

ICREA MEMOIR 2018



Antonio Acín
 Institut de Ciències Fotòniques
 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 3 grants from the European Research Council: 1 Starting, 1 Proof of Concept and 1 Consolidator Grant, the latter starting in 2014. 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 unprecedented levels of security or more precise sensing devices. It is a highly interdisciplinary 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

- Bowles J, Supic I, Cavalcanti D & **Acín A** 2018, 'Self-testing of Pauli observables for device-independent entanglement certification', *Physical Review A*, 98, 4, 042336.
- Gomez S, Mattar A, Gomez ES, Cavalcanti D, Jiménez-Farías O, **Acín A** & Lima G 2018, 'Experimental nonlocality-based randomness generation with nonprojective measurements', *Physical Review A*, 97, 4, 040102.
- Lopez Grande IH, Senno G, de la Torre G, Larotonda MA, Bendersky A, Figueira S & **Acín A** 2018, 'Distinguishing computable mixtures of quantum states', *Physical Review A*, 97, 5, 052306.
- Wang J, Paesani S, Ding Y, Santagati R, Skrzypczyk P, Salavrakos A, Tura J, Augusiak R, Mancinska L, Bacco D, Bonneau D, Silverstone JW, Gong Q, **Acín A**, Rottwitz K, Oxenlowe LK, O'Brien JL, Laing A & Thompson M G 2018, '**Multidimensional quantum entanglement with large-scale integrated optics**', *Science*, 360, 6386, 285.
- Sainz AB, Guryanova Y, **Acín A** & Navascues M 2018, 'Almost-Quantum Correlations Violate the No-Restriction Hypothesis', *Physical Review Letters*, 120, 20, 200402.
- Lipinska V, Curchod FJ, Mattar A & **Acín A** 2018, 'Towards an equivalence between maximal entanglement and maximal quantum nonlocality', *New Journal Of Physics*, 20, 063043.
- **Acín A**, Bloch I, Buhrman H, Calarco T, Eichler C, Eisert J, Esteve D, Gisin N, Glaser SJ, Jelezko F, Kuhr S, **Lewenstein M**, Riedel MF, Schmidt PO, Thew R, Wallraff A, Walmsley I & Wilhelm FK 2018, 'The quantum technologies roadmap: a European community view', *New Journal Of Physics*, 20, 080201
- Bourdoncle B, Pironio S & **Acín A** 2018, 'Quantifying the randomness of copies of noisy Popescu-Rohrlich correlations', *Physical Review A*, 98, 4, 042130.
- Bowles J, Supic I, Cavalcanti D & **Acín A** 2018, 'Device-Independent Entanglement Certification of All Entangled States', *Physical Review Letters*, 121, 18, 180503.

ICREA MEMOIR 2018



Jordi Agustí

Institut Català de Paleoecologia Humana i Evolució Social
Humanities

PhD in Biological Sciences by the Univ. of Barcelona in 1981, under the supervision of Prof. Miquel Crusafont. 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 Catalan Government for his scientific merits. Scientific Literature Prize of the Catalan Government for his book "El secret de Darwin" (2001). President of the Regional Committee on Neogene Mediterranean Stratigraphy from 1999 to 2009 and voting member of the Subcommission on Neogene Stratigraphy (IUGS, UNESCO). Chairman of several national and international projects, among them the ESF-Network on "Hominoid Evolution and Climatic change in the Neogene of Europe" (1996-1999). He has also conducted field-campaigns in northern Africa and Caucasus (Georgia). He has written 14 books and edited 14. He is the author or co-author of more than 200 papers.

Research interests

My main field of interest is the environmental and biogeographic changes in the Mediterranean terrestrial ecosystems in the last 10 million 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

