Research Professor at the Universitat Pompeu Fabra, where I'm the head of the Complex Systems Lab. I am also External Professor of the Santa Fe Institute (New Mexico, USA) fellow member of the European Center for Living Technology (Venice, IT) and external faculty of the Center for Evolution and Cancer at UCSF. I am also member of the editorial board of several international journals. I obtained my degrees in Physics and Biology at the University of Barcelona and received my PhD in Physics at the Universitat Politècnica de Catalunya. I have been awarded with James McDonnell Foundation, Botín Foundation and ERC Advanced Grants.

Research interests

One of my main research interests is understanding the origins of complexity in living and artificial systems, and how major transitions can be explained by means of statistical physics approaches. To this goal, my Lab develops both theoretical and experimental research, including complex networks, evolutionary unstable dynamics (RNA viruses and cancer) an ambitious program on synthetic biology. The later area includes an exploration of synthetic multicellular systems, biocomputation and synthetic swarm intelligence. Additionally, I have also created two research areas of my own, namely Liquid brains (developing a theory of cognitive networks beyond standard solid brains) and the concept of biosphere terraformation (developing synthetic biology motifs to engineer ecosystems facing future tipping points).

Selected publications

– Aguade-Gorgorio G, Costa J & **Sole R** 2023, 'An oncospace for human cancers', *Bioessays*, 45, 5, e2200215.

ICREA**MEMOIR2023**

Martín Sombra
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Born in 1970 in Ezpeleta (Argentina), Martín Sombra studied Mathematics at the University of La Plata and obtained his PhD from the University of Buenos Aires with a thesis in Computer Algebra. He did postdoctoral stays at the MSRI in Berkeley, the IAS in Princeton, and the IMJ in Paris. He became Maître de Conférences at the University of Lyon 1, then spent four years as a "Ramón y Cajal" Researcher at the University of Barcelona (UB) and became afterwards Full Professor at the University of Bordeaux 1. He finally moved back to Barcelona in 2009, joining ICREA as a Research Professor and UB as a Profesor Asociado. He has also held visiting positions at the IPAM in Los Angeles, the MSRI in Berkeley, and the University of Buenos Aires. He is currently a member of the Board of Directors of the FoCM Society, and of the Advisory Board of the MEGA conferences.

Research interests

Polynomials appear in a wide variety of contexts in Mathematics, Engineering and Computer Science. Polynomials in those situations are not random but come up with a certain structure which is important to exploit. I am interested in systems of structured polynomial equations and particularly in questions like: how many solutions does a given system have? How complicated those solutions can be? Can we predict where they will accumulate? Can we efficiently solve systems of polynomial equations? These problems have conduced me to study combinatorial objects like polytopes and fans, geometrical objects like curves and surfaces, and arithmetic objects like height of points and Diophantine equations. This gives a rich interplay between Complexity Theory, Combinatorics, Algebraic Geometry and Number Theory, leading to interesting results and stimulating research directions.

Selected publications

– D'Andrea C, Jeronimo G & **Sombra M** 2023 'The Canny-Emiris conjecture for the sparse resultant', *Foundations of Computational Mathematic*s, vol. 23, pp. 741-801.

Selected research activities

Invited talks
– Talk at the *Arithmetic geometry seminar* at Humboldt University Berlin, Germany,
31 January
– Talk at the *Number theory seminar* at Université de Caen, France, 24 March
– Talk at the conference *XXXIèmes rencontres arithmétiques de Caen* at Île de Tatihou, France, 26 June – 1 July
– Talk at the *Number theory seminar* at Universität Basel, Switzerland, 19 October
Managerial
– Member of the board of directors of the *FoCM Society*
– Member of the advisory board of the series of conferences *MEGA*
– Coorganizer of the workshop *Computational Algebraic Geometry* at the conference *FoCM 2023* at Paris, France, 12 – 21 June
– Member of the workshops and of the Stephen Smale committees of the
conference *FoCM 2023* at Paris, France, 12 – 21 June
– Coorganizer (chair) of the conference
Global invariants of arithmetic varieties at CIRM, Marseille, France, 9 – 13 October
PhD and Master theses, and TFG's
– Jury of the PhD thesis of Marcos Morales at Universidad Católica de Chile, Santiago, Chile, 27 March
– Jury of the PhD thesis of Njaka Andriamandratomanana at Université de Caen, France, 25 June
– Reviewer and jury of the PhD of Gerold Schefer at Universität Basel, Switzerland, 20 October

ICREA**MEMOIR2023**

Jordi Sort Viñas
Universitat Autònoma de Barcelona (UAB)
Engineering Sciences

Jordi Sort leads the 'Group of Smart Nanoengineered Materials, Nanomechanics and Nanomagnetism' (with ca. 15 researchers) as an ICREA Research Professor at UAB. After finishing his PhD in 2002 in the field of "magnetic interfacial effects" (Extraordinary Award), Prof. Sort performed two postdoctoral stays, at SPINTEC (Grenoble) and at Argonne National Laboratory. His research is focused on a wide variety of materials (thin films, lithographed structures, porous materials and nanocomposites) with emphasis on their magnetic, magnetoelectric and mechanical performance. He received awards from the Catalan and Spanish Physical Societies as well as the Federation of European Materials Societies. So far, Prof. Sort has supervised 20 PhD Theses, has published 364 articles (>12100 citations in WoS, h = 56), has issued 7 patents and has managed 39 research projects, being Coordinator of 2 European Training Networks (ITN), and PI of a CoG, a PoC and an AdG from the ERC.

Research interests

Jordi Sort investigates the nanomechanical, magnetoelectric and nanomagnetic properties of innovative and advanced materials, including lithographed structures, thin films and bulk specimens. Among his most relevant achievements one can mention: the use of nanoindentation and selective ion irradiation to create magnetic structures embedded in non-magnetic matrices; the ductilization of metallic glasses by development of nanostructured morphologies; the growth of new types of coatings with enhanced mechanical, magnetic, corrosion-resistance and catalytic properties; the development of advanced biodegradable materials; the characterization of mesoporous materials; the observation of magnetoelectric and magneto-ionic effects in different kinds of heterostructures combining ferromagnetic, ferroelectric and antiferromagnetic layers; or the use of magneto-ionics for neuromorphic applications. Further information at: https://jsort-icrea.uab.cat/.

Selected publications

– Ma Z, Fuentes-Rodriguez L, Tan Z, ..., **Sort J** 2023, 'Wireless magneto-ionics: voltage control of magnetism by bipolar electrochemistry', *Nat. Commun.* 14, 1, 6486.

– Tan Z, Ma Z, Fuentes L, ..., **Sort J** 2023. "Regulating oxygen ion transport at the nanoscale to enable highly cyclable magneto-ionic control of magnetism", *ACS Nano* 17, 7, 6973.

– Fluksman A, Lafuente A, Li Z, **Sort J** et al. 2023., 'Efficient tumor eradication at ultralow drug concentration via magnetically controlled drug delivery boosted by photothermal actuation using iron magneto-plasmonic nanodomes', *ACS Nano* 17, 3, 1946.

– Monalisha P, Ma Z, Pellicer E, Menéndez M, **Sort J** 2023, "A Multilevel Magnetic Synapse Based on Voltage-Tuneable Magnetism by Nitrogen Ion Migration", *Adv. Electron. Mater.* 9, 8, 2300249.

– Tan Z, de Rojas J, Martins S, ..., **Sort J**, Menéndez E 2023, 'Frequency-dependent stimulated and post-stimulated voltage control of magnetism in transition metal nitrides: towards brain-inspired magneto-ionics', *Mater. Horiz.* 10, 88-96.

– Martins S, Ma Z, Monfort X, Sodupe M, Santiago L, Menéndez E, Pellicer E, **Sort J** 2023. 'Enhancing magneto-ionic effects in Co oxide films by electrolyte engineering', *Nanoscale Horiz.* 8, 118-126.

– de h-Óra M, Nicolenco A, ..., **Sort J**, Driscoll J 2023, 'Highly Cyclable Voltage Control of Magnetism in Cobalt Ferrite Nanopillars for Memory and Neuromorphic Applications', *APL Materials* 11, 5, 051105.

Selected research activities

– Recipient: ERC Advanced Grant.
– 16 new publications, 1 new patent.
– Associate Editor in *APL Materials*.
– 3 Plenary, 4 Keynote, 5 invited talks, >20 other contributions at International Conferences.
– Organizer of 4 conferences.
– 3 PhD Thesis completed (+3 ongoing)
– Coordinator: H2020-ETN ('BeMAGIC'), ERC-AdG, Spanish and Catalan Governments (Retos, Prueba de Concepto, SGR).
– Technical Committee of IEEE Magn. Soc., AdCom MMM, etc.
– Outreach: Twitter, Facebook, Amics UAB, Newtral, Divulcat.

ICREA**MEMOIR2023**

Salvador Soto-Faraco
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

I graduated in Psychology in 1994 and completed a PhD in Cognitive Science in 1999 at Universitat de Barcelona. I worked at the University of Oxford (UK) during my PhD as well as a postdoc, before moving to University of British Columbia (Canada). I returned to Spain as a Ramón y Cajal fellow and started a research group at Universitat de Barcelona in 2002, and I became ICREA Research Professor at the Parc Científic de Barcelona in 2005, where I established the Multisensory Research Group thanks to public and private funding. Since 2009, I am based at Universitat Pompeu Fabra, where I combine research and teaching as one of the group leaders of the Center for Brain and Cognition (CBC), of which I am the director as of 2022. I received an ERC-StG in 2010, and an ERC PoC in 2016. Currently, the MRG works on basic and applied research projects supported by national (MINECO, AGAUR, BBVA Foundation) and international EU (ERC, BIAL, MSCF) funding sources.

Research interests

I am interested in multisensory perception and attention in humans. Like many other animals, humans are endowed with a wide range of sensory capacities such as hearing, feeling, seeing, smelling and so on. This rich variety of senses allows our brains to represent the surrounding environment with fidelity and precision, so that we can parse information, maintain it as memories, make decisions, and plan and carry out actions. However, to achieve coherent mental representations our brains must coordinate the distinct sources of sensory information effectively across their different temporal scales, spatial frames of reference, and representational formats. I am interested in the neural and behavioural principles underlying the selection, integration and representation of such multisensory information. To achieve this, I use experimental approaches based on psychophysics, a variety of neuroimaging methods to measure neural activity (EEG, fMRI), and brain stimulation techniques (TMS).

Selected publications

– Barbosa J, Stein H, Zorowitz S, Niv Y, Summerfield C, **Soto-Faraco S** & Hyafil A 2023, 'A practical guide for studying human behavior in the lab', *Behavior Research Methods*, 55, 58-76.

– Esparza-Iaizzo M, Vigue-Guix I, Ruzzoli M, Torralba-Cuello M & **Soto-Faraco S** 2023, 'Long-Range α-Synchronization as Control Signal for BCI: A Feasibility Study', *Eneuro*, 10, 3.

– Sanz-Aznar J, Bruni LE & **Soto-Faraco S** 2023. 'Cinematographic continuity edits across shot scales and camera angles: An ERP analysis'. *Frontiers in Neuroscience*, *17*, 1173704.

– Vigué-Guix I & **Soto-Faraco S** 2023, 'Using occipital α-bursts to modulate behavior in real-time', *Cerebral Cortex*, 33, 16, 9465–9477.

– Marly A, Yazdjian A & **Soto-Faraco S** 2023, 'The role of conflict processing in multisensory perception: behavioural and electroencephalography evidence', *Philosophical Transactions Of The Royal Society B-biological Sciences*, 378, 1886, 20220346.

– Marti-Marca A, Vilà-Balló A, Cerda-Company X, et al. 2023, 'Exploring sensory sensitivity, cortical excitability, and habituation in episodic migraine, as a function of age and disease severity, using the pattern-reversal task', *Journal Of Headache And Pain*, 24, 1, 104.

– Rodríguez-Prada C, Burgaleta M., Morís-Fernández L, Vadillo MA, & **Soto-Faraco S** 2023, 'Online Interventions for Mental Health in Times of COVID: A Systematic Review and Quality Assessment of Scientific Production', *Collabra: Psychology*, 9, 1, 90197.

– Kvasova D, Spence C & **Soto-Faraco S** 2023 'Not so Fast: Orienting to Crossmodal Semantic Congruence Depends on Task Relevance and Perceptual Load', *Psicologica*, 44 – 2.

ICREAMEMOIR2023

Clivia Marfa Sotomayor Torres
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Clivia obtained her PhD in Physics (Manchester Univ., UK 1984). She held tenured appointments at St. Andrews and Glasgow Universities and became a C4 professor at Wuppertal Univ. (Germany 1996). During 2004-8 she was a research professor at Univ. College Cork, Tyndall National Institute (Ireland). Since 2007 she is at ICN2 and heads a 17-strong team working on phonon engineering and nanofabrication. Clivia received awards from the Royal Society of Edinburgh, the Nuffield Foundation and an Amelia Earhart Fellowship from ZONTA International (USA). She is author of over 600 scientific works. She was a guest professor at the P. Sabatier Univ. Toulouse and at KTH in Sweden. During the Winter Semester 2022-23 she was the Mittlesten-Scheid guest professor at the University of Wuppertal. She is member of the Academia Europaea. She was appointed Director General of the International Iberian Nanotechnology Laboratory (Braga, Portugal) and left ICREA on 14th September 2023.

Research interests

Her group investigated new concepts for multi-state variables based on the engineered interactions of phonons and photons, in device-like structures. One particular interest is thermal transport at the nanoscale to address heat dissipation in nanoelectronics, the role of phonons in noise and dissipation in nano-scale systems. Another strand is Si-based opto-mechanics for phonon-based information processing which is supported by one additional research grants this year. The experimental research portfolio consolidated research in 2D materials. The ERC project LEIT made substantial progress in the realisation of mechanical gaps with guided modes and enhanced experimental methods for characterisation. During 2022 we made considerable progress in phononic waveguides exhibiting phonon lasing and in multimode coupling in optomechanical circuits mediated by localization.

Selected publications

- Madiot G, Albrechtsen M, Stobbe S, **Sotomayor-Torres CM** & Arregui G 2023 'Multimode optomechanics with a two-dimensional optomechanical crystal', *Apl photonics*, 8 - 11.
- Ng RC, Nizet P, Navarro-Urrios D, Arregui G, Albrechtsen M, Garcia PD, Stobbe S, **Sotomayor-Torres CM** & Madiot G, 2023, 'Intermodulation of optical frequency combs in a multimode optomechanical system', *Physical Review Research*, 5, 3, L032028.
- Chavez-Angel E, Tsipas P, Xiao P, et al. 2023, 'Engineering Heat Transport Across Epitaxial Lattice-Mismatched van der Waals Heterointerfaces', *Nano Letters*, 23, 15, 6883 - 6891.
- Arregui G, Ng RC, Albrechtsen M, et al. 2023, 'Cavity Optomechanics with Anderson-Localized Optical Modes', *Physical Review Letters*, 130, 4, 043802.
- Esteso V, Duquennoy R, Ng RC, Colautti M, Lombardi P, Arregui G, Chavez-Angel E, **Sotomayor-Torres CM**, Garcia PD, Hilke M & Toninelli C 2023, 'Quantum Thermometry with Single Molecules in Nanoprobes', *Prx quantum*, 4 - 4.
- Krushynska AO, Torrent D, Aragon AM, et al. 2023, 'Emerging topics in nanophononics and elastic, acoustic, and mechanical metamaterials: an overview', *Nanophotonics*, 12, 4.
- Madiot G, Ng R C, Arregui G, Florez O, Albrechtsen M, Stoebbe S, Garcia P D and Sotomayor Torres CM, '*Optomechanical generation of coherent GHz vibrations in a phononic waveguide*', Physical Review Letters, 130, 106903
- Maire J, Necio T, Chavez-Angel E, Colombano M F, Jaramillo-Fernandez J, Sotomayor-Torres C M, Capuj N and Navarro-Urrios D, '*Contactless characterization of the elastic properties of glass microspheres*', APL Materials **11** (4) 041128

ICREA**MEMOIR2023**

Laura Soucek
Vall d'Hebron Institut d'Oncologia (VHIO)
Life & Medical Sciences

Laura Soucek graduated in Biological Sciences at the University La Sapienza, Rome (Italy) in 1996. She was then awarded her PhD in Genetics and Molecular Biology in 2001. She was a postdoctoral fellow and Assistant Researcher in Dr. Gerard Evan's laboratory at the University of California San Francisco (UCSF, USA) until 2011. Since then, she has been leading the Models of Cancer Therapies Laboratory at the Vall d'Hebron Institute of Oncology (VHIO), in Barcelona, Spain, where she became Director of the Preclinical and Translational Research Program in 2022 and of the Experimental Therapeutics Research Program in 2024. She is ICREA Research Professor and Associate Professor at the Universidad Autónoma de Barcelona (UAB). Laura is a key opinion leader in Myc inhibition strategies, as well as founder and CEO of Peptomyc S.L., a spin off company that aims at treating cancer with anti-Myc peptides. Peptomyc lead compound, OMO-103, successfully completed a Phase I clinical trial in 2022.

Research interests

Our focus is the Myc oncoprotein, whose deregulation is implicated in almost all human cancer types. We have designed a Myc dominant negative, Omomyc, to investigate the therapeutic benefit of inhibiting Myc in cancer. We demonstrated that Myc inhibition has a remarkable therapeutic index in many mouse models of cancer, while only causing mild and reversible side effects in normal tissues. We also showed that Myc is a safe pharmacological target for many, perhaps all, cancers. Our goal is now to push such a therapeutic approach further towards the clinic. To do so we are making use of a new generation of Myc inhibitory cell-penetrating miniproteins. Our first compound, OMO-103, successfully completed Phase I clinical trial in 2022 and is now in Phase Ib/II in metastatic cancer patients. Research lines in the lab cover different aspects of MYC biology, such as DNA damage, oncogene cooperation and immune modulation.

Selected publications

- Casacuberta-Serra S, Gonzalez-Larreategui I & **Soucek L** 2023, 'eIF4A dependency: the hidden key to unlock KRAS mutant non-small cell lung cancer's vulnerability', *Transl Lung Cancer Res*, 12, 12, 2570-2575.
- Zacarías-Fluck MF, Massó-Vallés D, Giuntini F, González-Larreategui Í, Kaur J, Casacuberta-Serra S, Jauset T, Martínez-Martín S, Martín-Fernández G, Serrano Del Pozo E, Foradada L, Grueso J, Nonell L, Beaulieu ME, Whitfield JR & **Soucek L** 2023, 'Reducing MYC's transcriptional footprint unveils a good prognostic gene signature in melanoma', *Genes & Development*, 37, 7-8, 303 - 320.
- Beaulieu ME, Martínez-Martín S, Kaur J, et al. 2023, 'Pharmacokinetic analysis of Omomyc shows lasting structural integrity and long terminal half-life in tumor tissue', *Cancers*, 15, 826.

ICREA**MEMOIR2023**

Kestutis Staliunas
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences

Graduated Theoretical Physics, Vilnius University, Lithuania, 1985. PhD in Physics, Vilnius University, 1989. Habilitation in Physics, Vilnius University, 2001. A.v. Humboldt fellow in Physikalisch-Technische Bundesantstalt (PTB) Braunschweig, Germany, 1991-1992. Senior research fellow in Braunschweig PTB and University of Hannover on nonlinear pattern formation in laser systems and Bose condensates 1993-2003. Since 2004 ICREA research professor in Universitat Politècnica de Catalunya (UPC), Barcelona, head of research group (DONLL) on lasers, photonics and meta-photonics, nonlinear laser dynamics. Professional experience: around 250 articles in scientific journals with more than 7000 citations (h-factor 49); appr. 500 presentations in conferences (more than 100 invited ones); 4 patents, 2 monographs. Up to now directed (or currently directing) 20 PhD projects.

Research interests

Spatial quality of laser beams is of high importance in technologies: good quality beams propagate better collimated, can be more tight focused. Not all lasers, however, produce good beams: the radiation of especially very important semiconductor microlasers, microchip lasers,VCELSs, are too random and divergent. We develop new physical concepts and new techniques to manipulate the spatial structure of radiation, by using micro-modulated photonic materials: photonic crystals, metamaterials, Non-Hermitian optical materials. We develop these novel light-manipulation techniques in fundamental level and implement them in photonic industry. Also the good quality beams of microwaves, sound waves, or matter waves are required. We apply our experience in "smart manipulation of light patterns" to the other types of waves, to produce "clean" and well directed sound beams by so called "sonic crystals" in acoustics, as well as "clean" matter wave ensembles in modulated Bose condensates.

Selected publications

- Akhter MN, Ivars SB, Botey M, Herrero R & **Staliunas K** 2023, 'Non-Hermitian Mode Cleaning in Periodically Modulated Multimode Fibers', *Physical Review Letters*, 131, 4, 043604.
- Redondo J, Godinho L, **Staliunas K** & Sanchez-Perez JV 2023, 'An equivalent lattice-modified model of interfering Bragg bandgaps and Locally Resonant Stop Bands for phononic crystal made from Locally Resonant elements', *Applied Acoustics*, 211, 109555.
- Ivars SB, Botey M, Herrero R & **Staliunas K** 2023, 'Stabilisation of spatially periodic states by non-Hermitian potentials', *Chaos Solitons & Fractals*, 168, 113089.
- Babayigit C, Grineviciute L, Nikitina J, Melnikas S, Gailevicius D & **Staliunas K** 2023, 'Inverse designed photonic crystals for spatial filtering', *Applied Physics Letters*, 122, 24, 244103.
- Lukosiunas I, Grineviciute L, Nikitina J, Gailevicius D & **Staliunas K** 2023, 'Extremely narrow sharply peaked resonances at the edge of the continuum', *Physical Review A*, 107, 6, L061501.
- Plukys M, Gaizauskas E, Gailevicius D & **Staliunas K** 2023, 'Transverse modes and beam spatial quality in microchip lasers', *Physical Review A*, 107, 4, 043505.
- Ahmed WW, Farhat M, Staliunas K et al. 2023, 'Machine learning for knowledge acquisition and accelerated inverse-design for non-Hermitian systems', *Communications Physics*, 6, 1, 2.

Selected research activities

-Keynote presentation: CLEO Europe/EQEC'23, Munich

-Invited talks: SPIE'23 Prague, Photonic West'23 San Francisco, META'23 Paris, ICTON'23 Bucharest;

-Committees: CLEO Europe/EQEC, SPIE Europe

ICREA**MEMOIR2023**

Massimiliano Stengel
Institut de Ciència de Materials de Barcelona (CSIC - ICMAB)
Experimental Sciences & Mathematics

Massimiliano Stengel graduated in Physics at the University of Trieste (1999) and received his PhD in Science from the Swiss Polytechnic School of Lausanne (EPFL) in 2004. From February 2005 to April 2009 he was a postdoctoral researcher in the group of Prof. Nicola Spaldin at the Materials Department (UC Santa Barbara), and from May to September 2009 at CECAM (EPFL) under the supervision of Prof. Wanda Andreoni. From February 2010 to September 2011 he worked at ICMAB in Barcelona as a "Ramón y Cajal" fellow, before joining ICREA as a Research Professor in October 2011.

Research interests

My research develops and uses frontier electronic-structure methods to tackle key fundamental and technological questions in ferroelectricity, magnetism, surface science and metal/oxide interfaces. In the past few years I have focused on perovskite thin films, and in particular on understanding how the reduced size affects their functional properties. I am currently interested in the study of novel functionalities in oxide-based systems (e.g. flexoelectricity, magnetoelectric effects, confined electron gases, improper ferroelectricity) and in development of accurate modeling strategies to bridge the gap between the microscopic and macroscopic worlds.

Selected publications

- Bonini J, Ren S, Vanderbilt D, **Stengel M**, Dreyer CE & Coh S 2023, 'Frequency Splitting of Chiral Phonons from Broken Time-Reversal Symmetry in CrI3', *Physical Review Letters*, 130, 8, 086701.
- Ponce S, Royo M, **Stengel M**, et al. 2023, 'Long-range electrostatic contribution to electron-phonon couplings and mobilities of two-dimensional and bulk materials', *Physical Review B*, 107, 15, 155424.
- Zabalo A & **Stengel M** 2023, 'Natural Optical Activity from Density-Functional Perturbation Theory.', *Physical Review Letters*, 131, 8, 086902-086902.
- Springolo M, Royo M & **Stengel M** 2023, 'In-Plane Flexoelectricity in Two-Dimensional D_{3d} Crystals', *Physical review letters*, 131 - 23.
- Poncé S, Royo M, Gibertini M, Marzari N & **Stengel M** 2023, 'Accurate Prediction of Hall Mobilities in Two-Dimensional Materials through Gauge-Covariant Quadrupolar Contributions', *Physical review letters*, 130 - 16.
- Cazorla C, **Stengel M**, Íñiguez J & Rurali R 2023, 'Giant multiphononic effects in a perovskite oxide', *npj Computational Materials*, vol. 9, 97.
- Shapovalov K & **Stengel M** 2023, 'Tilt-driven antiferroelectricity in PbZrO3', *Phys. Rev. Materials*, vol. 7, L071401

Selected research activities

Invited talks:

-'*Flexoelectricity and flexomagnetism in two-dimensional materials*', CMD30 FisMat2023 joint conference (Milano, September 2023).

-'*Flexoelectricity and long-range Coulomb interactions in two-dimensional crystals*', CMT@Brixen Workshop (Bressanone/Brixen, June 2023).

ICREA**MEMOIR2023**

Thomas Sturm
Universitat Autònoma de Barcelona (UAB)
Humanities

After studies in philosophy, history, and political science at the University of Göttingen and the University of California at San Diego (UCSD), I obtained my PhD in 2007 from Marburg University. Before joining ICREA in 2014, I held positions at Marburg (1995-2000); UCSD (2000), the Berlin-Brandenburg Academy of Sciences & Humanities (2001-2005), the Max Planck Institute for the History of Science (2005-2009), and the Dept. of Philosophy, UAB (Ramón y Cajal Scholar, 2009-2014). I am also a member of the IHC (UAB), the LOGOS group (UB), the Kant-edition at the Berlin-Brandenburg Academy of Sciences & Humanities, and Associate Research Fellow at the Wundt Center for Philosophy & History of Psychology, Universidade Federal Juiz de Fora (Brazil). From 2019-2021, I was Head of the *Kantian Rationality Lab* at Immanuel Kant Baltic Federal University, Kaliningrad – a project which I quit because of the war on Ukraine. In 2019, I became elected member of the Academia Europea.

Research interests

How is rationality understood in philosophy and the sciences? How should it be understood? What is its function in various domains? These are the guiding questions for my research, which comprises topics reaching from early modern philosophy – esp. Immanuel Kant's philosophy – up to current discussions at the interface of philosophy, psychology, and the social sciences. I study aspects of Kant's account of reason and his contributions to the natural and the human sciences. I analyze the history, the potentials, and the limits of current empirical and philosophical theories of rationality. I have more recently turned to the role of these theories in politics, ethics, and education. Methodologically, I combine tools of analytic philosophy, cognitive science, and history of science: I am unconvinced that they cannot, or should not, be integrated.

Selected publications

– **Sturm T**, Burt F 2023 (eds.), 'Immanuel Kant, *Allgemeine Naturgeschichte und Theorie des Himmels* (1755)', *Kant's Gesammelte Schriften*, Academy edition, Berlin: DeGruyter, vol. 1, 187-324.

– **Sturm T**, Burt F 2023, 'Editorischer Bericht, Sacherläuterungen und Literatur zu: Immanuel Kant, *Allgemeine Naturgeschichte und Theorie des Himmels* (1755)', *Kant's Gesammelte Schriften*, Academy edition, Berlin: DeGruyter, vol. 1, 672-822.

Selected research activities

-2023-2027 PI, *Critical Reasoning, Philosophy at Secondary Schools, and the Education of Democratic Citizens* –MICINN project PID2022-141952NB-I00

-2023- Advisory Board Member, Institute de Philosophie Indépendent (IPHI), Sorbonne University, Paris

-2021- Member, Spanish-German Scientific Network, German Embassy, Madrid

-2019- Member, Academia Europaea

-2019- Member, LOGOS Research Group, UB – Catalan Government, project 2017-SGR-63

-2017- Co-editor of works by Kant on natural science for the new Academy edition of Part I of Kant's Collected Writings; PI: V. Gerhardt, Berlin-Brandenburg Academy of Sciences & Humanities – DFG project GE 657/16-1

-2021-2024 Mercator Fellow, Rationality as Pragmatic Worldly Prudence (DFG project no. 449581114), Goethe University Frankfurt

-2021-2023 Convenor, LOGOS Colloquium

-Invited talks at Warsaw University; KU Leuven; University of Turin; TU Berlin; Sorbonne University, Paris

-Conference organization: *Kant's Anthropology and the Modern Social Sciences* (with A. Salikov & A. Zhavoronkov, Frankfurt, July 2023)

-Director of 4 ongoing PhD theses

-Editorial Board Member (selected): History of Philosophy and Science (DeGruyter book series); ConTextos Kantianos; Rivista Internazionale die Filosofia e Psicologia

-Reviewer for (selected): German Research Council (DFG); ERC; Foundations of Science; Kant-Studien; Oxford UP

ICREA**MEMOIR2023**

Fran Supek
Institut de Recerca Biomèdica (IRB Barcelona)
Life & Medical Sciences

Fran Supek is an ICREA professor based at the Institute for Research in Biomedicine (IRB Barcelona). Fran leads the Genome Data Science laboratory (https://www.genomedatalab.org/) dealing with statistical genomics of genetic disease esp. cancer evolution. Fran obtained a PhD in Molecular biology in 2010 from the U. of Zagreb, while working as an early-stage researcher at the RBI, Croatia. Following a postdoctoral stay at the Centre for Genomic Regulation as a Marie Curie fellow, in 2017 he started his group at IRB as a Ramón y Cajal fellow. Fran was PI of ERC StG "HYPER-INSIGHT" and is PI on ERC CoG "STRUCTOMATIC", on Horizon EU projects "DECIDER" and "LUCIA", coordinator of a CaixaResearch project "POTENT-IMMUNO", and an EMBO Young Investigator. Fran authored 55 research papers, of that 13 as first and 24 as senior/corresponding author (16/24 in top-10% journals, incl. Nat Genet, Sci Adv, Nat Commun, NAR, Genome Biol) and 3 invited review articles, cited >11,600 times (H-index=34).

Research interests

My interests focus on computational approaches for elucidating mutational processes that generate genetic diversity within populations and across species, with the goal of understanding mechanisms of mutagenesis and DNA repair. I am also interested in developing statistical frameworks for detecting signatures of negative or positive selection, which can be challenging to distinguish from the background DNA sequence variability due to heterogeneous local mutation risk. Novel statistical methods, often based on machine learning, can provide better insight into genome evolution resulting from interplay between mutation and selection. The biological questions I addressed include learning about evolution of gene function and regulation, related to mechanisms underlying genetic disease, and cancer evolution in particular. In addition, I am interested in distributions of local mutation rates in the human germline and somatic genomes, which reveal how DNA repair is organized along chromatin.

Selected publications

- Delhomme TM, Munteanu M, Buonanno M, Grilj V, Biayna J & **Supek F** 2023, 'Proton and alpha radiation-induced mutational profiles in human cells', *Scientific Reports*, 13, 1, 9791.
- Fito-Lopez B, Salvadores M, Alvarez MM & **Supek F** 2023, 'Prevalence, causes and impact of TP53-loss phenocopying events in human tumors', *Bmc Biology*, 21, 1, 92.

ICREA**MEMOIR2023**

Hans Supèr
Universitat de Barcelona (UB)
Life & Medical Sciences

2017-present: Director of ACAP; 2013-present: Cofounder & CTO Braingaze; 2009-2014: Director VISCA lab; 2005-present: Research Professor, ICREA; 2005-present: Assistant professor University of Barcelona; 2002-2005: Head of the Vision and Cognition-II group, NIN, KNAW, The Netherlands; 1999-2001: Senior postdoc, NIN, NWO, The Netherlands; 1997-1999: Postdoc in the lab of Prof. Dr. V. Lamme, NORI, The Netherlands; 1992-1996: PhD student in the lab of Prof. Dr. E. Soriano, University of Barcelona.

Research interests

My interest lies in studying the cognitive brain. To delve into its immense complexity, I've explored the development of the cortex and the functional organization of the neocortex. Presently, my research is focused on neural circuit dynamics through computer simulations and cognitive behaviour via psychophysical experiments. We have identified novel roles for fixational eye movements in cognitive processing, supporting the concept that vision is an active process that can be trained to enhance cognitive behaviour. The utilization of these findings is safeguarded by patents, which are currently licensed. My ongoing research investigates 1) the neural mechanisms and functions of cognitive vergence and eye synchrony, 2) clinical applications of cognitive vergence and eye synchrony, and 3) interactive eye-tracking games aimed at enhancing cognitive behaviour.

Selected publications

- Bast N, Boxhoorn S, **Supér H**, Helfer B, Polzer L, Klein C, Cholemkery H & Freitag CM 2023, 'Atypical Arousal Regulation in Children With Autism but Not With Attention-Deficit/Hyperactivity Disorder as Indicated by Pupillometric Measures of Locus Coeruleus Activity'. *Biol Psychiatry Cogn Neurosci Neuroimaging,* 8, 1, 11 - 20.
- Romeo A & Supèr H 2023, 'Optimal twist angle for a graphene-like bilayer', *Journal Of Physics-condensed Matter,* 35, 16, 165302.
- Romeo A & **Supèr H** 2023, 'Spiking model of fixational eye movements and figure-ground segmentation', *Network,* 33,1-2, 143-166.
- Hashemi A, et al. 2023, 'Classification of MCI patients using vergence eye movements and pupil responses obtained during a visual oddball test', Aging and Health Research, 3, 1.