- Gonzalez-Guarda E, Petermann-Pichincura A, Tornero C, Domingo L, **Agusti J**, Pino M, Abarzua AM, Capriles JM, Villavicencio NA, Labarca R, Tolorza V, Sevilla P & **Rivals F** 2018, 'Multiproxy evidence for leaf-browsing and closed habitats in extinct proboscideans (Mammalia, Proboscidea) from Central Chile', *Proceedings of The National Academy of Sciences of The United States of America*, 115, 37, 9258 - 9263.
- **Agustí J**, Leroy S, Lozano-Fernández I & Julià R 2018, Joint vegetation and mammalian records at the early Pleistocene sequence of Bòvila Ordis (Banyoles-Besalú Basin, NE Spain) and their bearing on early hominin occupation in Europe. *Palaeobiodiversity and Palaeoenvironments*, 98:653-662.
- **Agusti J** & Lordkipanidze D 2018, 'An alternative scenario for the first human dispersal in Eurasia', *Metode Science Studies Journal*, , 8, 99 - 105.
- Minwer-Barakat R, **Agustí J**, García-Alix A & Martín-Suárez E 2018. The European record of the African gerbil *Myocricetodon* (Rodentia, Mammalia) and its bearing on the Messinian Salinity Crisis. *Palaeogeography, Palaeoclimatology, Palaeoecology* 506, 168-182.
- Piñero P, **Agusti J** & Oms O 2018, 'The Late Neogene Rodent succession of the Guadix-Baza Basin (South-Eastern Spain) and its magnetostratigraphic correlation', *Palaeontology*, 61, 2, 253 - 272.
- Piñero P, **Agusti J**, Furio M & Laplana C 2018, Rodents and insectivores from the Late Miocene of Romerales (Fortuna Basin, southern Spain). *Historical Biology*, 30, 3, 336 - 359.
- Martín RA, Tesakov A, **Agusti J** & Johnston K 2018, 'Orcemys, a new genus of arvicolid rodent from the early Pleistocene of the Guadix-Baza Basin, southern Spain', *Comptes Rendus Palevol*, 17, 4-5, 310 - 319.
- Bufill E, **Agustí J** & Redolar D 2018, '¿Cómo evolucionamos los humanos? La historia del linaje humano'. En Redolar, D.: *Psicobiología*. Editorial Médica Panamericana. p. 605-632.

ICREA MEMOIR 2018



Tomás Alarcón

Centre de Recerca Matemàtica
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 Matemàtica where I lead the Computational & Mathematical Biology 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 Matemàtica.

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 the effects of random fluctuations in cell regulatory systems and population dynamics, robustness and evolvability, and the stochastic dynamics of HIV-1-infection in patients treated with potent anti-retroviral therapy.

Selected publications

- Sardanyes J, Arderiu A, Elena SF & **Alarcón T** 2018, 'Noise-induced bistability in the quasineutral coexistence of viral RNA under different replication modes', *J R Soc. Interface.* 15, 20180129.
- Sardanyes J & **Alarcón T** 2018, 'Noise-induced bistability in the fate of cancer phenotypic quasispecies: a bit-strings approach', *Scientific Reports*, 8, 1027.
- de la Cruz R, Perez-Carrasco R, Guerrero P, **Alarcón T** & Page KM 2018, 'Minimum Action Path theory reveals the details of stochastic biochemical transitions out of oscillatory cellular states', *Phys. Rev. Lett.* 120, 128102
- Folguera-Blasco N, Cuyas E, Menendez JA & **Alarcón T** 2018, 'Epigenetic regulation of cell fate reprogramming in aging and disease: A predictive computational model', *PLoS Comp. Biol.* 14, e1006052.

Selected research activities

- Co-organiser (jointly with Jean Clairambault, INRIA, France, and Thomas Hillen, University of Alberta, Canada), of the workshop on *Mathematical challenges in the analysis of continuum models for cancer growth, evolution and therapy*, November 2018, BIRS, Casa Matemàtica de Oaxaca, Oaxaca, Mèxic.
- Co-organiser (jointly with Jose Antonio Carrillo, Imperial College London, UK, Silvia Cuadrado, Universitat Autònoma de Barcelona, and Antoni Guillamon, Universitat Politècnica de Catalunya) of the Intensive Research Programme *Current developments in Mathematical Biology*, April-June 2018, Centre de Recerca Matemàtica, Barcelona, Spain.

ICREA MEMOIR 2018



Mar Albà

Institut Hospital del Mar d'Investigacions Mèdiques
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 has directed 10 doctoral thesis and is author of more than 80 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 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

- Faherty SL*, Villanueva-Cañas JL, Blanco MB, **Albà MM*** & Yoder AD 2018, 'Transcriptomics in the wild: Hibernation physiology in free-ranging dwarf lemurs', *Molecular Ecology*, 27, 3, 709 - 722.
- Ruiz-Orera J, Grau-Verdaguer P, Villanueva-Cañas JL, Messeguer X & **Albà MM** 2018, 'Translation of neutrally evolving peptides provides a basis for *de novo* gene evolution', *Nature Ecology and Evolution*, 2, 5, 890 - 896.

Selected research activities

During 2018 I was invited to give talks at the following meetings: "XVIII Jornada de Biología Evolutiva" (Societat Catalana de Biologia, Barcelona), Workshop "Genomic parasite and non-coding RNA in evolution and disease" (Universidad Internacional de Andalucía, Baeza) and "IX Argentinian Meeting of Bioinformatics and Computational Biology" (Mar del Plata, Argentina). I also gave seminars at the Barcelona Biomedical Research Park (Group Leader series), Universitat de Girona (Descobert a Girona - Cicle de conferències) and Universitat de Barcelona (MSc in Genetics and Genomics).

I wrote the article "New proteins on the test track" in the Nature Community Blog (March 19 2018), about our work "Translation of neutrally evolving peptides provides a basis for *de novo* gene evolution" published in *Nature Ecology and Evolution* in 2018.

I supervised the MSc project "Novel transcript discovery in yeast using sequencing reads from Oxford Nanopore Technologies in comparison to Next Generation Sequencing" by Audald Lloret Villas (Sep 2018), Master of Science in Omics Data Analysis, Universitat de Vic.

ICREA MEMOIR 2018



Anna Alberni
 Universitat de Barcelona
 Humanities

Anna Alberni studied English Philology at the University of Barcelona. She obtained her PhD in Catalan Philology in 2003 at the same University. She has 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 she was a postdoc researcher at the University of Rome-La Sapienza and at the University of L'Aquila. In 2005 she accepted an ICREA Junior position at the University of Girona. In 2009 she moved to the University of Barcelona, where she is ICREA Research Professor at the Department of Linguistics and Catalan Philology-IRCVM.

Research interests

Alberni's research focuses on the study of medieval Catalan poetry as an essential part of Europe's cultural past, with a particular interest on late Romance lyric collections and on how the reception of the poetic code of the troubadours shaped the intellectual background in which the literary culture of modern Europe is deeply rooted. More specifically, she works on issues of poetic genre, intertextuality, discursive traditions and textual criticism. During the last years Alberni has extensively dedicated her efforts to the consolidation of the research group created in 2009 in order to develop the ERC-StG project *The Last Song of the Troubadours. Linguistic Codification and Construction of a Literary Canon in the Crown of Aragon*. Her new research project, *Ioculator seu Mimus. Performing Music and Poetry in Medieval Iberia* (ERC-CoG-2017), intends to transform our understanding of medieval poetry and music by establishing a corpus of archive records of unprecedented size and breath on the lives and careers of the minstrels who performed in the Crown of Aragon from the mid 13th to the mid 15th centuries. This new data will shed crucial light on the literary and musical repertoires circulating in the South of Europe in the late medieval period.

Selected publications

- **Alberni A** 2018, 'Machaut's Literary Legacy in the Crown of Aragon: the Catalan Chansonnier Vega-Aguiló and the anonymous Roman de Cardenois', in N. Morato, D. Schoeaners (ed.), *Medieval Francophone Literary Culture Outside France. Studies in the Moving Word*, Turnhout, Brepols, p. 391-410.
- **Alberni A** 2018, "Ioculator seu Mimus. Performing Music and Poetry in Medieval Iberia", *Journal of Transcultural Medieval Studies*, 5 (2), p. 435-441.
- **Alberni A** 2018, *The Troubadours to Ausiàs March*, Barcelona, Biblioteca de Catalunya.

<https://itunes.apple.com/es/book/the-troubadours-to-ausiàs-march/id1385678692?mt=11&ign-mpt=uo%3D4>

Selected research activities

- Organization of the *I Congrés Internacional IRCVM "Llegir i escriure a l'Edat Mitjana"*, Universitat de Barcelona-CSIC, 25-27 April 2018
- Organization of the International Conference *El pensament d'Ausiàs March*, Reial Acadèmia de Bones Lletres de Barcelona, 10-11 december 2018

ICREA MEMOIR 2018



Rosa María Albert
Universitat de Barcelona
Humanities

I defended my PhD in Archaeology at the U. of Barcelona in 1999 after 3 years at the Weizmann Inst of Science. I pioneered in applying quantitative and morphological phytolith analyses to Prehistoric sites to identify fuel and collecting strategies. In 2005 I received the Blecu Award (UB). Along these years I have focused on reconstructing the vegetation at different sites such as Olduvai Gorge (Tanzania), being one of the first to use a combined study of modern soils and plants to identify past vegetation. In 2011 I created PhytCore, the most extensive phytolith database to date. I have directed more than 20 research projects and written more than 100 papers and and 78 technical reports. From 2005 until 2013 I founded and directed GEPEG recognized as Quality Research Group by Catalan Government. At present, I am responsible for the "Paleoenvironmental and paleovegetation" research area within ERAAUB.

Research interests

I am an archaeologist working on the palaeovegetation and palaeoenvironmental reconstruction, through the study of vegetal microremains, in order to better understand the relationship between environment, humans and use of plants. My research focuses mostly on: i) The study of Fire in Prehistory, with special emphasis on Middle and Upper Palaeolithic. ii) Palaeoenvironmental reconstruction during African Human Evolution. iii) Agriculture and domestication practices in the Levant. iv) Plant uses and landscape at the Balearic Islands, collaborating with Prof. Miguel Ángel Cau on the roman site of Pollentia. iv) Anthropogenic impact on the environment. v) Development of digital platforms to exchange databases to improve archaeological research. For this I developed PhytCore: www.phytcore.org, the most extensive database integrating different research centers and universities phytolith databases. I am also a member of the International Committee for Phytolith Nomenclature.