ICREA**MEMOIR2023**

Thomas Surrey
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Thomas Surrey obtained his PhD in Biochemistry from the University of Tübingen in 1995. After postdoctoral training at Princeton University and the EMBL Laboratory in Heidelberg, he became group leader at EMBL. In 2011, Thomas moved to the CRUK London Research Institute (LRI) to take the position of a senior group leader and later transferred to the newly established Francis Crick Institute in London. In 2019, Thomas relocated to the Centre of Genomic Regulation (CRG), a part of the BIST, to take the position as a CRG senior group leader and ICREA research professor. Thomas is author of 96 research publications, elected EMBO member (2012), recipient of an ERC Advanced Grant (2013) and an ERC Synergy Grant (2021) and of the Hooke medal of the British Society of Cell Biology (2015). He was a Whitman Center Fellow at the Marine Biology Laboratory (MBL) in Woods Hole in 2016 and a Visiting Miller Professor at UC Berkeley in 2018. In 2021, he was selected as an ASCB Fellow.

Research interests

Living cells are internally highly organized, yet also very dynamic. How is dynamic order generated? The cytoskeleton plays a critical role in this process by forming an active filament network that provides a mechanically stable coordinate system for the internal organization of cells. The Surrey lab studies the properties of the microtubule cytoskeleton with a particular interest in its ability to organize itself into different networks in different cell types or at different times of a cell's life cycle. The Surrey lab has pioneered several biochemical in vitro reconstitution approaches in which minimal cytoskeletal subsystems can be generated from purified components. Observing the behaviour of these reconstituted systems by advanced fluorescence microscopy provides insight into the molecular mechanisms underlying cytoskeleton dynamics and function. Our goal is to uncover the design principles governing active biological network organization which is essential for cell function.

Selected publications

- Henkin G, Brito C, Thomas C & **Surrey T** 2023, 'The minus-end depolymerase KIF2A drives flux-like treadmilling of γTuRC-uncapped microtubules', *Journal of cell biology*, 222 - 10.
- Ustinova K, Ruhnow F, Gili M & **Surrey T** 2023, 'Microtubule binding of the human augmin complex is directly controlled by importins and Ran-GTP', *Journal Of Cell Science*, 136, 12, jcs261096.
- Chew WX, Henkin G, Nédélec F & **Surrey T** 2023, 'Effects of microtubule length and crowding on active microtubule network organization', *Iscience*, 26, 2, 106063.

Selected research activities

-Monitoring editor for Molecular Biology of the Cell (MBoC, journal of the American Society of Cell Biology) and for Elife.

ICREA**MEMOIR2023**

Marcel Swart
Universitat de Girona (UdG)
Experimental Sciences & Mathematics

Marcel Swart obtained his PhD degree at Univ. Groningen under the guidance of Prof. Herman Berendsen, Prof. Gerard Canters and Prof. Jaap Snijders. After postdoctoral stays in Amsterdam, he was appointed ICREA Junior researcher and in 2009 ICREA Professor at the Univ. Girona. He was elected Fellow of the Young Academy of Europe (2014-19), Fellow of the Royal Society of Chemistry (2015), and member of Academia Europaea (2019). He organized the Girona Seminars on Predictive Catalysis (2016, 2018), edited the textbook on "Spin states in Biochemistry and Inorganic Chemistry" (Wiley), was Chair of COST Action CM1305 (2014-2018), and Director of the IQCC institute (2015-23). He is Founding Member of the QBIC Society and GEQC group of the Spanish Chemical Society. He is editorial board member for 3 scientific journals, Editor for Inorg. Chim. Acta, member of the Editorial College of (Diamond OA) SciPost:Chemistry, and Community Gateway Advisor Collection Advisor for Open Research Europe (EC).

Research interests

He focuses on the study of electrons in transition-metals during catalysis and in the formation of nanomaterials. He paved the way and designed new density functionals which enabled him to show how electrons flow in transition metal catalysts by jumping from one spin state to another, enabling the corresponding fingerprinting through computational spectroscopy (IR, NMR, UV-Vis, Mössbauer). His scientific excellence has been recognized through several honors and awards: he was awarded the 5th MGMS Silver Jubilee Prize for promoting young molecular modelers (2012), and was selected to contribute to "The next generation" 40 years anniversary issue of Inorg. Chim. Acta (2007). Recently, he received a special award in honor of his continuous support for advancing chemical sciences in Serbia (2017), as the first and only foreigner who has received it.

Selected publications

- Bhadra M, Albert T, Franke A, Josef V, Ivanović-Burmazović I, **Swart M**, Moënne-Loccoz P & Karlin K 20223 "Reductive Coupling of Nitric Oxide by Cu(I): Stepwise Formation of Mono and Dinitrosyl Species en route to a Cupric Hyponitrite Intermediate", *J. Am. Chem. Soc. 145*, 2230-2242

- Díaz-Cervantes E, Robles J, Solà M & **Swart M** 2023, "The peptide bond rupture mechanism in the serine proteases: an in silico sequential scale models study", *Phys. Chem. Chem. Phys*, 25, 11, 8043 - 8049.

- Jaimes–Romano E, Valdés H, Hernández-Ortega S, Mollfulleda R, **Swart M** & Morales-Morales D, "C–S Couplings Catalyzed by Ni(II) Complexes of the Type [(NHC)Ni(Cp)(Br)]", *Journal of Catalysis*, 426, 247-256

- Kumar R, Ahsan F, Awasthi A, **Swart M** & Draksharapu A 2023, 'Generation of Ru(iii)-hypochlorite with resemblance to the heme-dependent haloperoxidase enzyme', *Dalton Transactions*, 52, 35, 12552 - 12559.

- Martins FF & **Swart M** 2023, "Electronic properties and redox chemistry of N confused metalloporphyrins", *Journal of Porphyrins and Phthalocyanines*, 27, 1320-1329

Selected research activities

He participated in an evaluation panel of LaCaixa, was member of the W&T4 Panel of FWO, and was member of a PhD tribunal. He supervised one PhD thesis (F. Martins), was invited speaker at the LQ Fest, at the QBIC-VI and the sixth EuChemS-Inorg conferences, was invited to the SUD University (Odense), and the Hylleraas centre (Oslo) as part of the Young Researcher Parliament program to give a talk and enjoy a short research stay. He is currently supervising four PhD students, one TFG student and a postdoctoral researcher.

ICREA**MEMOIR2023**

Albert Tarancón Rubio
Institut de Recerca en Energia de Catalunya (IREC)
Engineering Sciences

Albert holds M.Sc. and PhD in Physics from the University of Barcelona (2001, 2007) and M. Eng. in Materials Science from the Polytechnic University of Catalonia (2007). He worked as research associate at the IMB-CSIC (ES) and as visiting researcher at the University of Oslo (NO), Imperial College London (UK) and Caltech (USA). In 2010, Albert gained a Ramon y Cajal Fellowship and joined the Catalonia Institute for Energy Research (IREC) as the Head of Group. Since 2018, he is ICREA Professor at IREC and leads a group of 35+ people devoted to alternative technologies based on solid state ionics and iontronics. He has been PI of 14 EU projects, including one ERC-CoG, one ERC-PoC and four coordinated actions, attracting a total amount of 25+ M€. He is editor of J. Phys. Energy (IoP), APL Energy (AIP) and J. Eur. Ceram. Soc. (Elsevier). Albert is included in the 1% top-cited scientists in the field of "Energy".

Research interests

The research work carried out by Albert is in advanced materials for energy applications. In particular, he has been developing innovative concepts for improving the performance of different solid state energy devices such as Solid Oxide Fuel and Electrolysis Cells (SOFC/SOEC), ThermoElectric Generators (TEGs) or Li-ion batteries for energy storage and portable power applications. In the last years, Albert has been specifically developing new concepts for the unexplored field of Nanoionics and Iontronics. They are called to drive a new revolution similarly to Nanoelectronics, underlining the relevance of size effects and interfaces on mass transfer, transport and storage. Albert's group is pioneer in implementing interface-dominated nanomaterials in devices for radically new applications. In this direction, he was awarded with an ERC CoG to implement disruptive Nanoionics concepts in Si-integrated micro-SOFC technology and two FET Proactive projects on new microenergy technologies. From this recent activity, Albert's group developed unprecedented synaptic transistors based on oxide-ion conductors in the frame of their Transionics ERC-PoC project. This can be considered the starting point for a new class of switchable devices that will boos the future Ion Age.

Selected publications

- Bernadet L, Segura-Ruiz J, Yedra L, et al. 2023, 'Enhanced diffusion barrier layers for avoiding degradation in SOFCs aged for 14000 h during 2 years', *Journal Of Power Sources*, 555, 232400.
- Sabato AG, Nunez Eroles M, Anelli S, et al. 2023, '3D printing of self-supported solid electrolytes made of glass-derived Li1.5Al0.5Ge1.5P3O12 for all-solid-state lithium-metal batteries', *Journal Of Materials Chemistry A*, 11, 13677-13686.
- Stangl A, Pla D, Pirovano C, et al. 2023, 'Isotope Exchange Raman Spectroscopy (IERS): A Novel Technique to Probe Physicochemical Processes In Situ', *Advanced Materials*, 35(33):e2303259.

Selected research activities

- Coordinator of the EU-projects EpiStore and 7M€ HarveStore (H2020-FET program), HyP3D (Clean Hydrogen JU) and TransIonics (ERC PoC)

- Coordinator of the 3D-PASSION Spanish project (MICINN) and leader of the Consolidated Research Group (SGR) NANOEN

- Editor of the Journal of the European Ceramic Society (Elsevier), Journal of Physics: Energy (IoP) and APL energy (AIP). Guest editor of a special issue in JPhysEnergy

- Several Keynotes (4) and Invited Lectures (4) and chairs and scientific committees in international reputed conferences

- Co-author of two book chapters

- Holder of 6 active patents

- High impact outreach activity on the promotion of Hydrogen Economy including paper press outputs

ICREA**MEMOIR2023**

Leticia Tarruell
Institut de Ciències Fotòniques (ICFO)
Experimental Sciences & Mathematics

Leticia Tarruell is an ICREA Research Professor at ICFO. She studied physics in Madrid and Paris, and obtained her Ph.D. thesis in Quantum Physics in 2008, with a thesis on superfluid Fermi gases carried out at the Ecole Normale Supérieure. As a postdoctoral researcher at the ETH Zurich, she investigated artificial graphene and quantum magnetism with ultracold fermionic atoms in optical lattices. After a stay as Chargé de Recherche CNRS at Institut d'Optique in Bordeaux, she joined ICFO in 2013 and ICREA in 2022. At ICFO, she leads the Ultracold Quantum Gases experimental group. She was awarded an ERC Consolidator grant in 2021 and has been involved in many international projects, including as a PI in the European projects QUIC, DAALI, DYNAMITE and PASQuanS2, and as a PI and foreign collaborator in a Research Unit from the German DFG.

Research interests

Leticia Tarruell leads the Ultracold Quantum Gases experimental group at ICFO, which uses ultracold (nanokelvin) atomic gases as model systems to explore fundamental phenomena in quantum many-body physics. By exploiting atom-light interactions, her group engineers highly controllable artificial quantum materials and probes their properties. The goal is to employ these systems as quantum simulators (i.e. special purpose quantum computers) for studying open problems in various fields of physics, in particular in the condensed-matter context, and for realizing novel quantum phases of matter. This research is carried out in three different platforms: quantum mixtures in the continuum, ground state atoms in optical lattices, and arrays of atoms in Rydberg states.

Selected publications

- Höschele J, Buob S, Rubio-Abadal A, Makhalov V & **Tarruell L** 2023, 'Atom-number enhancement by shielding atoms from losses in strontium magneto-optical traps', *Phys. Rev. Applied,* vol. 19, 064011
- Barbiero L, Cabedo J, **Lewenstein M**, **Tarruell L** & Celi A 2023, 'Frustrated magnets without geometrical frustration in bosonic flux ladders', *Physical Review Research*, vol. 5, L042008

Selected research activities

- Invited talk at BEC 2023 - International Conference Bose-Einstein condensation, Sant Feliu de Guíxols
- Invited talk at APS March Meeting 2023, Las Vegas
- Invited talk at the Gordon Research Conference in Atomic Physics, Salve Regina University, Rohde Island
- Invited talk at the JILA-NIST-Colorado University CUBit seminar

ICREAMEMOIR2023

Alexander Taylor
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

I obtained my bachelor's degree at Oxford University, and my PhD at the University of Auckland. I then worked as a Junior Research Fellow at the University of Cambridge, before taking up a lectureship at the University of Auckland, where I was awarded by the Royal Society of New Zealand both a Rutherford Discovery Fellowship (2014-19), and the Prime Minister's Emerging Scientist prize (2015). In 2022 I was awarded an ERC Consolidator Grant (2023-2028) for my project 'UNIPROB'.

Research interests

My research is focused on comparing and understanding the similarities and differences between human and animal minds. At the heart of my research program is an experimental framework I term the signature testing approach (Taylor et al. 2022). This uses the information processing errors, biases and other patterns agent exhibits to make inference about the content of different minds. This approach generates powerful intelligence tests that strongly constrain the possible cognition an agent is using and allows for the comparison of both biological intelligences. I also have a keen interest in understanding the role information processing errors and biases play in human decision-making. My lab currently works with a wide range of study species, including the kea parrot, rats, and adult humans.

Selected publications

- Nelson XJ, **Taylor AH**, Cartmill EA, et al. 2023, 'Joyful by nature: approaches to investigate the evolution and function of joy in non-human animals'. *Biol Rev*. 98, 5, 1548-1563.
- Miller R, Davies JR, Schiestl M, Garcia-Pelegrin E, Gray RD, **Taylor AH** & Clayton NS 2023, 'Social influences on delayed gratification in New Caledonian crows and Eurasian jays', *Plos one*, 18, 12, e0289197.
- Hassall RS, Neilands P, Bastos APM & **Taylor AH** 2023, 'Dogs assess human competence from observation alone and use it to predict future behaviour', *Learning And Motivation*, 83, 101911.

Selected research activities

Member of LIFT Cost Action group (CA21124) on Animal Welfare https://liftanimalwelfare.eu/

ICREA**MEMOIR2023**

Sergey Tikhonov
Centre de Recerca Matemàtica (CRM)
Experimental Sciences & Mathematics

I graduated from the Lomonosov Moscow State University in 1999 and obtained the PhD degree in Mathematics from MSU in 2003. From September 2012, I am an ICREA Research Professor at the Centre de Recerca Matemàtica. 2003: PhD in Mathematics, Lomonosov Moscow State University, Moscow. 2004-2006: Marie Curie Fellow at CRM, Barcelona. 2006-2008: Post-doctoral Fellow at the Scuola Normale Superiore, Pisa. 2008-September 2012: ICREA Researcher at CRM, Barcelona. 2009: ISAAC Award. 2012: ICREA Research Professor at CRM, Barcelona. 2013: Humboldt Research Fellowship for Experienced Researchers. 2021: Friedrich Wilhelm Bessel research prize

Research interests

My main research areas are Fourier Analysis and Approximation Theory. Particularly, I study the relationship between "smoothness" of a function and the possibility to approximate or to represent this function by a sum of "simple" functions. The case when "simple" functions have wave structure is of special interest.

Selected publications

– Gorbachev D, Ivanov V & **Tikhonov S** 2023, 'On the kernel of the (kappa, alpha)-generalized Fourier transform', *Forum of Mathematics, Sigma*, vol. 11 , e72.
– Kolomoitsev, Y, Lomako T & **Tikhonov S** 2023, 'Sparse Grid Approximation in Weighted Wiener Spaces', *Journal Of Fourier Analysis And Applications*, 29, 2, 19.
– Dai F, Prymak A, Shadrin A, Temlyakov V & **Tikhonov S** 2023, 'On the cardinality of lower sets and universal discretization', *Journal of Complexity*, 76, 101726.
– Dominguez O & **Tikhonov S** 2023, 'Function spaces of logarithmic smoothness: embeddings and characterizations', *Memoirs Amer Math Soc,* 282, 1393.
– Dyachenko M, Nursultanov E **Tikhonov S** & Weisz F 2023, "Hardy-Littlewood-type theorems for Fourier transforms in Rd", *Journal of Function Analysis*, vol. 284, no. 4, 109776.

Selected research activities

Research visits:
-Oberwolfach Research Fellow, MFO, Germany
-Invited Researcher, IHES, Bures-sur-Yvette, France
Member of Editorial board:
-Advances in Operator Theory
-Analysis Mathematica
-Journal of Fourier Analysis and Applications
-Journal of Mathematical Analysis and Applications
-Rendiconti del Circolo Matematico di Palermo
Seminar and Conference talks:
-International Conference on Multivariate Approximation, Schloss Rauischholzhausen, Germany;
-Seminar on Function Spaces, Friedrich-Schiller-Universität, Jena, Germany;
-Colloquium, Universität zu Lübeck, Germany;
-Analysis seminar, L.N.Gumilyov Eurasian National University, Astana, Kazakhstan.