Selected publications

- Stanistreet IG, Stollhofen H, Njau JK, Farrugia P, Pante MC, Masao FT, **Albert RM** & Bamford MK 2018, 'Lahar inundated, modified, and preserved 1.88 Ma early hominin (OH24 and OH56) Olduvai DK site', *Journal of Human Evolution* 116, 27-42.
- Esteban I, Marean CW, Fisher EC, Karkanas P, Cabanes D & **Albert RM** 2018, 'Phytoliths as an indicator of early modern humans plant gathering strategies, fire fuel and site occupation intensity during the Middle Stone Age at Pinnacle Point 5-6 (south coast, South Africa)', *Plos One*, 13, 6, e0198558.
- de la Torre I, **Albert RM**, Macphail R, McHenry L, Pante M, Rodríguez-Cintas A, Stanistreet I & Stollhofen H 2018. **The contexts and early Acheulean archaeology of the EF-HR landscape (Olduvai Gorge, Tanzania)**. *Journal of Human Evolution* 120, 274-297.
- **Albert RM**, Bamford M, Stanistreet I, Stollhofen H, Rivera-Rondón C, Njau J & Blumenshine R 2018, 'River-fed wetlands in Bed I, HWK West locality, Olduvai Gorge, and Palaeoecological implications', *Review of Paleobotany and Palynology*, 259, 223-241.

Selected research activities

Member of the ERC project: *Terrace Archaeology and Culture in Europe (TerrACE)*. ERC-2017-ADG. Ref. number 787790. PI: Anthoni Brown (University of Southampton, United Kingdom).

Awarded with a Programa Salvador de Madariaga 2017 grant, PRX17/00324 to do research at the Dep. of Archaeology, Simon Fraser University (SFU) (Jan 1- 30 June 2018).

Co-organizer of the Phytolith Workshop: Interpreting Phytoliths for Environmental and Archaeological Research. Dep. of Archaeology, Simon Fraser University (SFU), Burnaby, BC, Canadá, April 23-24, 2018.

Member of Scientific Committee: *2nd Frontiers in Archaeological Sciences*. Simon Fraser University (SFU), Burnaby, BC, Canadá, August 27-29, 2018.

Video on Phytoliths given at the Archaeology Seminar Series on 8 March 2018, at the Dep. of Archaeology SFU (Canadá)

<https://www.youtube.com/watch?v=qjjGgDMJHQ>

ICREA MEMOIR 2018



Vassil Alexandrov

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
Experimental Sciences & Mathematics

Vassil Alexandrov is an ICREA Research Professor in Computational Science at BSC since September 2010. He holds a MSc in Applied Mathematics from Moscow State University, Russia (1984) and a PhD in Parallel Computing from Bulgarian Academy of Sciences (1995). He has held previous positions at the University of Liverpool, UK (Depts. of Statistics and Computational Mathematics and Computer Science, 1994-1999), the University of Reading, UK (School of Systems Engineering, 1999-2010, as Professor of Computational Science leading the Computational Science research group until September 2010, and as the Director of the Centre for Advanced Computing and Emerging Technologies until July 2010). He is an Editorial Board member and a Guest Editor of the Journal of Computational Science and Journal of Mathematics and Computers in Simulation. He has published over 120 papers in renowned refereed journals and international conferences in the area of his research expertise.

Research interests

My expertise and research interests are in the area of Computational Science and High Performance Computing focusing on tackling Data and Compute Intensive problems at scale and encompassing stochastic modelling, Monte Carlo methods and algorithms, parallel algorithms, Parallel Computing, Scalable Algorithms for Large Scale Systems and Applications. In particular, the emphasis is on novel scalable stochastic and hybrid mathematical methods and algorithms such as scalable hybrid Monte Carlo algorithms for variety of supercomputing architectures for Linear Algebra, Optimization, Computational Finance, Environmental Models, Computational Biology, etc. In addition the research focuses on scalable, fault-tolerant and resilient algorithms for petascale and exascale computing paradigms. These are applied through various collaborations to applications in diverse areas.

Selected publications

- Fathi-Vajargah B, Kanafchian M & **Alexandrov V** 2018, 'Image Encryption Based on Permutation and Substitution Using Clifford Chaotic System and Logistic Map', *Journal of Computers*, Vol 13, no. 3, pp.309-326.
- Hervert-Escobar L & **Alexandrov V** 2018, 'Territorial design optimization for business sales plan', *Journal of Computational and Applied Mathematics*, Volume 340, 1 October 2018, pp. 501-507.
- Fathi Vajargah B, **Alexandrov V**, Javadi S & Hadian A 2018, 'Novel Monte Carlo Algorithm for Solving Singular Linear Systems', *Lecture Notes in Computer Science*, Volume 10862, pp.202 - 206,
- **Alexandrov V**, Davila D, Esquivel-Flores O, Karaivanova A, Gurov T & Atanassov E 2018 'On Monte Carlo and quasi-Monte Carlo for Matrix Computations', *Lecture Notes in Computer Science*, V. 10665 pp- 249-257.
- Lebedev A & **Alexandrov V** 2018, 'On Advanced Monte Carlo Methods for Linear Algebra on Advanced Accelerator Architectures', *IEEE/ACM* pp.81-90.

Selected research activities

Distinguished Visiting Professor in Computational Science at Tecnológico de Monterrey (ITESM), Mexico for the period January 2015 - January 2018, providing research leadership in Data and Computational Science and focusing on developing efficient methods and algorithms for data and compute intensive problems and applications.

Conferences/Workshops Organization:

- 9th Scalable Algorithms for Large-Scale Systems Workshop at Supercomputing 2018, Dallas, Texas, November 2018, USA.
- 6th Solving Problems with Uncertainties Workshop on ICCS 2018, Wuxi, China, June 2018.
- 4th Workshop/Special session on High Performance Data Analysis on ITQM, Omaha, Nebraska, October 2018.

Editorships/Memberships:

- Editorial Board member and Guest Editor of Journal of Computational Science, Elsevier.
- Editor of Mathematics and Computers in Simulation Journal, Elsevier.

ICREA MEMOIR 2018



Núria Aliaga-Alcalde

Institut de Ciència de Materials de Barcelona
Experimental Sciences & Mathematics

I completed my doctorate in 2003 at the University of Indiana (USA). Then, I carried out post-doctorates at the Max Planck Institut für Bioorganische Chemie (MPI, Germany, 2003-2005) and at the Leiden University (The Netherlands, 2005-2007). In 2007 I started as ICREA Researcher in the Department of Inorganic Chemistry at the University of Barcelona (UB) and in September 2012 became ICREA Researcher Professor and moved to the Institut de Ciències dels Materials de Barcelona (ICMAB-CSIC) where I am the group leader of "Functional Nanomaterials & Surfaces" since 2014 (FunNanoSurf, <http://departments.icmab.es/funnanosurf/>). My research focuses on multifunctional molecules and polymers, their nanostructuring and application taking advantage of their magnetic, electronic and/or fluorescent properties in the bulk, on surfaces and as active components in nanodevices.

Research interests

My work focuses on the relevance and necessity of molecular design in Nanoscience, where functional molecules play a key role since they provide homogeneous tunable nanometer-size units and properties ready to be exploited (as reliable sensors, switches, quantum computing materials or molecular electronics). Main goals are the design of specific molecules and their control and organization on surfaces/nanodevices where their properties can be used. In my group, we synthesize different molecular-based systems (from 0D-3D, of porphyrinic/curcuminoid nature, with or without coordination to metal ions), characterize and study them on surfaces (eg.: graphene, gold, SWCNTs) and analyze their electronic behavior on nanodevices (eg.: nanoFETs). So far, our work in progress has shown the advantages of our systems as (i) biomarkers (luminescence), (ii) transistors (BJs, gateable molecular junctions) and (iii) as Single-Molecule Magnets (SMMs).

Selected publications

- Olavarria-Contreras IJ, Etcheverry-Berrios A, Qian W, Gutierrez-Ceron C, Campos-Olguin A, Sanudo EC, Dulic D, Ruiz E, **Aliaga-Alcalde N**, Soler M & van der Zant HSJ 2018, 'Electric-field induced bistability in single-molecule conductance measurements for boron coordinated curcuminoid compounds', *Chemical Science*, vol. 9, no. 34, pp 6988-6996.
- Qian W, González-Campo A, Pérez-Rodríguez A, Rodríguez-Hermida S, Imaz I, Wurst K, MasPOCH D, Ruiz E, Ocal C, Barrena C, Amabilino DB & **Aliaga-Alcalde N** 2018, 'Boosting Self-Assembly Diversity in the Solid-State by Chiral/Non-Chiral ZnII-Porphyrin Crystallization', *Chemistry-A European Journal*, vol.24, pp 12950-12960.
- Portoles-Gil N, Lanza A, **Aliaga-Alcalde N**, Ayllon JA, Gemmi M, Mugnaioli E, Lopez-Periago AM & Domingo C 2018, 'Crystalline Curcumin bioMOF Obtained by Precipitation in Supercritical CO₂ and Structural Determination by Electron Diffraction Tomography', *Acs Sustainable Chemistry & Engineering*, vol. 6, no. 9, pp 12309-12319.
- Guzman-Mendez O, Gonzalez F, Bernes S, Flores-Alamo M, Ordonez-Hernandez J, Garcia-Ortega H, Guerrero J, Qian W, **Aliaga-Alcalde N** & Gasque L 2018, 'Coumarin Derivative Directly Coordinated to Lanthanides Acts as an Excellent Antenna for UV-Vis and Near-IR Emission', *Inorganic Chemistry*, vol. 57, no. 3, pp 908 - 911.