ICREA**MEMOIR2023**

Matthias Tischler
Universitat Autònoma de Barcelona (UAB)
Humanities

Matthias M. Tischler, born 1968 in Münchberg (Germany), studied Medieval and Modern History, Applied Historical Sciences, Latin and Romance Philology, Philosophy, Theology and Islamic Studies at Heidelberg, Munich and Frankfurt. He obtained his PhD in Heidelberg (1998). He was an Assistant Professor at Frankfurt (2001–2009). After his habilitation at Dresden (2008/2009), he was Associate Professor (2009/2012), Senior Research Fellow at the Autonomous University of Barcelona (UAB) (2013/2014) and Research Group Leader at the IMAFO (ÖAW) in Vienna (2015/2016). He was a Visiting Professor of the ÉPHÉ in Paris (2015) and a Senior Research Fellow at the Medieval Institute of Notre Dame, USA (2016), the IAS, Princeton, USA (2019) and the Herzog August Bibliothek, Wolfenbüttel, Germany (2020). In 2016 he accepted a position at ICREA at the Department of Ancient and Medieval Studies of the UAB, which he has held since January 1, 2017. Since 2020 he is member of the Academia Europaea.

Research interests

My studies are raising the question about the geographical, linguistic, religious, cultural and mental borders of the multi-layered legacy in the centres and peripheries of the Medieval Worlds. I have analyzed the Europe-wide intellectual attraction and radiance of the Parisian abbey of Saint-Victor in the mirror of its exegetical and theological production, focusing on the various European areas. Then, I have broadened my panorama to reconstruct European religious and intellectual identities by conducting extensive research on texts of Christian-Muslim encounters and perceptions in Europe, specializing on early Christian polemics against Islam, the linguistic and religious borders between Christians, Jews and Muslims, processes of religious and cultural passages, entanglement and dis/integration among the members of the three monotheisms in the Carolingian and Iberian Worlds. A new research field I try to establish is methodologically sound Transcultural Studies and Palaeography.

Selected publications

- **Tischler M**: 'Das Homiliar des Paulus Diaconus an der südwesteuropäischen Peripherie des Karolingerreiches', *Mitteilungen des Instituts für Österreichische Geschichtsforschung* 131 (2023) 1–20
- **Tischler M**: 'A Political Testament in the Matrix of Time and Space: Einhart's Vita Karoli in Italy, Septimania, and Catalonia from the Tenth to Thirteenth Centuries', in *I Franchi*, Spoleto 2023, 169–96 & 197–201 (Discussion)
- **Tischler M**: 'Saint-Victor de Paris. Spiritualité et érudition des chanoines réguliers, XIIᵉ et XIIIᵉ siècles', in *I Canonici Regolari dal Medioevo ai nostri giorni*, ed. by B. Ardura - G. Melville, Città del Vaticano 2023, 233–64
- **Tischler M**: 'Überwindung der Krise durch Fiktion. Christlich-muslimische Glaubensgespräche vom 12. zum frühen 14. Jahrhundert,' in *Religionsgespräche und Religionspolemik im Mittelalter*, ed. Chr. Reinle, Ostfildern 2023, 319–69
- **Tischler M**: 'Des de Roma a Ripoll, la Rioja i més enllà: la transmissió de la *Sibil·la tiburtina* a la península Ibèrica i l'extensa xarxa europea de coneixement de l'abat i bisbe Oliba de Ripoll i de Vic', in *Oliba de Vic, un bisbe de mil anys enrere*, ed. M. Sureda i Jubany - R. Baró i Cabrera, Barcelona 2023, 149–72

Selected research activities

-Transcultural Medieval Studies 2 & 3 (ed.-in-Chief): Carpentieri N: *Writing the Twilight*, Turnhout 2023; Byrne Ph - Ellis C (eds): *Maritime Exchange and the Making of Normand Worlds*, Turnhout 2023

-PhD theses Óscar Perdomo Ceballos: *St Ildefonsus of Toledo and the Virginity of Mary*; Silke Engelhardt: *Heiligenpatrozinien im Pyrenäenraum 750–1100*

-Projects *Carolingian Culture in Septimania and Catalonia* (2020–24); *Study and Critical Edition of the Homiliary of Luculentius* (2019–23)

-Advisory Board of *Nomads' Manuscripts Landscape* (FWF START 2020–25)

-Course at Barcelona

-Workshop at Bellaterra

-Papers at Bellaterra (2), Berlin, Fanjeaux, Spiez, Toulouse (2) & Vienna

-Manuscript excursions at Urgell, Vic, Nîmes & Montpellier

-Reviewer for Palgrave Macmillan

ICREA**MEMOIR2023**

Xavier Tolsa Domènech
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics

Xavier Tolsa first studied engineering and later he turned to mathematics. After obtaining his PhD in mathematics in 1998 at the Universitat Autonoma de Barcelona (UAB), he spent about one year in Goteborg (University of Goteborg – Chalmers) and another year in Paris (Université de Paris-Sud). Afterwards, he returned to the UAB as a Ramon y Cajal felow in 2001. Since 2003 he is ICREA Research Professor at the UAB. He has received several awards for his achievements, such as the Salem Prize (2002), the Prize of the European Mathematical Society (2004), or the Prize Rei Jaume I (2019, first time awarded in the field of mathematics). He was invited lecturer at the European Congress of Mathematics in Stockholm (2004) and at the International Conference of Mathematicians in Madrid (2006). He has also been PI of two ERC Advanced Grants (2013-2018 and 2021-2026).

Research interests

Xavier Tolsa works in mathematical analysis. His research deals with harmonic analysis, geometric measure theory, and potential theory. More recently he has also become interested in elliptic PDE's and free boundary problems.
Particularly, he is interested in the relationship between analytic notions such as analytic capacity or harmonic measure, and geometric concepts like rectifiability. Around 2002 he proved that analytic capacity is semiadditive. This was an open problem since the early 1960s. Later on he studied related problems in higher dimensions. In particular, in a collaboration with F. Nazarov and A. Volberg he proved the so called David-Semmes conjecture in the codimension 1 case. This result has important applications to the study of harmonic measure and the Dirichlet problem for the Laplace equation, which are other main interests in his research.

Selected publications

- Molero A, Mourgoglou M, Puliatti C & **Tolsa X** 2023, 'L-2-Boundedness of Gradients of Single Layer Potentials for Elliptic Operators with Coefficients of Dini Mean Oscillation-Type (vol 247, 38, 2023)', *Archive For Rational Mechanics And Analysis*, 247, 38.
- **Tolsa X** 2023, 'Unique continuation at the boundary for harmonic functions in C^1 domains and Lipschitz domains with small constant', *Comm. Pure Appl. Math.* 76 (2), pp. 305-336.
- Azzam J, Garnett J, Mourgoglou M & **Tolsa X** 2022, 'Uniform Rectifiability, Elliptic Measure, Square Functions, and epsilon-Approximability Via an ACF Monotonicity Formula', *International Mathematics Research Notices,* 2023, 13, 10837–10941.

Selected research activities

Minicourses:

- "Harmonic measure and free boundary problems", BGSMath (Barcelona). November-December 2023.
- "Introduction to harmonic measure", University of Jyväskylä (Finland). August 2023.

Plenary talks in the conferences:

- Harmonic Analysis, PDEs, and GMT in Bilbao 2023. June 2023.
- Harmonic and Complex Analysis: modern and classical, Bar-Ilan University, Ramat Gan, Israel. June 2023.
- Conference in honor of S. Treil and A. Volberg, University of Würzsburg (Germany). June 2023.
- Workshop of the LMS Harmonic Analysis & PDE network, Warwick (UK). February 2023.

ICREA**MEMOIR2023**

Josefa Toribio Mateas
Universitat de Barcelona (UB)
Humanities

I got my PhD in Philosophy from Complutense University, Madrid, in 1988. I worked as an Assistant Professor in the Department of Logic and Philosophy of Science at Complutense between 1989 and 1991. I was then awarded a postgraduate fellowship by the British Council to work in the School of Cognitive and Computing Sciences at the University of Sussex (1991-93). I was Assistant Professor at Washington University in St. Louis (1993-2000), Lecturer in Philosophy in the School of Cognitive and Computing Sciences at the University of Sussex (2000-2002), Associate Professor at the University of Indiana, Bloomington (2002-2004), and Senior Lecturer at the University of Edinburgh (2004-2008). I joined ICREA in 2009. I am a member of the research group LOGOS (Research Group in Analytic Philosophy) at the UB and also a member of the Barcelona Institute of Analytic Philosophy (BIAP). I have been president of the Spanish Society of Analytic Philosophy (SEFA) between 2010 and 2016.

Research interests

My goal in philosophy has long been the same: to explore the nature of the mind within a naturalistic framework. What is most distinctive of my research is my ongoing effort to respect scientific findings about mental phenomena while insisting on the critical importance of the method of analysis and the theoretical tools provided by analytic philosophy. My current research focuses on the analysis of central topics in the philosophy of mind and the philosophy of cognitive science, with a special emphasis on the philosophy of perception and rationally responsive unconscious mental states such as implicit attitudes.

Selected research activities

Grants:
2022-2026: Philosophy of Social Cognition. MICINN – PID2021-124100NB-I00. PIs: Josefa Toribio and Esa Díaz León.
2022-2026: María de Maeztu. Barcelona Institute of Analytic Philosophy. MICINN – CEX2021-001169-M. PI: Carl Hoefer.
2023-2025: LOGOS (Research Group in Analytic Philosophy). Project: 2021- SGR-00276 AGAUR. Catalan Government. PI: Sven Rosenkranz.
Personnel Grants:
2022-2025: Ilia Patronnikov. PhD Grant. FPI-PRE2019-089063. MICINN.
2022-2024: Daniel Gregory. María Zambrano Post-doc. Ministerio de Universidades.
2024-2027: Lucía González Arias: "Social Cognition". FPI-PRE2022-104536. MICINN.
Conference Presentations:
Toribio, J. "Seeing Wrongness". 30th Conference of the European Society for Philosophy and Psychology (ESPP 2023). Prague, Czech Republic, 28-31 August 2023.
Invited Presentations
Toribio, J. "Failing to see wrongness". Centre for Philosophical Psychology, University of Antwerp, Belgium. March 23rd, 2023.
Toribio, J. "Seeing Wrongness". The 17th International Congress of Logic, Methodology and Philosophy of Science and Technology (CLMPST). University of Buenos Aires, Buenos Aires, Argentina, July 24-29, 2023. Keynote speaker.
Scientific Committees
30th European Society for Philosophy and Psychology Conference (ESPP 2023). Prague, Chez Republic, August 28-31, 2023.
Teaching / Supervising
Lucía González Arias (CCIL 2022-23). TFM: Moral perception: seeing the Good, the bad and the ugly. Defense: 04/07/2023.
MA Cognitive Science and Language (CCiL). Philosophy of Language and Cognition. UB.

ICREA**MEMOIR2023**

Juan Manuel Toro
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences

I was born in Bogotá (Colombia) in 1976 and studied Psychology at the Universidad Nacional de Colombia. In 2005, I got a PhD from the Universitat de Barcelona in which I demonstrated that humans share with other animals basic perceptual and computational abilities that we use during language acquisition (this dissertation was awarded the Premio Extraordinario de Doctorado). After my PhD, I worked as a postdoctoral fellow with Jacques Mehler at the Language and Cognitive Development lab at SISSA (Trieste, Italy) where I studied linguistic constrains on computational processes. I moved back to Barcelona as a research fellow under the Ramón y Cajal program. Currently I am an ICREA Research Professor at the Center for Brain and Cognition of the Universitat Pompeu Fabra, where I coordinate the Language and Comparative Cognition Group (http://lcc.upf.edu/).

Research interests

I am interested in studying why language and music have only emerged in humans and not in other animals. I tackle this issue using a variety of experimental techniques and populations that include human adults and infants, and non-human animals. Our studies have demonstrated that some of the building blocks of language learning are found in other animals. For example, we showed that rats extract prosodic information present in speech in a similar way human infants do (a study named one of the five best Ig Nobel prize-winning scientific papers). I am also interested in music, as another ability that might emerge from sensibilities already present in other species. We have shown that consonance advantages are not shared with other animals, and have characterized the biological bases of beat perception and harmonic expectations. With the rise of large language models we are also exploring how processing biases emerge in natural and artificial cognitive systems.

Selected publications

- Santolin C, Crespo-Bojorque P, Sebastian-Galles N & **Toro JM** 2023, 'Sensitivity to the sonority sequencing principle in rats (Rattus norvegicus)', *Scientific Reports*, 13, 17036.

ICREA**MEMOIR2023**

David Torrents Arenales

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)

Life & Medical Sciences

After graduating in Biochemistry and Molecular Biology, I obtained the PhD in Molecular Biology at the University of Barcelona in 2000 in the group of Manuel Palacín working on amino acid transporters and associated genetic diseases. This PhD was awarded with the University PhD Extraordinary Prize. Then I moved with an EMBO long term fellowship to the group of Peer Bork to enter in the world of genomics, at the EMBL in Heidelberg, where I stayed from 2000 to 2006. There, I worked on genome annotation and analysis using bioinformatics approaches. Currently, since 2006, I'm a group leader at the Barcelona Supercomputing Center doing research on biomedical genomics, studying the relationship between changes in the genome and disease.

Research interests

Genomes are the central molecules of life because they carry all the information necessary for the development, the survival and the reproduction of all organisms. Over the lasts 20 years, the study of the genome in a biomedical context has provided valuable information about the genetic and molecular basis of diseases. Current sequencing of DNA allows the incorporation of the genome analysis as an integrated and regular protocol within the health-care system, resulting in a Precision Medicine, where the genomic information will be determinant for a more accurate diagnosis and for the selection of a more precise treatment. In this context, our group and my research activity is focused on the design and implementation of analysis protocols, including artificial intelligence approaches to, ultimately, improve our understanding of the relationship between genomic variation and disease, and to generate the basis for more precise medical care.

Selected publications

- Rodriguez-Fos E, Planas-Fèlix M, Burkert M, Puiggròs M, Toedling J, Thiessen N, Blanc E, Szymansky A, Hertwig F, Ishaque N, Beule D, **Torrents D**, Eggert A, Koche RP, Schwarz RF, Haase K, Schulte JH & Henssen AG 2023, 'Mutational topography reflects clinical neuroblastoma heterogeneity'.
Cell Genom. 3(10):100402.

ICREA**MEMOIR2023**

Diego F. Torres
Institut de Ciències de l'Espai (CSIC - ICE)
Experimental Sciences & Mathematics

I was born in Buenos Aires, where I studied up to obtaining my doctoral degree in physics from the National University at La Plata, working on cosmology and astrophysics of extended gravitational theories. After several years in fellowships around the world, I moved to the Institute of Space Sciences to start a research group on high-energy astrophysics. My research focuses on compact objects and cosmic rays. I have received several scientific awards including the Chinese Academy Presidential Fellowship, its Science Senior Visiting Professorship, the Friedrich Wilhelm Bessel Award of the Humboldt Foundation of Germany, the Shakti Duggal Award on Cosmic Ray Physics of the International Union of Pure and Applied Physics, the Guggenheim Fellowship, and several others. I was Director of the Institute of Space Sciences 2016-2023, and Editor-in-Chief of the Journal of High Energy Astrophysics 2013-2023 among several positions of responsibility.

Research interests

The familiar sights of peacefully shining stars would be replaced by something extreme and variable should you look with gamma-ray eyes. You would be glancing at the most energetic phenomena known in astrophysics: accreting masses around black holes, pulsars, close binaries, regions of stellar formation, explosions of supernovae, and others. I develop theoretical models for these scenarios, and test them with observations using ground-based telescopes and satellites. My research focuses on compact objects and cosmic rays. My earlier research includes gravitation and cosmology; particularly, scalar-tensor theories and non-minimal couplings, scalar dark matter, boson stars, gravitational lensing, and wormholes. I published several papers on all these topics. My research group hosted 50+ scientists since its foundation in 2006. You can know more about all this, including links to my publications, from my website, https://sites.google.com/view/dft-research

Selected publications

- Smith DA, et al. 2023, 'The Third Fermi Large Area Telescope Catalog of Gamma-ray Pulsars
',
 The Astrophysical Journal, 958, 2, 191.
- Bandiera R, Bucciantini N, Martín J, Olmi B, **Torres DF**, et al. 2023, 'Reverberation of pulsar wind nebulae - II. Anatomy of the 'thin-shell' evolution
',
Monthly Notices of the Royal Astronomical Society, 520, 2, 2451-2472.
- Bandiera R, Bucciantini N, Martín J, Olmi B & **Torres DF** 2023 'Reverberation of pulsar wind nebulae - II. Anatomy of the 'thin-shell' evolution',
Monthly Notices of the Royal Astronomical Society, 525, 2, 2839-2850.
- Garcia CR & **Torres DF** 2023, 'Quantitative determination of minimum spanning tree structures: using the pulsar tree for analysing the appearance of new classes of pulsars', *Monthly Notices Of The Royal Astronomical Society*, 520, 1, 599 - 610.
- Hou X, Zhang W, **Torres DF**, Ji L & Li J. 2023, 'Deep Search for Gamma-Ray Emission from the Accreting X-Ray Pulsar 1A 0535+262', *Astrophysical Journal*, 944, 1, 57.
- Illiano G, Papitto A & Ambrosino F, et al. 2023, 'Investigating the origin of optical and X-ray pulsations of the transitional millisecond pulsar PSR J1023+0038', *Astronomy & Astrophysics*, 669, A26.
- Baglio MC, Coti Zelati F, Campana S, et al. 2023, 'Matter ejections behind the highs and lows of the transitional millisecond pulsar PSR J1023+0038', *Astronomy & Astrophysics*, 677, A30.