Selected research activities

- Master course instructor (Nanochemistry: from small molecules to nanoporous materials)
- Member of 2 evaluation committees for PhD degree
- Talks: One Seminar (INA) and Invited talks at International Workshops (NAGC, ELECMI and ESMolNa)
- Director of 2 defended thesis
- Editorial board member of *Inorganica Quimica Acta*
- Management of Tmol4TRANS ERC Consolidator grant

ICREA MEMOIR 2018



Patrick Aloy

Institut de Recerca Biomèdica de 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 100 publications in first-rate journals, with over 10,000 citations and remarkable press coverage, illustrating the scientific and social impact of the work.

Research interests

The main goal of my laboratory is to combine computational and structural biology with interaction discovery experiments to unveil the basic wiring architecture of physio-pathological pathways. It is our believe that a deeper knowledge of the global topology of interactome networks related to human disease will have important bearings in the discovery of new drug targets and biomarkers, optimisation of preclinical models and understanding how biological networks change from the healthy state to disease.

Selected publications

- Bertoni M & **Aloy P** 2018, 'DynBench3D, a Web-Resource to Dynamically Generate Benchmark Sets of Large Heteromeric Protein Complexes', *Journal Of Molecular Biology*, 430, 21, 4431 - 4438.
- Juan-Blanco T, Duran-Frigola M & **Aloy P** 2018, 'Rationalizing Drug Response in Cancer Cell Lines', *Journal of Molecular Biology*, 430:3016-3027
- Wuchty S, Mueller SA, Caufield JH, Haeuser R, **Aloy P**, Kalkhof S & Uetz P 2018, 'Proteome Data Improves Protein Function Prediction in the Interactome of Helicobacter pylori', *Molecular & Cellular Proteomics*, 17, 5, 961 - 973.
- Schlereth K, Weichenhan D, Bauer T, Heumann T, Giannakouri E, Lipka D, Jaeger S, Schlesner M, **Aloy P**, Eils R, Plass C & Augustin HG 2018, 'The transcriptomic and epigenetic map of vascular quiescence in the continuous lung endothelium', *Elife*, 7, e34423.
- Mateo L, Guitart-Pla O, Duran-Frigola M & **Aloy P** 2018, 'Exploring the OncoGenomic Landscape of cancer', *Genome Medicine*, 10, 61.
- Persi E, Duran-Frigola M, Damaghi M, Roush WR, **Aloy P**, Cleveland JL, Gillies RJ & Ruppin E 2018, 'Systems analysis of intracellular pH vulnerabilities for cancer therapy', *Nature Communications*, 9, 2997.
- Hennrich ML, Romanov N, Horn P, Jaeger S, Eckstein V, Steeples V, Ye F, Ding X, Poisa-Beiro L, Lai MC, Lang B, Boulwood J, Luft T, Zaugg JB, Pellagatti A, Bork P, **Aloy P**, Gavin A-C & Ho AD 2018, 'Cell-specific proteome analyses of human bone marrow reveal molecular features of age-dependent functional decline', *Nature Communications*, 9, 4004.

ICREA MEMOIR 2018



Ramón Álvarez-Puebla
 Universitat Rovira i Virgili
 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

- E. Polo, M.F. Navarro Poupard, L. Guerrini, P. Taboada, B. Pelaz, **R.A. Alvarez-Puebla**,* P. del Pino* 'Colloidal Bioplasmonics', *Nano Today* (2018) 20, 58-73.
- M. Garcia-Algar, A. Fernandez-Carrascal, L. Guerrini, N. Feliu, W.J. Parak, R. Guimera,* E. Garcia-Rico,* **R.A. Alvarez-Puebla*** 'Metabolic liquid biopsy for the disease monitoring in lung cancer', *npj Precision Oncology* (2018) 2, Art: 16 (1-10 pp)
- **R.A. Alvarez-Puebla**,* N. Pazos-Perez, L. Guerrini.* 'SERS/Fluorescent Encoded Particles as Dual-mode Optical Probes', *Applied Materials Today* (2018) 13, 1-14.
- N. Pazos-Perez,* Luca Guerrini, **Ramon Alvarez-Puebla*** *Plasmon Tunability of Gold Nanostars at the Tip Apexes*, *ACS Omega* (2018) 3, 17173–17179 **Invited Paper**
- C. Catala, N. Pazos-Perez, L. Guerrini, **R.A. Alvarez-Puebla*** 'SERS methods for diagnosis of infectious diseases' in *Nanotechnologies in Preventive and Regenerative Medicine* (V. Uskokovic Ed.) Elsevier (2018) Chapter 1.3, 1-92 (ISBN: 9780323480635). Invited Book Chapter
- M Sivis,* N Pazos-Perez, R Yu, **R.A. Alvarez-Puebla**, **F de Abajo** & C Ropers, 2018, 'Continuous-Wave Multiphoton Photoemission from Plasmonic Nanostars', *Communications Physics* 1, Art 13 (1-6 pp)
- S. Jessl, M. Tebbe, L. Guerrini, A. Fery, **R.A. Alvarez-Puebla**,* Nicolas Pazos-Perez* 2018, 'Silver-assisted synthesis of gold nanorods: the relation between silver additive and iodide impurities', *Small* ,14, 1703879 (1-12 pp).
- I. Chakraborty, D. Jimenez de Aberasturi, N. Pazos-Perez, L. Guerrini, A. Masood, **R.A. Alvarez-Puebla**, N. Feliu, W.J. Parak* 'Ion-Selective Ligands: How Colloidal Nano- and Micro-Particles Can Introduce New Functionality', *Zeitschrift für Physikalische Chemie* (2018) 232, 1307-1317.
- E. Garcia-Rico, **R.A. Alvarez-Puebla**,* L Guerrini 2018, 'Direct surface-enhanced Raman scattering (SERS) spectroscopy of nucleic acids: from fundamental studies to real-life applications', *Chemical Society Reviews* , 47, 13, 4909 - 4923.

ICREA MEMOIR 2018



Isabelle Anguelovski
 Universitat Autònoma de Barcelona
 Social & Behavioural Sciences

Isabelle obtained a PhD in Urban Studies & Planning from MIT before returning to Europe in 2011 with a Marie Curie fellowship. Situated at the intersection of urban planning and policy, social inequality and development studies, her research examines the extent to which urban plans, policies, and socio-environmental interventions contribute to more just, resilient, healthy, and sustainable cities. She also studies how community groups in distressed neighborhoods contest the existence or exacerbation of environmental inequities as a result of urban (re)development processes. Based at the UAB-ICTA where she leads the research line on Cities and Environmental Justice, she is also an affiliated researcher at IMIM where she directs the Barcelona Lab for Urban Environmental Justice and Sustainability. Much of her work takes place in marginalized neighborhoods in Europe, the US, L. America, South Africa, and South East Asia.

Research interests

I am a social scientist trained in urban and environmental planning (PhD, MIT, 2011), nonprofit management (Harvard University, 2004), international development (University de Paris-1 Sorbonne, 2001), and political studies (Science Po, 2000). Before starting my PhD in 2006, I held several positions in international development NGOs in France and the US. As part of collaborative EU and international research projects, I study 1) the extent to which environmental gentrification processes lead to new forms of green locally unwanted land uses (GREENLULUs – ERC Starting Grant (2016-2021) in historically marginalized neighborhoods, 2) how municipalities protect vulnerable communities from climate risks and inequality, 3) what opportunities and constraints exist to transitioning towards a low-carbon economy within European urban regions, 4) how the governance of urban nature-based solutions planning in Europe addresses (or exacerbates) environmental injustices.

Selected publications

- **Anguelovski I**, Connolly JT, Masip L & Pearsall H 2018, 'Assessing green gentrification in historically disenfranchised neighborhoods: a longitudinal and spatial analysis of Barcelona', *Urban Geography*, 39, 3, 458 - 491.
- **Anguelovski I**, Cole H, Connolly J & Triguero-Mas M 2018, 'Do green neighbourhoods promote urban health justice?', *Lancet Public Health*, 3, 6, E270 - E270.
- Connolly J, Trebic C, **Anguelovski I**, Wood E & Théry E 2018. 'Green Trajectories: Municipal policy trends and strategies for greening in Europe, Canada and the United States (1990-2016)'. *Barcelona Lab for Urban Environmental Justice and Sustainability (BCNUEJ) & ICLEI-Local Governments for Sustainability*.
- Chu E, **Anguelovski I** & Roberts D 2018. 'Urban climate adaptation in the global south: Justice and inclusive development in a new planning domain.' *Companion to Planning in the Global South*, Routledge, London.
- Arguelles L, **Anguelovski I** & Sekulova F 2018, 'How to survive: Artificial quality food schemes and new forms of rule for farmers in direct marketing strategies', *Journal Of Rural Studies*, 62, 10 - 20.
- Comelli T, **Anguelovski I** & Chu E 2018, 'Socio-spatial legibility, discipline, and gentrification through favela upgrading in Rio de Janeiro'. *CITY*, 22:5-6, 633-656.

ICREA MEMOIR 2018



Jose Apesteguia
 Universitat Pompeu Fabra
 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 2018, "Monotone Stochastic Choice Models: The Case of Risk and Time Preferences", *Journal of Political Economy*, 126, 1, 74 - 106.