Selected research activities

Member of Fermi-LAT, LST, and CTA Collaborations.

Director of the Institute of Space Science (ICE-CSIC).

Co-Director of the Institut d'Estudis Espacials de Catalunya (IEEC).

Director of the Maria de Maeztu Award to ICE.

Published 17 papers in first-tier international journals.

Participated in evaluation processes for institutes, projects and professorships of 4 countries.

Editor-in-chief of JHEAp (Elsevier).

Secretary National Committee for Astronomy.

ICREA**MEMOIR2023**

Xavier Trepat
Institut de Bioenginyeria de Catalunya (IBEC)
Engineering Sciences

Xavier Trepat received a BSc in Physics in 2000 and a BSc in Engineering in 2001. In 2004 he obtained his PhD from the Medical School at the University of Barcelona. He then joined the Program in Molecular and Integrative Physiological Sciences at Harvard University as a postdoctoral researcher. In 2008 he became a "Ramón y Cajal" researcher at the University of Barcelona and in January 2011 an ICREA Research Professor at the Institute for Bioengineering of Catalonia (IBEC). He is Group Leader of the Integrative Cell and Tissue Dynamics research line at IBEC. In 2015, he won the Banc de Sabadell Award for Biomedical Research and, in 2021, the "Constantes y Vitales" award from A3Media. In 2018, he was elected EMBO Member.

Research interests

We aim at understanding how physical forces and molecular control modules cooperate to drive biological function. We develop new technologies to map and perturb the main physical properties that determine how cells and tissues grow, move, invade and remodel. By combining this physical information with systematic molecular perturbations and computational models we explore the principles that govern the interplay between chemical and physical cues in living tissues. We study how these principles are regulated in physiology and development, and how they are derailed in cancer.

Selected publications

– **Trepat X** & Alert R 2023, 'How to bridge the gap between theory and experiments in biological physics' *Nature Physics*, 19, 12, 1738–1739.

– Barbazan J, Pérez-González C, Gómez-González M, Dedenon M, Richon S, Latorre E, Serra M, Mariani P, Descroix S, Sens P, **Trepat X** &, Vignjevic DM 2023, 'Cancer-associated fibroblasts actively compress cancer cells and modulate mechanotransduction', *Nature Communi*cations, 14, 1, 6966.

– Abenza JF, Rossetti L, Mouelhi M, Burgués J, Andreu I, Kennedy K, Roca-Cusachs P, Marco S, García-Ojalvo J, & **Trepat X** 2023, 'Mechanical control of the mammalian circadian clock via YAP/TAZ and TEAD' *Journal of Cell Biology,* 222, 9, e202209120.

– Marín-Llauradó A, Kale S, Ouzeri A, Golde T, Sunyer R, Torres-Sánchez A, Latorre E, Gómez-González M, Roca-Cusachs P, Arroyo M, & **Trepat X** 2023, 'Mapping mechanical stress in curved epithelia of designed size and shape', *Nature Communications*, 14, 1.

– Matejci M & **Trepat X** 2023, 'Mechanobiological approaches to synthetic morphogenesis: learning by building', *Trends In Cell Biology*, 3, 2, 95-111.

– Pallarès ME, Pi-Jauma I, Fortunato IC, Grazu V, Gomez-Gonzalez M, Roca-Cusachs P, de la Fuente JM, Alert R, Sunyer R, Casademunt J & **Trepat X** 2023, 'Stiffness-dependent active wetting enables optimal collective cell durotaxis', *Nature Physics*, vol. 19, pp 279-289

ICREA**MEMOIR2023**

Isabel Usón Finkenzeller
Institut de Biologia Molecular de Barcelona (CSIC - IBMB)
Life & Medical Sciences

Isabel Usón Finkenzeller completed a Chemistry degree (1987) and Ph. D. (1992) in synthetic organometallic chemistry at the U. of Zaragoza. In November 1992, she joined Procter & Gamble as Product Research Scientist in Brussels, gaining insight into the science and management of industrial chemistry. She moved as HCM postdoc to the U. of Göttingen in 1994. She has developed methods for crystallography for 23 years, first within the group of Prof. Sheldrick FRS, author of SHELX, during her postdoctoral research and Habilitation (1994-2001) and as of July 2001 leading an emergent group. September 2003, she moved to the Institute of Molecular Biology of Barcelona (IBMB-CSIC) as ICREA Research Professor. Her work on structural chemistry and biology has led to over 180 publications. The software ARCIMBOLDO, SHELX and VAIRO are the central output of her work. She is Life Member of Clare Hall College (U. Cambridge).

Research interests

Structural biology provides eyes to the life sciences. This field, traditionally dominated by crystallography, has been enriched by atomic resolution microscopy and accurate structure predictions using deep learning to relate knowledge. New challenges can be conquered harnessing further sources of information to experiments and predictions. We are developing VAIRO to inform predictions with experiments and incorporating predictions into rational, integrated structural methods implemented in our own software ARCIMBOLDO and in SHELX. Our methods exploit the stereochemical knowledge present in small, local folds to determine and interpret structure within chemical, biomedical and biotechnological research. To extricate experimental information from model bias and data pathologies we propose a change of the validation paradigm (average stereochemistry) into verification (outperform alternative hypotheses).

Selected publications

- Agirre J, Atanasova M, Bagdonas H, et al. 2023, 'The CCP4 suite: integrative software for macromolecular crystallography', *Acta Crystallographica Section D-structural Biology*, 79, 6, 449 - 461.
- Simpkin AJ, Caballero I, McNicholas S, et al. 2023, 'Predicted models and *CCP*4', *Acta Crystallographica Section D-structural Biology*, 79, 9, 806 - 819.
- Logan RS, Flores MD, Millan C, et al. 2023, 'Fragment-Based Ab Initio Phasing of Peptidic Nanocrystals by MicroED', *Acs Bio & Med Chem Au*, 3, 2, 201-210.
- Gubensäk N, Sagmeister T, Buhlheller C, Di Geronimo B, Wagner GE, Petrowitsch L, Gräwert MA, Rotzinger M, Berger TMI, Schäfer J, **Usón I**, Reidl J, Sánchez-Murcia PA, Zangger K & Pavkov-Keller T 2023, '*Vibrio cholerae's* ToxRS bile sensing system', *Elife*, 12.
- Borges RJ, Cardoso FF, de Carvalho C, et al. 2023, 'Structural and functional studies of a snake venom phospholipase A2-like protein complexed to an inhibitor purified from Tabernaemontana catharinensis'. *Biochimie*, 206, 105 - 115.
- Brehm W, Triviño J, Krahn JM, **Usón I** & Diederichs K, 2023, 'XDSGUI: a graphical user interface for XDS, SHELX and ARCIMBOLDO', *J. Appl. Cryst*, 56, 1585-1594.

ICREA**MEMOIR2023**

Juan Valcárcel Juárez

Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Juan Valcárcel studied biology and chemistry at the Universities of Santiago de Compostela and Autónoma de Madrid. He obtained his PhD in 1990 for work carried out at the Centro de Biología Molecular Severo Ochoa under the supervision of Juan Ortín. He did postdoctoral work in the laboratory of Michael Green at the University of Massachusetts and in 1996 he joined the European Molecular Biology Laboratory in Heidelberg as a group leader. In 2002 his group moved to the Centre de Regulació Genòmica in Barcelona, where he is a senior scientist and ICREA Research Professor. Since the time of his PhD work, his research has focused on how pre-mRNAs are spliced and how this process can be regulated.

Research interests

The genome provides the instructions to build and maintain the function of a living organism. Strangely, in complex organisms these instructions are not written as continuous messages, but rather as smaller pieces interrupted by meaningless text. This arrangement has the advantage that the pieces can be combined in different ways to generate alternative instructions. We study the molecular machinery that puts messages together and how the production of alternative messages is regulated.

Selected publications

- Juan-Mateu J, Bajew S, Miret-Cuesta M, et al. 2023, 'Pancreatic microexons regulate islet function and glucose homeostasis', *Nature Metabolism*, 5, 219-236.
- Juan-Mateu J & **Valcárcel J** 2023, 'Minority report: The minor spliceosome as a novel cancer vulnerability factor', *Molecular Cell*, 83, 12, 1958 - 1960.
- Soni K, Jagtap PKA, Martinez-Lumbreras S, et al. 2023, 'Structural basis for specific RNA recognition by the alternative splicing factor RBM5', *Nature Communications*, 14, 1, 4233.
- Rogalska M, Vivori C & **Valcárcel J** 2023, 'Regulation of pre-mRNA splicing: roles in physiology and disease, and therapeutic prospects'. *Nature Reviews Genetics,* 24, 251-269.
- Guerra-Moreno A, & **Valcárcel J** 2023, 'AI-assisted proofreading of RNA splicing', *Genes & Development,* 37, 945-947.
- López-Oreja I, Gohr A, Playa-Albinyana H, Giró A, Arenas F, Higashi M, Tripathi R, López-Guerra M, Irimia M, Aymeric M, **Valcárcel J***, Bonnal S* & Colomer D* 2023, 'Mechanisms of SF3B1 K700E mutation-mediated sensitization to H3.8800 splicing inhibitor in chronic lymphocytic leukemia cells'.

Life Science Alliance, 6, 11, e202301955.

ICREA**MEMOIR2023**

Alfonso Valencia Herrera

Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC - CNS)

Life & Medical Sciences

Computational biologist, pioneer scientist applying computer science to solve biological problems, recognized as leader in his field. Focused on the analysis of large collections of genomic data, especially protein interaction networks applied to (epi)Genomics, Cancer Biology and Precision Medicine, his group train the application of Natural Language technology to the biomedical domain. He earned a PhD in Biochemistry and Molecular Biology (UAM) plus a PostDoctoral researcher in Bioinformatics (EMBL Heid). Prof. at ICREA, Scientific Director and Director's of Life Sciences in BSC-CNS. Head of the Spanish node of the European Infrastructure for Life-Science Information, ELIXIR. Founding member and former President of the ISCB. Elected member of the European Molecular Biology Organization (EMBO). Executive Editor of "Bioinformatics" OUP, Section Editor of Mol Oncol. Editor FEBS Letters, Prof. Honoris Causa by the Danish Technical University.

Research interests

His research interest is the development of Computational Biology methods and their application to biomedical problems. Some of the computational methods he developed are considered pioneering work in areas such as biological text mining, protein coevolution, disease networks and more recently modelling cellular systems (digital twins). He participates in some of the key cancer related international consortia. In terms of community services, he is one of the initial promoters of what is now the ELIXIR infrastructure, founder of the Spanish Bioinformatics network and founder member and former president of ISCB the professional association of Bioinformaticians and the Executive Editor of the main journal in the field (Bioinformatics OUP).

Selected publications

– Ponce-de-Leon M, Montagud A, Noël V, Meert A, Pradas G, Barillot E, Calzone L & Valencia A 2023, 'PhysiBoSS 2.0: a sustainable integration of stochastic Boolean and agent-based modelling frameworks', *npj Systems Biology and Applications*, 9 (54).

– Sánchez-Valle J & **Valencia A** 2023, 'Molecular bases of comorbidities: present and future perspectives', *Trends In Genetics*, 39, 10, 773 – 786.

– Rovirosa L, Tomás-Daza L, Urmeneta B, **Valencia A** & Javierre BM 2023, 'An Integrated Workflow to Study the Promoter-Centric Spatio-Temporal Genome Architecture in Scarce Cell Populations', *Jove-journal Of Visualized Experiments*, 194, 10.3791/65316.

– Tomás-Daza L, Rovirosa L, López-Martí P, et al. 2023, 'Low input capture Hi-C (liCHi-C) identifies promoter-enhancer interactions at high-resolution'. *Nature communications 14, 268.*

– Armaos A, Serra F, Núñez-Carpintero I, Seo JH, Baca SC, Gustincich S, **Valencia A**, Freedman ML, Cirillo D, Giambartolomei C & **Tartaglia GG** 2023, 'The PENGUIN approach to reconstruct protein interactions at enhancer-promoter regions and its application to prostate cancer', *Nature communications*, 14 – 1.

Selected research activities

Director of two thesis:
1) Network-based method for biological data integration in precision medicine. *Iker Núñez*
2) Evaluating protein folding predictions and functional annotations: A comprehensive analysis of recent advancements in the protein structural field. *Victoria Isabel Ruiz Serra*
Conferences & talks:
-July 10th. Keynote, "Network-Based Approaches to Two Different Disease Scenarios" NetBioMed.
-July 24th. Keynote, "Network-based Perspectives on Two Diverse Disease Scenarios: Rare Diseases and COVID-19 Spread in Spain" ISMB/ECCB 2023
-June 14th. Invited section talk " The cancer data management and analysis infrastructure proposed by EOSC4CANCER" EACR2023
-April 19th. Invited talk. "Personalized Medicine and Virtual Digital Twins in Accelerating Times". EATRIS-Plus Summer School in Personalised Medicine. INFARMED

ICREA**MEMOIR2023**

Sergio O. Valenzuela
Institut Català de Nanociència i Nanotecnologia (ICN2)
Engineering Sciences

Sergio O. Valenzuela is an ICREA Prof. at the Catalan Institute of Nanoscience and Nanotechnology (ICN2). He leads the Physics and Engineering of Nanodevices group, which focuses on quantum transport, spintronics and thermoelectricity in quantum and topological materials. He has pioneered nonlocal devices to study the spin Hall effect, thermopiles to isolate the magnon drag in ferromagnets and implemented novel qubit control and spectroscopy methods. Prof. Valenzuela received a PhD in Physics at the University of Buenos Aires and held research positions at Harvard University and MIT. He is recipient of the Giambiagi and IUPAP Young Scientist Prizes, a ERC Consolidator Grant and is a 2022 elected member of the Academia Europaea and 2022 APS Fellow. He is also Principal Investigator of the Graphene Flagship and Grantor of the ICN2 "Severo Ochoa" Centre of Excellence Project.

Research interests

In recent years, electronic devices have been scaled down to nanoscale sizes where quantum effects begin to interfere with their functioning. Materials and devices in such scales often present unexpected and counterintuitive physical properties. Prof. Valenzuela's Group focus is the development of novel devices, which are designed to gain insight of specific physical properties of the system components, relevant both for fundamental reasons and applications at the nanoscale. The current research interests of the group span spintronics, spin caloritronics, quantum transport and manipulation, using 2D materials and topological insulators, and quantum metrology. For more information see: http://nanodevices.icn2.cat.

Selected publications

- Lv H, da Silva A, Figueroa AI, et al. 2023, 'Large-Area Synthesis of Ferromagnetic Fe5-xGeTe2/Graphene van der Waals Heterostructures with Curie Temperature above Room Temperature' Small 19, iss. 39, 2301387.
- Cano BM, Ferreiros Y, Pantaleon PA, et al. 2023, 'Experimental Demonstration of a Magnetically Induced Warping Transition in a Topological Insulator Mediated by Rare-Earth Surface Dopants', *Nano Letters*, 23, 13, 6249-6258.
- Jamet M, Vaz DC, Sierra JF, Světlík J, **Valenzuela SO**, Dlubak B, Seneor P, Bonell F & Guillet T 2023, *Two-Dimensional Spintronics,* Beyond-CMOS: State of the Art and Trends.
- Figueroa AI, Lv H, Herfort J, Czubak D, Zallo E, Guillemard C, Valvidares M, Rubio-Zuazo J, López-Sánchez J, **Valenzuela SO**, Hanke M, Ramsteiner M & Lopes JMJ 2023, 'Microscopic magnetic properties of two-dimensional magnetic FexGeTe2 films on graphene', *IEEE Int Mag Conf,* 1-2.

Selected research activities

Selected Invited Talks and Lectures

– 2D Materials Day, National Graphene Institute, the University of Manchester, June 26, 2023, Manchester, UK.
– Paul Drude Institute, December 15, 2023, Berlin Germany.
– MRS-Materials Research Society Fall Meeting, November 26-December 1, Boston, USA.
– Lecturer, ESONN'23 European School on Nanoscience & Nanotechnologies (Spintronics), September 2023, Grenoble, France.

Other Activities

– Focus Topic Leading Organizer "*Spin-Dependent Phenomena in Semiconductors, including 2D Materials and Topological Systems*", APS March Meeting, March 5-10, Las Vegas, US.
– Co-organizer and co-chair "T*opological Matter Conference*" March 28-31, Athens, Greece.
– Coordinator of FET-PROACTIVE Project "*Dissipationless topological channels for information transfer and quantum metrology*".
– Editorial Board in *npj Spintronics* (Nature Publishing Group) and in *Advanced Physics Research* (Wiley).

ICREAMEMOIR2023

Jeroen van den Bergh
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences

ICREA Research Professor, Institute of Environmental Science & Technology, Universitat Autònoma de Barcelona (ICTA-UAB). Honorary Professor of Environmental & Resource Economics, School of Economics & Business and Institute for Environmental Studies, Vrije Universiteit Amsterdam (VUA). Head of the research group Environmental & Climate Economics at ICTA-UAB. Previously Professor of Environmental Economics (1997-2007) at VUA, and editor-in-chief of the journal 'Environmental Innovation & Societal Transitions' (2011-2021). He holds a Master degree in Econometrics & Operations Research from Tilburg University, and a PhD from VUA. He was awarded the Shell Sustainability Research Prize 2002, IEC's ("Sant Jordi") Environmental Prize 2011, two ERC Advanced Grants (2017 & 2023), and an honorary doctorate from the Netherlands' Open University (2019). His latest book is 'Human Evolution Beyond Biology and Culture: Evolutionary Social, Environmental and Policy Sciences' (Cambridge Univ. Press).

Research interests

Working on the interface of environmental economics, climate-policy research, and innovation studies. Research in recent years focuses on effectiveness and public support of climate policy. This accounts for undesirable systemic impacts, such as energy rebound and carbon leakage, and the role of dynamic climate clubs of countries. It makes use of methods and insights from behavioural and evolutionary economics, operationalized through agent-based modelling, questionnaire surveys and online experiments. Past work covered integrated ecological-economic modelling, contributions to the growth-versus-environment debate, environmental policies applied to urban-transport issues, biodiversity valuation and policy, circular economy and recycling, and international aspects of environmental policy.

Selected publications

- **van den Bergh J** 2023, 'Climate policy versus growth concerns: Suggestions for economic research and communication'. *Journal of Behavioral and Experimental Economics* 107, 102125.
- **van den Bergh J** & Savin I 2023, 'Political leadership, climate policy and renewable energy', *PNAS* 120 (14), e230129112.
- **van den Bergh J**, van Beers C & King LC 2023, 'Climate activists - rethink fossil-fuel subsidy cuts', *Nature* 617, 465.
- Walker, B., ... **J. van den Bergh**, et al. (2023). Response diversity as a sustainability strategy, *Nature Sustainability* 6, 621–629.
- **van den Bergh J** & Savin I 2023, 'The role of interest in the unsustainability of growth: analytical findings using an accounting model', *Sustainability: Science, Practice and Policy,* 19(1), 2262830.
- Castro-Santa J, Drews S & **van den Bergh J** 2023, 'Low-carbon consumption through advertising and social norms', *Journal of Behavioral and Experimental Economics,* 102, 101956.
- Drews S & **van den Bergh J** 2023, 'Behavioral interventions for climate mitigation in developing countries: Overview and prospects', *Journal of Environment and Development*, 32, 3, 223 - 242.

Selected research activities

Invitation with two other experts for a 3-hour round-table discussion about Dutch climate policy with Members of Parliament of The Netherlands (19 Jan. 2023).

ICREA**MEMOIR2023**

Niek van Hulst
Institut de Ciències Fotòniques (ICFO)
Engineering Sciences

Following study in Astronomy and Physics, I obtained my PhD (1986) in Molecular & Laser-Physics at University of Nijmegen (NL), on microwave-laser double resonance molecular-beam spectroscopy. After research in non-linear optics of organic materials, integrated optics, atomic force and near-field optical microscopy, since 1997 full Professor at MESA+ Institute for NanoTechnology, Univ. Twente (NL) with focus on single molecule detection and scanning probe technology. In 2005, attracted by the Catalan quality-based science policy, I started as ICREA Research Professor and senior group leader at ICFO – the Institute of Photonic Sciences, within The Barcelona Institute of Science & Technology; I was Head Academic Programs, now chair at ICFO NanoFabrication Laboratory. Recipient of 2003 Körber European Science Award, 2010 City of Barcelona Prize; 2017 European Physical Society Prize; ERC Advanced Grants in 2010, 2015 and 2021.

Research interests

My current interest is to control light interaction at the nanometer scale. To this end, my group specializes on optical antennas, with nanoscale hot spots, and on coherent control schemes to command light on the "femto-nano" scale. We study individual molecules, quantum dots and single proteins, in strong interaction with nanoantenna-cavities and sub-10-fs pulses; controlling excitation-emission rates, direction, spectra, polarization, single photon character. We focus particularly on transport and coupling in single light-harvesting antenna complexes at native conditions, to unravel the efficiency and robustness of energy conversion in such natural molecular antennas. At ICFO I aim to stimulate young researchers, towards well-rooted skilled scientists and assertive critical thinkers, ready to shape their future and sustain the world. To reflect & recharge, I like to touch ground in the Massis del Garraf, rambling between Mediterranean waters and Catalan winefields.

Selected publications

- Lo Gerfo M G, Bolzonello L, Bernal-Texca F, Martorell J & **van Hulst NF** 2023, 'Spatiotemporal Mapping Uncouples Exciton Diffusion from Singlet-Singlet Annihilation in the Electron Acceptor Y6', *J. Phys. Chem. Lett.* **14** (7), 1999 - 2005. Journal Cover.
- Ortiz-Orruño U, Quidant R, **van Hulst NF**, Liebel M & Ortega Arroyo J, 2023, 'Simultaneous sizing and refractive index analysis of heterogeneous nanoparticle suspensions', *ACS Nano* **17** (1), 221–229.
- Hörmann M, Visentin F, Zanetta A, et al. 2023, 'High-Sensitivity Visualization of Ultrafast Carrier Diffusion by Wide-Field Holographic Microscopy', *Ultrafast Sci.* **3**, 0032.
- Block A, Yu R, Un L-W, Varghese S, Liebel M, **van Hulst NF**, Fan S, Tielrooij K-J, Sivan Y, 2023, 'Observation of negative effective thermal diffusion in gold films', *ACS Photonics* **10** (4), 1150-1158.
- Varghese S, Mehew JD, Block A, Saleta Reig D, Wozniak P, Farris R, Zanolli Z, Ordejón P, Verstraete MJ, **van Hulst NF**, Tielrooij K-J, 2023, 'A pre-time-zero spatiotemporal microscopy technique for the ultrasensitive determination of the thermal diffusivity of thin films', *Rev. Sci. Instrum.* **94**, 034903.
- Bolzonello L, Bruschi M, Fresch B & **van Hulst NF** 2023, 'Nonlinear Optical Spectroscopy of Molecular Assemblies: What Is Gained and Lost in Action Detection?', *J. Phys. Chem. Lett.* **14** (50), 11438 - 11446.
- Sağlamkaya E, Musiienko A, Shadabroo MS, Sun B, Chandrabose S, Shargaieva O, Lo Gerfo Morganti G, **van Hulst NF**, Shoaee S, 2023, "What's special about Y6; the working mechanism of neat Y6 organic solar cell', *Mater. Horiz.* **10**, 1825–1834

ICREA**MEMOIR2023**

Licia Verde
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Originally from Venice (Italy) Licia Verde studied physics as an undergraduate at the Università degli Studi di Padova. She obtained her PhD from the University of Edinburgh (UK) sponsored by a Marie Curie grant from the EU, and then moved to a research assistant position at Princeton University and at Rutgers University (USA). At Princeton she held a Chandra postdoctoral fellowship and a Spitzer postdoctoral fellowship and she entered the WMAP science team. She spent 4 years as faculty at the University of Pennsylvania (USA). In September 2007, she moved to Barcelona as an ICREA Research Professor. Verde has received the 2012 Gruber prize in Cosmology, the Narcis Monturiol medal 2017, the 2018 Breakthrough prize in fundamental physics, the premi Nacional de Recerca 2018, the European Astroniomical Society Lodewijk Woltjier Lecture 2019, and the Premi Rei Jaume I for fundamental science in 2021.

Research interests

I am interested in Cosmology, which is the study of the origin, evolution and composition of the universe. Cosmology has a very successful standard model, which, however, is unsatisfactory and surely is incomplete. According to the model, most of the matter in the Universe is dark, exotic and only inferred indirectly; also more than 70% of what makes up the universe is something that suggests that some energy is associated with the nothingness of vacuum: "dark energy". Dark energy is one of the major problems in physics today and is motivating a host of future and planned observations. I study the "large-scale distribution of galaxies", their statistical properties and how the emerge and evolve from the Universe's initial conditions, which can be gleaned from the statistical properties of the heat left over from the big bang. These observations are used to shed light on the Universe composition (including the dark energy) evolution and ultimately the physics governing it.

Selected publications

- Jung G, Ravenni A, Baldi M, Coulton WR, Jamieson D, Karagiannis D, Liguori M, Shao H, **Verde L**, Villaescusa-Navarro F & Wandelt BD 2023, 'Quijote-PNG: The Information Content of the Halo Mass Function', *Astrophysical journal*, 957 - 1.
- Mukhanov V & **Verde L** 2023, 'JCAP 20th anniversary special issue: editorial', *Journal Of Cosmology And Astroparticle Physics*, 11, 018.
- Mukhanov V & **Verde L** 2023, 'JCAP 20th anniversary retrospective: editorial', *Journal Of Cosmology And Astroparticle Physics*, 6, 041.
- Jung G, Karagiannis D, Liguori M, et al. 2023, 'Quijote-PNG: Quasi-maximum Likelihood Estimation of Primordial Non-Gaussianity in the Nonlinear Halo Density Field', *Astrophysical Journal*, 948, 2, 135.
- Brieden S, Gil-Marin H & **Verde L** 2023, 'A tale of two (or more) h's', *Journal Of Cosmology And Astroparticle Physics*, 2023, 4, 023.
- Coulton WR, Villaescusa-Navarro F, Jamieson D, et al. 2023, 'Quijote-PNG: The Information Content of the Halo Power Spectrum and Bispectrum', *Astrophysical Journal*, 943, 2, 178.
- Coulton WR, Villaescusa-Navarro F, Jamieson D, et al. 2023, 'Quijote-PNG: Simulations of Primordial Non-Gaussianity and the Information Content of the Matter Field Power Spectrum and Bispectrum', *Astrophysical Journal*, 943, 1, 64.

Selected research activities

Scientific Director of Journal of Cosmology and Astroparticle physics (JCAP)

arXiv science advisory board (Chair)

ICREA**MEMOIR2023**

Isabelle Vernos
Centre de Regulació Genòmica (CRG)
Life & Medical Sciences

Isabelle Vernos obtained a PhD in Biology from the University Autonoma of Madrid in 1989. She was a postdoc first in Cambridge (UK) and then EMBL (Heidelberg), becoming staff scientist in1996. In 2001, she established an independent research group as team leader at EMBL. In 2005, she obtained an ICREA Research Professor position to join the Cell and Developmental Biology program at the CRG. She is EMBO member since 2005. She was a member of the ERC Scientific Council in 2011-2019 and chaired its Gender Balance working group in 2013-2019. From 2012 to 2015, she was a member of the Advisory Board for Science, Technology and Innovation for the Spanish Ministry of Economy and Competitivity. Isabelle Vernos has published more than 90 research papers and reviews in high impact international journals.

Research interests

Life depends on the ability of cells to divide while maintaining their genomic integrity. Cell division is therefore a critical process and yet involves the full reversible reorganization of most of intra-cellular components. In particular it involves the transient assembly of a microtubule based molecular machine, the bipolar spindle that organizes and segregates the chromosomes during cell division. We recently identified a novel mechanism involving the postranslational modification of the spindle microtubules that is required for chromosome segregation fidelity in normal cells. This mechanism is at stake in cancer cells that often misegregate chromosomes. Indeed aneuploidy and chromosomal instability are two hallmarks of particularly aggressive tumors. Our aim is to understand how this mechanism and other regulatory signalling pathways ensure the proper execution of mitosis and identify novel targets to prevent cancer cell proliferation.

Selected publications

- Laguillo-Diego A, Kiewisz R, Martí-Gómez C, Baum D, Müller-Reichert T & **Vernos I** 2023, 'MCRS1 modulates the heterogeneity of microtubule minus-end morphologies in mitotic spindles' *Mol Biol Cell*, 1;34(1):ar1.

ICREA**MEMOIR2023**

Fernando Vidal
Universitat Rovira i Virgili (URV)
Humanities

Born in Buenos Aires, I received a BA from Harvard University, graduate degrees from the Universities of Geneva and Paris, and a Habilitation from the École des Hautes Études en Sciences Sociales. Before moving in 2018 to the field of medical anthropology, I worked as historian of the human sciences from the Renaissance to the present. I was Guggenheim Fellow, Athena Fellow of the Swiss National Science Foundation, Visiting Scholar at the American Academy in Rome and at Harvard University, Fellow at the Brocher Foundation, Visiting Professor in Buenos Aires, Paris, Rio de Janeiro, Mexico and Kyoto, and permanent investigator at the Max Planck Institute for the History of Science. I was elected to the Academia Europaea in 2017, and in 2021 received the Carlson Award "in recognition of extraordinary scholarship in the history of the human sciences."

Research interests

How do values and the production and application of scientific knowledge interact in particular contexts to shape views and practices of the human? This has been the common question of my main research interests, which have long concerned the history of the mind/brain sciences from the early modern "sciences of the soul" to contemporary neurosciences. I keep remain interested in those topics and problem areas (see Lines of Research), but now in the framework of medical anthropology and phenomenology. My main current project, which involves a network of researchers, patients and caregivers in Europe, the US and Japan, examines how the "disorders of consciousness" articulate with conceptions of personhood and forms of subjectivity. It focuses on the locked-in syndrome (known to the public through the film *The Diving Bell and the Butterfly*), a condition that leaves the mind intact, but the body almost entirely paralyzed.

Selected research activities

My URV colleague, Prof. Blanca Deusdad and I have organized at the Medical Anthropology Research Center an open lecture series on Ethics and Anthropology, which should become the basis of an edited volume.

ICREA**MEMOIR2023**

Anton Vidal i Ferran
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics

Anton Vidal graduated in Chemistry at the "Institut Químic de Sarrià" in 1987 and completed his PhD at the same institution in 1992 with Prof. P. Victory. Throughout the two post-doctoral appointments that followed (at the University of Cambridge with Prof. J.K.M. Sanders and the University of Barcelona with Prof. M.A. Pericàs) he studied topical and diverse areas of chemistry such as Supramolecular Chemistry and aspects of Enantioselective Catalysis. He had the opportunity to complement his academic background with the industrial experience gained during his tenure in a number of research departments at Bayer-AG (Leverkusen). Following the appointment as ICREA Research Professor (Catalan Institution for Research and Advanced Studies) he started his independent research activities as a Group Leader at the ICIQ in September 2003. In October 2019, he moved as Research Professor to the Department of Inorganic and Organic Chemistry at the University of Barcelona.

Research interests

Our current objectives encompass developing efficient, reliable and selective catalytic systems for synthetic transformations of interest, and studying their use to prepare relevant products for the life science and fine chemical sectors. Crucial aspects of this work include the modularity of the catalytic systems, the versatility of the synthetic strategies for their preparation and the incorporation of supramolecular motifs (when appropriate) in the catalyst's structure to achieve additional function, taking into account the issue of sustainability. In terms of the catalytic transformations under homogeneous conditions that are being studied, our research interests focus on generating value-added products from unsaturated compounds through pivotal chemical transformations such as stereoselective hydrogenations, hydroformylations, hydroalkoxylations, hydrovinylations and hydroborations and C-C couplings on non-halogenated substrates.

Selected publications

- Martínez-Bascuñana A, Núñez-Rico JL, Carreras L & **Vidal-Ferran A** 2023, 'Counterion Variation: A Useful Lever for Maximizing the Regioselectivity in the Hydroboration of Terminal Alkynes', *ACS Catalysis*, 13, 10447 - 10456.
- Núñez-Rico JL, Cabezas-Giménez J, Lillo V, Balestra SRG, **Galán-Mascarós JR**, Calero S & **Vidal-Ferran A** 2023, 'TAMOF-1 as a Versatile and Predictable Chiral Stationary Phase for the Resolution of Racemic Mixtures',
ACS Appl. Mater. Interfaces, 15, 39594-39605.
- Eusamio J, Medina YM, Córdoba JC, **Vidal-Ferran A** & *et al.* 2023, 'Rhodium and Ruthenium Complexes of Methylene-Bridged, *P*-Stereogenic, Unsymmetrical Diphosphanes', *Dalton Transactions*, 52, 2424-2439.

Selected research activities

- Keynote lecturer at the 24th International Conference on Phosphorus Chemistry (ICPC24), "Halogen bond-assembled metal complexes as (stereo)selective catalysts" (November 2023, Ningbo, China), amongst other contributions as lecturer at conferences and PhD programs.

- Principal investigator on a collaborative research program with COVESTRO AG for developing new catalysts for transformations of COVESTRO's interest.

- Evaluator of projects for a number of national and international chemistry panels and reviewer of articles for a number of editorial boards (e.g., Springer Nature Publishing AG, ACS, Wiley, RSC, Thieme and Elsevier).

- Student promotions: Andrés Romero-Navarro (PhD Thesis from the Rovira i Virgili University), Alba Martínez-Bascuñana (PhD Thesis from the University of Barcelona) and David Mir Molina (Bachelor Thesis from the University of Barcelona). Supervision of 2 PhD students.

- Filing of the patent "Supramolecular hydroformylation catalysts" (Patent number: EP23382305; filed on the 30th March 2023, publication pending) on a highly efficient catalyst for hydroformylation reactions towards linear aldehydes.

ICREAMEMOIR2023

Miquel Vila Bover
Vall d'Hebron Institut de Recerca (VHIR)
Life & Medical Sciences

Miquel Vila received his MD from the University of Barcelona (Spain) and then moved to the laboratory INSERM U289 (Prof. Y. Agid) at the Salpêtrière Hospital (Paris, France), where he obtained a Master degree (DEA) and PhD in Neuroscience from the University of Paris 6. From 1998 to 2001 he worked as a postdoctoral researcher at the laboratory of Dr. S. Przedborski at the Dept. of Neurology of Columbia University (New York, USA). In 2001, he obtained a tenure-track position as Assistant Professor of Neurology at Columbia University, a $1M-R01 NIH grant and the US permanent residency (outstanding researcher category). In December 2005, he moved back to Barcelona as an ICREA Research Professor to create and lead a new research group on Neurodegeneration at the Vall d'Hebron Research Institute, with the support of a 1.5M€ European Commission's Marie Curie Excellence Grant. He also holds positions as Associate Professor at the UAB and as Principal Investigator at the CIBERNED.

Research interests

Our research is geared toward elucidating the molecular mechanisms of neuron cell death occurring in Parkinson's disease, the second most common neurodegenerative disorder after Alzheimer's dementia, in order to: (i) identify biomarkers for the diagnosis, early detection, patient stratification, disease progression, prognosis or response to treatment, (ii) identify new molecular targets for potential therapeutic intervention, (iii) develop novel therapeutic strategies with disease-modifying potential for this currently incurable disease, (iv) unravel molecular pathways common to other neurodegenerative diseases.

Selected publications

- Chocarro J, Rico AJ, Ariznabarreta G, et al. 2023, 'Neuromelanin accumulation drives endogenous synucleinopathy in non-human primates', *Brain,* 146, 12, 5000-5014.
- Teil M, Dovero S, Bourdenx M, et al. 2023, 'Cortical Lewy body injections induce long-distance pathogenic alterations in the non-human primate brain.', *Npj Parkinson's Disease*, 9, 1, 135.
- de Fàbregues O, Sellés M, Ramos-Vicente D, Roch G, **Vila M** & Bové J 2023, 'Relevance of tissue-resident memory CD8 T cells in the onset of Parkinson's disease and examination of its possible etiologies: infectious or autoimmune?', *Neurobiology Of Disease*, 187, 106308.
- Gonzalez-Sepulveda M, Compte J, Cuadros T, et al. 2023, 'In vivo reduction of age-dependent neuromelanin accumulation mitigates features of Parkinson's disease', *Brain*, 146, 3, 1040-1052.

Selected research activities

- Organization of the 6th World Parkinson Congress 2023 (Barcelona, Spain), as co-Chair of the Local Organizing Committee, Member of the Basic Science Program Committee and Member of the Steering Committee of the World Parkinson Coalition.
- Member of the the Steering Committee of the International Parkinson and Movement Disorder Society (MDS) Basic Science Special Interest Group (MDS-BSSIG), which oversees the development of educational programs worldwide and interacts with the MDS leadership to promote and survey interest in Basic Science of Movement Disorders.
- Co-organizer, Co-Director and Faculty of the MDS-European Section Course *Controversies in Parkinsons's Disease Research*, Bordeaux, France (2023).

ICREA**MEMOIR2023**

Josep Vilardell Trench
Institut de Biologia Molecular de Barcelona (CSIC - IBMB)
Life & Medical Sciences

Since 2010 ICREA Research Professor at the Molecular Biology Institute of Barcelona (IBMB). (2002) Group Leader at the Center for Genomic Regulation. (1991) Post-doc at the Albert Einstein College of Medicine (New York), working on mechanisms of pre-mRNA splicing in yeast. (1990) PhD in Biochemistry by the Universitat Autònoma de Barcelona (UAB), with research on the regulation of gene expression by the plant hormone absicic acid in maize, supervised by Dr. Montserrat Pagès at the Center for Research and Development (CID), Barcelona. (1988) BA in Sciences (Biochemistry), UAB. IBMB Vice-director Nov 2018 – June 2022.

Research interests

Most genes bear interruptions by meaningless segments that are to be removed. This task is catalyzed a machine, the spliceosome, akin to a genome's ghostwriter, possibly the most complex enzyme in an eukaryotic cell. Why such convoluted, dangerous, and wasteful genomic layout, escapes us. But by controlling the spliceosome it is possible to get diverse mRNAs from a single pre-mRNA sequence, enlarging the information content of the genomes. The current model on how the spliceosome works hinges on a "splicing code" that guides the spliceosome and it is built using RNA sequences and RNA-binding proteins. Our goal is to contribute to deciphering this code. For this we follow a reductionist scheme with yeast, using molecular and computational approaches to study the initial steps of splicing and their control. We are finding aspects of the spliceosome that must impact the splicing code itself, implicating that its role in gene expression is even more complex than it is assumed.

ICREA**MEMOIR2023**

Peter Wagner
Universitat de Barcelona (UB)
Social & Behavioural Sciences

Educated in economics, political science and sociology in Hamburg, London and Berlin, Peter Wagner joined ICREA in 2010. Before, he was Research Fellow at the Wissenschaftszentrum Berlin für Sozialforschung (1983-1995), Professor of Sociology at the U of Warwick (1996-2006) and the U of Trento (2006-2010) as well as Professor of Social and Political Theory at the European University Institute in Florence (1999-2006). Furthermore, he was project director at Ural Federal University, Ekaterinburg (2018-2020), and held visiting positions at the University of Hamburg (2019-20), Université de Paris 8 (2011); U catholique de Louvain-la-neuve (2009-10); U of Cape Town (2009-10); EHESS, Paris (1998; 2001); U of California at Berkeley (1996; 1997); Swedish Collegium for Advanced Study, Uppsala; Institute for Advanced Study, Princeton (1990-91), among others. He is chair of the Academia Europaea section "Social change and social thought" and of the Task Force Environment, Sustainability, Climate.

Research interests

Peter Wagner's research is based in comparative historical and political sociology, social and political theory, and sociology of the social sciences, and it focuses on the historical trajectories and transformations of modern societies. Analyzing the persisting tensions between struggles for autonomy and forms of domination, it explores in the light of historical experiences in different world-regions the current possibilities of progress, not least in the face of human action reaching and exceeding planetary boundaries. Initially applied to a comparative political sociology of European societies, the research programme has been elaborated further towards a "world-sociology", focusing on Latin American, Southern African and more broadly BRICS societies in terms of global connectedness. Since 2022, he has also led the research cluster "Modernity in Central Asia" at the University of Central Asia.

Selected publications

- Wagner, P 2023, 'Ways out of the modern labyrinth: normative expectations and subsequent social change', In L'ubomir Dunaj et al. (eds.), *Civilization, Modernity, and Critique: Engaging Johann P. Arnason's Macro-Social Theory*, London: Routledge.
- **Wagner P**, 2023, 'Autonomy and equality: exploring the antinomy of modernity (if any)', *International Journal of Social Imaginaries*
- **Wagner P** 2023, 'Mind the gap(s): Moral philosophy, international law and interpretative historical sociology', *European Journal Of Social Theory*
- **Wagner P** 2023, 'The Virus and the Atmosphere: Reviewing the Trajectory of Human History', *Journal Of Bioethical Inquiry*
- Wagner P, 2023, *Theories of the political, in William Outhwaite and Laurence Ray, eds,* Teaching political sociology, London: Elgar, forthcoming.
- **Wagner P** 2023, Johann Arnason's unanswered question: To what end does one combine historical-comparative sociology with social and political philosophy?', *Thesis Eleven* 174 (1): 3-20.

Selected research activities

During 2023, work on a new historico-sociological perspective on the relation between societal self-understandings and the use of biophysical resources, including questions of global social and ecological justice, has been completed. The systematic consideration of the changing use of biophysical resources alters our view of the world-regionally uneven processes of "modernization and development" and provides a much-needed historical understanding for the current debate about global sustainability. Ultimately, such a historical-comparative analysis of socio-ecological transformations creates substantive underpinnings for the application of the principle of "common but differentiated responsibilities", to which the signatories of the Paris Agreement on climate change have committed themselves without, though, implementing it. The results of this research are summarized in the book *Carbon Societies. The Social Logic of Fossil Fuels*, scheduled to be published by Polity Press in June 2024.

ICREAMEMOIR2023

Leo Wanner
Universitat Pompeu Fabra (UPF)
Humanities

Leo Wanner earned his Diploma in Computer Science from the University of Karlsruhe and his PhD in Computational Linguistics from the University of The Saarland, Germany. Prior to joining ICREA he held positions at the German National Centre for Computer Science (GMD), University of Waterloo, University of Stuttgart and Pompeu Fabra University, Barcelona. As visiting researcher, he was affiliated with U of Montreal, U of Sydney, U of Southern California's Institute for Information Sciences, U Paris 7, Columbia University, and U of Augsburg. Throughout his career, Leo has been involved as Principal Investigator in numerous national and European research projects. He has published 10 volumes and more than 230 peer reviewed papers. He is Associate Editor of the Computational Intelligence and Frontiers in AI, Language and Computation journals and serves as regular reviewer for a number of high profile conferences and journals in the field.

Research interests

Leo Wanner is working in the field of computational linguistics, teaching the computer to understand spoken and written natural language material, to supply people with information that might be useful to them and to interact with people. His research areas include human-computer interaction (in particular, the design and realization of conversational agents that reveal social and cultural competence), automatic written and spoken language generation, automatic summarization of written material, data-driven parsing, information extraction, and, more recently, abusive language analysis, author profiling and the information structure-prosody interface. He is furthermore interested in lexicology and lexicography, and there, in particular, in the automatic recognition, representation and use of lexical idiosyncrasies (so-called "collocations") by both native speakers and learners of a language. An important characteristics of his research is that it is multilingual.

Selected publications

- Cámbara G, Grivolla J, Farrús M & **Wanner L** 2023 'Automatic Speech Translation for Multinational First Responder Teams', *Proc. of the 20th International Conference on Information Systems for Crisis Response and Management*, 188-196.
- Jin Y, **Wanner L**, Laxman Kadam V & Shvets A 2023. 'Towards Weakly-Supervised Hate Speech Classification Across Datasets', *Proceedings of the 7th Workshop on Online Abuse and Harms (WOAH)*, 42–59.
- Symeonidis S, Meditskos G, Vrochidis S, et al. 2023, 'V4Design: Intelligent Analysis and Integration of Multimedia Content for Creative Industries', *IEEE Systems Journal*, 17, 2, 2570-2573.
- Xefteris VR, Dominguez M, Grivolla J, Tsanousa A, Zaffanela F, Monego M, Symeonidis S, Diplaris S, **Wanner L**, Vrochidis S & Kompatsiaris I 2023, 'A Multimodal Late Fusion Framework for Physiological Sensor and Audio-Signal-Based Stress Detection: An Experimental Study and Public Dataset', *Electronics*, 12 - 23.
- Fortuna, P., Soler-Company, J., & Wanner, L. 2023. `Dataset annotation in abusive language detection'. In C. Strippel, C., Paasch-Colberg, S., Emmer, M., & Trebbe, J. (eds.), Challenges and perspectives of hate speech analysis. Digital Communication Research. https://doi.org/10.48541/dcr.v12.25., pp. 369-391.

Selected research activities

In 2023, Leo acted as PI in five large scale European research projects (in one of them as Coordinator) and several national knowledge transfer projects. Furthermore, he served on the Program Committees of several top conferences in the area of Computational Linguistics (ACL, EMNLP, EACL) and as Co-Organizer of the NII Shonan Symposium on Intelligent Interaction with Autonomous Assistants.

ICREAMEMOIR2023

Andrew Williams
Universitat Pompeu Fabra (UPF)
Humanities

Andrew Williams read Philosophy, Politics, and Economics at the University of Oxford and was a graduate student at Nuffield College, Oxford and Harvard University. He then became a Junior Research Fellow at Jesus College, Oxford, and later taught at York, Reading and Warwick, where he was a Professor of Philosophy before joining ICREA in October 2009. He has also been a Visiting Professor in the Program in Ethics, Politics, and Economics at Yale University and the Department of Philosophy at Harvard, and a Faculty Fellow in Ethics at the Kennedy School of Government at Harvard. His work has been published in such journals as Ethics, Economics and Philosophy, Oxford Studies in Political Philosophy, Philosophical Quarterly, Philosophy & Public Affairs, and Utilitas. He is now a Consulting Editor of Politics, Philosophy & Economics, having been Editor-in-Chief from 2013 to 2023.

Research interests

My interests lie in moral and political philosophy and practical rationality, as well as intersecting areas in economics and political science. My research focuses in particular on questions about distributive justice, including ones arising across states and generations. I explore how egalitarian distributive principles should guide the design of social institutions that shape the prospects of children, parents, the elderly, and future generations. My most recent work examines how policy makers should deal with lifespan and gender wage/employment gaps as well as the role that demographic factors should play in our response to climate change.

Selected publications

- Krattenmacher J, et al. 2023, 'Universities should lead on the plant-based dietary transition', *The Lancet Planetary Health*, 7, 5, e354- e355

Selected research activities

"Class, Technology, and Gender Earnings Gaps", Philosophy Department Colloquium, University of Minnesota, USA, February 16, 2023

"The Variety of Objections to Gender Wage Gaps", Kyoto, Japan, April 8, 2023

"Why I Am Not A Republican", Pompeu Fabra University, June 12, 2023

"Discrimination and Gender Earnings Gaps", Aarhus University, Denmark, August 16, 2023

"How To Pursue a Career in Political Theory", Pompeu Fabra University, November 7, 2023

Consulting Editor, *Politics, Philosophy & Economics*.

Co-Editor, *Law, Ethics and Philosophy*

Editorial Board Member, *Oxford Studies in Political Philosophy*, *Utilitas*, and *Moral Philosophy and Politics*

ICREA**MEMOIR2023**

Martina Wiltschko
Universitat Pompeu Fabra (UPF)
Humanities

In my graduate education at the University of Vienna, I was trained in theoretical linguistics with an emphasis on syntactic theory as well as interface-issues (syntax-morphology, syntax-semantics, and syntax-pragmatics). My primary language focus was on Germanic. After completing my graduate work I joined the department of linguistics at the University of British Columbia first as a postdoctoral researcher (1996-2001) and later as a faculty member (2001-2019). During this time I expanded my language specialization to include Upriver Halkomelem (Salish), Blackfoot (Algonquian) and Ktunaxa (aka Kutenai). Thus, I became a field-worker. I have published extensively on typological issues viewed from the angle of theoretical linguistics. During this time I also founded the "eh-lab", a research group exploring the language of interaction. My relocation to ICREA and UPF in 2019 marks a turn towards a more cognitively-oriented research agenda.

Research interests

I explore the building blocks of human language and how they relate to more general cognitive capacities. My empirical focus is on aspects of language that are restricted to conversational interaction, such as constructing common ground and regulating of turn-taking. My research has revealed that interactional language is as much part of our human-specific language capacity as representational language is, thus answering a classic question that has divided linguists for centuries. Language is an instrument for thought AND for communication. I now explore interactional language from a variety of different angles: Its acquisition; its place in the architecture of the human mind (including its relation to the construction of emotions); and its role in human-machine interaction. Thus, my research links to neighbouring fields, including philosophy (referential semantics, pragmatics), sociology (conversation analysis), and psychology (theory of mind), and artificial intelligence.

Selected publications

- Dingemanse M, Liesenfeld A, Rasenberg M, et al. 2023, 'Beyond Single-Mindedness: A Figure-Ground Reversal for the Cognitive Sciences', *Cognitive Science*, *47*(1), e13230.

Selected research activities

-I started work on my MINECO grant on "*The role of interactional language in human-machine interactions. What can we learn from mindless interactants*" *(INTERACT)*.

-I was invited to teach at LOT (Netherlands Graduate School of Linguistics with a week-long course on "*The syntax of Talking heads*".

-I started to disseminate my research results for a general public in the form of blogposts published on Medium.

ICREA**MEMOIR2023**

Andreas Winter
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics

Andreas Winter was born in Altötting, a small rural town near Munich, known also as the Heart of Bavaria. After developing an infatuation with science early on, and in particular with mathematics, he decided to study this subject in Konstanz and Berlin. He graduated in 1997 from the Freie Universität Berlin, and went on to obtain a doctorate in mathematics from the Universität Bielefeld in 1999, with the late Rudolf Ahlswede. In 2001 he joined the quantum information group in Bristol as a postdoc, became Lecturer in Applied Mathematics there in 2003, and Professor of the Physics of Information in 2006. In 2012 he left Bristol after 11 years, to move to the Universitat Autònoma de Barcelona as ICREA Research Professor, where he is now part of the quantum information group.

Research interests

I work on quantum information, especially quantum Shannon theory, which aims at incorporating information-theoretic ideas into physics. The Shannon theoretic approach has succeeded in quantifying entanglement as a resource in information processing task, and likewise for other properties of quantum systems such as channel and storage capacities of quantum systems. One of my favourite topics is the interplay between classical and quantum information, evident in the intricate structure of local operations in composite systems, such as data hiding or "information locking". I also work on additivity and non-additivity of quantum channel capacities, quantum data compression, and zero-error quantum communication. Further interests include statistical mechanics, thermodynamics, resource theories, entropy characterization and entanglement measures. But at heart I am a mathematician and will still get fascinated by classic problems: existence of Hadamard matrices, incompleteness, ...

Selected publications

- Di Martino S, Mancini S, Pigliapochi M, Svampa I & **Winter A** 2023, 'Geometry of the p-adic special orthogonal group $SO(3)_p$', *Lobachevskii J. Math.*, vol. 44, no. 6, pp. 2133-2156.
- Mančinska L, Todorov I G, Paulsen V I & **Winter A** 2023, 'Products of synchronous games', *Studia Mathematica*, vol. 272, no. 3, pp. 299-318.
- Strasberg P, **Winter A**, Gemmer J & Wang J 2023, 'Classicality, Markovianity, and local detailed balance from pure state dynamics', *Phys. Rev. A*, vol. 108, 012225.
- Cheng H-C, **Winter A** & and Yu N 2023, 'Discrimination of Quantum States Under Locality Constraints in the Many-Copy Setting', *Commun. Math. Phys.*, vol. 404, no. 1, pp. 151-183.
- Mamindlapally M & **Winter A** 2023, 'Singleton Bounds for Entanglement-Assisted Classical and Quantum Error Correcting Codes', *IEEE Trans. Inf. Theory*, vol. 69, no. 9, pp. 5857-5868.
- Schindler J & **Winter A** 2023, 'Continuity bounds on observational entropy and measured relative entropies', *J. Math. Phys.*, vol. 64, 092201.
- Baghali Khanian Z, Bera M N, Riera A, Lewenstein M & **Winter A** 2023, 'Resource Theory of Heat and Work with Non-commuting Charges', *Ann. Henri Poincaré*, vol. 24, no. 5, pp. 1725-1777.

ICREA**MEMOIR2023**

Andrea Wulzer
Institut de Física d'Altes Energies (IFAE)
Experimental Sciences & Mathematics

Born in Rome in 1979. Graduated in particle physics at the University of Rome "La Sapienza" in 2002. PhD in theoretical high energy physics at SISSA (Trieste) in 2005. Postdocs at IFAE and at the École polytechnique fédérale de Lausanne (EPFL). In 2011, tenured Researcher at the University of Padova, and Associate Professor since 2016. Joint CERN/EPFL Staff from 2016 to 2021. ICREA Research Professor since October 2022.

Research interests

I am a particle physicist. My mission is to unveil the microscopic laws that govern the fundamental particles and their interactions. I study what these laws could be, and how they manifest as concrete predictions for a multitude of experimental measurements that are being and will be performed at particle colliders. Devising strategies to extract maximal information on fundamental physics laws from the data collected at the Large Hadron Collider is a main focus of my research. Another goal is to identify new pathways for further progress at ambitious future collider projects and in particular at a muon collider of very high energy. I attack these questions by employing and developing theoretical tools for predictions based on the fundamental principles of quantum mechanics and special relativity, combined in what is known as "Quantum Field Theory", as well as statistical and statistical learning tools for comparing the predictions with the experimental data.

Selected publications

- **Wulzer A** et. al. 2023, 'Towards a muon collider', *The European Physical Journal C, 83, 864.*
- Ruhdorfer M, Salvioni E & **Wulzer A** 2023, 'Invisible Higgs boson decay from forward muons at a muon collider', *Physical Review D*, 107, 9, 095038.
- Grosso G, Lai NCL, Letizia M, Pazzini J, Rando M, Rosasco L, **Wulzer A &** Zanetti M 2023, 'Fast kernel methods for data quality monitoring as a goodness-of-fit test', *Machine learning-science and technology*, 4 - 3.

Selected research activities

-In 2023, I contributed to the global efforts towards a muon collider by a number of accomplishments
- I organised two workshop on muon collider physics, at KITP (UC Santa Barbara) and at the University of Pittsburgh, and the Annual Meeting of the International Muon Collider Collaboration.
- I was the principal editor of the first ever published integrated review on muon collider physics, detector, accelerator physics and technology.
- I continued exploring novel strategies to exploit muon collisions. The paper published this year outlines a novel strategy to measure the Higgs to invisible decay that is uniquely enabled by muons.
-I was invited to give seminars and talks at conferences, including:
- "Higgs 2023" conference. Closing talk "Physics perspectives for future colliders and overall outlook". IHEP, Beijing, China.
- "Higgs Hunting 2023". Talk "Questions on Higgs physics". Orsay-Paris, France.
- I gave a Colloquium "Why building a muon collider" at LPSC, Grenoble, France.
-I contributed to LHC physic by:
- Organising the workshop "The LHC Precision Program" at the Centro de ciencias de Benasque Pedro Pascual
- Acting as convener of the "PhysTeV 2023" Les Houches workshop.
-In May, my former PhD student defended her thesis "Searching for Unexpected New Physics at the LHC with Machine Learning" at the University of Padova and CERN. She was awarded by an IAIFI postdoctoral fellowship at MIT.

In September, my new PhD student Francesco joined IFAE.

ICREA**MEMOIR2023**

Andriy Yaroshchuk
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics

Born on 7 March 1959 in Kiev, Ukraine. Candidate of Sciences (equivalent to PhD) in Colloid Chemistry, A.V. Dumanskiy Institute of Colloid and Water Chemistry, National Academy of Sciences of Ukraine, Kiev, 1983. Doctor of Sciences in Physics and Mathematics, Institute of Physical Chemistry of Russian Academy of Sciences, Moscow, 1992. ICREA Research Professor at the Polytechnic University of Catalonia, since 2007. Invited researcher/professor at Karl-Franzens Universität, Graz, Austria; École Nationale Supérieure de Chimie et de Physique de Bordeaux (France); École Supérieure Chimie Physique Electronique de Lyon (France); Universität Duisburg – Essen (Germany); Paul-Scherrer-Institute (Switzerland), etc. Member of Editorial Board of Desalination and Water Treatment (Taylor & Francis UK). Published 144 papers on theoretical and experimental studies of membranes, colloids, porous media and micro-/nano-fluidic systems.

Research interests

The keyword is behaviour of fluids at nano-scale. I study the transfer of ions and water molecules through nano-metric (tens of nanometers) barrier layers of composite nanofiltration membranes. Another example is the transfer of ions and water through nano-porous track-etched membranes having identical cylindrical pores. I also study processes of current-induced concentration polarization of nano-/micro-interfaces where concentration polarization is strongly-coupled to electroosmosis and fine separation of solutes like peptides can occur. Recently, I discovered that a layered structure consisting of a micro-perforated ion-exchange membrane and a nanoporous layer can have very interesting properties useful for AC electroosmotic pumping . Another topic is experimental and theoretical studies of ion transfer across polyelectrolyte multilayers where we have recently discovered very high (>1000) selectivities in the electrically-driven transfer of ions of different charge magnitudes.The most recent research topic is energy harvesting from water evaporation. It has been suggested that the area of contact between nanoporous electrodes and electrolyte solutions can be effectively controlled via solvent (water) evaporation. This opens new opportunities for energy harvesting from waste heat in coupled wetting/drying and charging/discharging cycles with nanoporous electrodes. This emerging process is critically controlled by the ion dynamics in ultrathin water films staying behind receding menisci, which reveals itself as almost completely unexplored and as a focal point of a new branch of electrochemistry, namely that of partially wet electrodes.

Selected publications

- **Yaroshchuk AE**, Koter S, Kovalchuk VI & Zholkovskiy EK 2023, 'Kinematic and volumetric analysis of coupled transmembrane fluxes of binary electrolyte solution components', *Adv. Coll. & Inteface Sci.*, 312, 102843.
- Bondarenko M & **Yaroshchuk A** 2023, 'Computational Design of an Electro-Membrane Microfluidic-Diode System', *Membranes*, 13, 243.
- D´Haese A & **Yaroshchuk A** 2023, 'Interplay between membrane imperfections and external concentration polarization', *J.Membr.Sci.* 676, 121579.
- Ding D, Yang L, Wang J, **Yaroshchuk A**, Schaefer JL & Bruening ML 2023, 'Selective transport of trivalent lanthanide in electrodialysis: Limitations due to concentration polarization', *Journal of Membrane Science,* 685, 121949.
- Bondarenko M & **Yaroshchuk A** 2023, 'Role of imperfections in transfer of organic micro-pollutants through RO/NF membranes: Numerical study, *Desalination*, 568, 117012.

Selected research activities

Co-chaired CECAM (Centre Européen de Calcul Atomique et Moléculaire) Flagship Workshop "Fluids in porous materials: from fundamental physics to engineering applications", June 19-21, 2023, Lausanne, Switzerland

Delivered invited/keynote talks at:

-3rd International Workshop on Membrane Distillation and Innovating Membrane Operations in Desalination and Water Reuse, April 23-26, 2023, Sorrento, Italy

-13th International Congress on Membranes and Processes (ICOM2023), July 10-15, Chiba, Japan

-6th Physics of Membrane Processes Workshop (PMP6), November 13-16, 2023, KAUST, Saudi Arabia

ICREA**MEMOIR2023**

Santiago Zabala
Universitat Pompeu Fabra (UPF)
Humanities

I was raised in Rome, Vienna, and Geneva and studied philosophy at the University of Turin and at the Pontifical Lateran University of Rome, where I obtained my PhD in 2006. The following year I was awarded the Humboldt Research Fellowship at the University of Potsdam for two years. After a visiting scholarship in 2010 at Johns Hopkins University, I was appointed ICREA Research Professor at the University of Barcelona. Since 2015 I am ICREA Research Professor at Pompeu Fabra University, where I currently teach contemporary and political philosophy and supervise PhD students. I am also the founding director of the "UPF Center for Vattimo's Archives and Philosophy." My books have been all been published by Columbia, McGill-Queen's, and Northwestern University Press and my op-ed in The New York Times, The Guardian, and the Los Angeles Review of Books. I have been invited as visiting professor by the University of Turin and Renmin University.

Research interests

My books, articles, and research focus on the meaning of art, politics, and freedom in the twenty-first century where, as I claim, "the greatest emergency has become the absence of emergency." The goal of philosophy is to thrust us into these absent emergencies (such as climate change or economic inequality) in order to disrupt the ongoing "return to order" that surveillance capitalism and right-wing populism are imposing upon us. These problems are discussed in my most recent book—*Being at Large: Freedom in the Age of Alternative Facts* (McGill-Queen's University Press, 2020 - translated into Spanish and Italian) —and in many articles. My forthcoming book - *Signs from the Future. A Philosophy of Warnings* - will be published by Columbia University Press in 2025. I also co-edit (with Adrian Parr) a book series for McGill-Queen's University Press where six volumes have been released so far.

Selected publications

- **Zabala S** & Parr A 2023, *Outspoken: A Manifesto for the Twenty-First Century,* Montreal, McGill-Queen's University Press.
- **Zabala S** 2023, 'Gifford Lectures' in *The Vattimo Dictionary* edited by Simonetta Moro. Edinburgh University Press, pp. 80-81.
- **Zabala S** (ed) 2023, New Volume in my series at McGill-Queen's University Press "Outspoken": Arne De Boever, "*Being Vulnerable: Contemporary Political Thought*", Montreal: McGill-Queen's University Press.
- **Zabala S** 2023, 'The Disappearance of Emergencies', *State of* Disappearance, edited by Evans B & Meza C, *McGill-Queen's University Press*, 188-195.
- **Zabala S** 2023, 'Solo l'arte può salvarci', Milan: Politi Seganfreddo. Includes a new foreword.
- *State of* Disappearance, edited by Brad Evans and Chantal Meza. McGill-Queen's University Press. Volume 6 in the "Outspoken" book series edited by Adrian Parr and **Santiago Zabala** for McGill-Queen's University Press.

Selected research activities

In 2023 I was invited at the Biennale of Architecture of Venice and at Oxford University to deliver a paper on the meaning of warnings for philosophy and aesthetics. I also became an evaluator for the "La Caixa" (Arts and Humanities) Postgraduate Abroad Fellowships Programme.

ICREA**MEMOIR2023**

Patrizia Ziveri
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics

Patrizia Ziveri is ICREA Research Professor at the Institute of Environmental Science and Technology, Universitat Autònoma de Barcelona (ICTA-UAB) where she coordinates the Marine and Environmental Biogeosciences Research Group (MERS) that catalyzes research on the natural and human-driven marine processes and sustainability challenges. Before joining ICREA, she obtained her PhD at the University of Padua (Italy)/University of South Carolina (USA), focusing on the impacts of recent climate oscillations on calcareous phytoplankton in the Eastern Pacific Ocean. After a postdoc at USC, she moved to the Vrije Universiteit Amsterdam, as a research scientist / associate professor. She led the first European coordinated effort to address ocean acidification in the Mediterranean Sea (2011-14) and other projects such as the JPI-Oceans i-plastic initiative (2016-2020). She is an associate editor of the Journal Scientific Reports (Nature). She was the Scientific Director of the ICTA-UAB.

Research interests

Her broad scientific interest is on marine global environmental change, ecology, and biogeochemistry at various time scales and complexity. She focuses on multidisciplinary investigations from target marine organisms at the base of the food web, to marine microplastics, biogeochemical processes and socio-oceanography. She links CO_2 dynamics, climate change and target marine processes. She is interested in pressing threats to the marine environment and their societal relevance, such as ocean acidification, warming and deoxygenation in different regions, both in coastal systems and open seas, from social to biogeochemical processes. She developed a laboratory on marine microplastics characterization, dispersion and impacts. She supports socially relevant marine studies in coastal Africa. Her research is bridging the natural and social systems on issues of major societal and sustainable development concern, and she has contributed or led diverse policy documents on key marine issues.

Selected publications

- **Ziveri P**, Gray WR, Anglada I Ortiz, ... Adkins JF, Berelson W. 2023, 'Pelagic calcium carbonate production and shallow dissolution in the North Pacific Ocean', *Nature Communications*, 14, 805 (2023).
- Pallacks S, **Ziveri P** et al. 2023, 'Anthropogenic acidification of surface waters drives decreased biogenic calcification in the Mediterranean Sea', *Communications Earth & Environment, 4 (1) 301.*
- Johnson R, Manno C & **Ziveri P** 2023, 'Shelled pteropod abundance and distribution across the Mediterranean Sea during spring', *Progress in Oceanography,* Vol. 210, 102930.
- Chamboun M, Miñarro S, ... V, Reyes-Garcia V, Tonalli Drouet H & **Ziveri P** 2023, 'A Synthesis of Women's Participation in Small-Scale Fisheries Management: Why Women's Voices Matter', *Reviews in Fish Biology and Fisheries,* 34, 43–63.
- Anglada-Ortiz G, Meilland J, **Ziveri P**, et al. 2023, 'Seasonality of marine calcifiers in the northern Barents Sea: Spatiotemporal distribution of planktonic foraminifers and shelled pteropods and their contribution to carbon dynamics', *Progress in Oceanography,* 218, 103121.
- Soares MO, Garcia TM, .. **Ziveri P**, et al. 2023, 'Marine debris provide long-distance pathways for spreading invasive corals', *Science of the Total Environment*, 900, 20, 165637.
- Chaabane S, de Garidel-Thoron T, Giraud X, Schiebel R, ... Kucera M, **Ziveri P**. 2023, 'The FORCIS database: A global census of planktonic Foraminifera from ocean waters', *Scientific Data*, 10, 1, 354.
- Incarbona A, Bonomo S, Cacho I,.. & **Ziveri P** 2023, 'Solar Forcing for Nutricline Depth variability inferred by Coccoliths in the Pre-Industrial Northwestern Mediterranean', *Global Planetary Change,* 224, 104102.

Selected research activities

Ziveri P, Grelaud M & Pato J 2023, Actions of cities and regions in Mediterranean Sea area to fight sea pollution; Reducing marine litter and plastic pollution, European Parliament, Policy Dept., Brussels.