Selected research activities

Other Publications:

- "Measures of rationality and welfare for behavioural decision-makers," *Els Opuscles del CREi*, nº 48, July 2018.
- "Imitation of peers in children and adults," (with Steffen Huck, Jörg Oechssler and Simon Weidenholzer), *Games*, Vol.9, No 1, Art. number 11, March 2018.

Invited Seminars: 72 Reunió Científica de la Societat Catalana de Neuropsicologia, June 2018; Barcelona GSE Summer Forum, June 2018; Berlin Behavioral Economics Seminar, May 2018; Queen Mary University, February 2018.

Short research visits: University of Oxford (March and December 2018) and University of Edinburgh (July 2018).

Grants: "la Caixa" Foundation Research Grants on Socioeconomic Well-being (2017-2019).

Organizer of the Barcelona GSE Summer Forum Workshop on "Stochastic Choice", June 2018.

Program Committee for the Spanish Economic Association Meeting, December 2018.

Scientific Committee for the "Bounded Rationality in Choice" Annual Meetings.

ICREA MEMOIR 2018



Jordi Arbiol
 Institut Català de Nanociència i Nanotecnologia
 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 also worked as Assistant Professor at UB. From 2009 to 2015 he was ICREA Prof. at Institut de Ciència de Materials de Barcelona, ICMA-B-CSIC. Since 2015 he is ICREA Prof. at Institut Català de Nanociència i Nanotecnologia (ICN2) and Leader of the Advanced Electron Nanoscopy Group. Since 2017 he is President of the Spanish Microscopy Society (SME), was Vice-President from 2013 to 2017 and since 2009 he is Member of its Executive Board. Member of the Executive Board of the International Federation of Societies for Microscopy (IFSM) (2019-2026). He is Scientific Supervisor of the Electron Microscopy Transversal Area at ICN2 and BIST. Awarded with the EU40 Materials Prize 2014 (E-MRS) & listed in the Top 40 under 40 Power List (2014) by The Analytical Scientist. >319 publications; h-index: 62 (WoS); 71 (GoS).

Research interests

Exploring the limits of physical resolution in advanced electron microscopy and understanding the ultimate behavior of materials at the nanoscale and their related properties are the central aims of our research. Main research lines:

- 1) Single atom recognition and localization in embedded quantum and nanostructures. From the atomic resolution data we obtain in the aberration corrected electron microscopes we create 3D atomic models of the nanosystems studied to get full knowledge on their growth mechanisms.
- 2) Direct correlation between the structure and elemental composition at the atomic scale and the physical properties at sub-nanometer scale: study of the photonic, plasmonic and phononic properties of the nanomaterials, correlated to simulated theoretical models.
- 3) Development of in-situ / in-operando experiments in the TEM to understand the physical and chemical phenomena promoting energy mechanisms, correlating theoretical models with

Selected publications

- **P. Neuderth, et al.**, Optical Analysis of Oxygen Self-Diffusion in Ultrathin CeO₂ Layers at Low Temperatures. *Advanced Energy Materials*, **8**, 1802120 (2018)
- **S. Mukherjee, et al.**, Growth and Luminescence of Polytypic InP on Epitaxial Graphene. *Advanced Functional Materials*, **28**, 1705592 (2018)
- **S. Vaitiekėnas, et al.**, Selective-Area-Grown Semiconductor-Superconductor Hybrids: A Basis for Topological Networks. *Physical Review Letters*, **121**, 147701 (2018)
- **J. Liu, et al.**, Triphenyl phosphite as phosphorous source for the scalable and cost-effective production of transition metal phosphides. *Chemistry of Materials*, **30**, 1799-1807 (2018)
- **Y. Liu, et al.**, Crystallographically Textured Nanomaterials Produced from the Liquid Phase Sintering of BixSb₂-xTe₃ Nanocrystal Building Blocks. *Nano Letters*, **18**, 2557-2563 (2018)
- **Y. Zhang, et al.**, Tin Diselenide Molecular Precursor for Solution-Processable Thermoelectric Materials. *Angewandte Chemie - International Edition*, **57**, 17063-17068 (2018)
- **M. Friedl, et al.**, Template-assisted scalable nanowire networks. *Nano Letters*, **18**, 2666-2671 (2018)
- **F. Krizek, et al.**, Field effect enhancement in buffered quantum nanowire networks. *Physical Review Materials*, **2**, 093401 (2018)
- **S. Mukherjee, et al.**, Reduction of Thermal Conductivity in Nanowires by Combined Engineering of Crystal Phase and Isotope Disorder. *Nano Letters*, **18**, 3066-3075 (2018)
- **Y. Liu, et al.**, High Thermoelectric Performance in Crystallographically Textured n type Bi₂Te₃-xSex Produced from Asymmetric Colloidal Nanocrystals. *ACS Nano*, **12**, 7174-7184 (2018)

Selected research activities

- 23 Publications in 2018 with a mean IF of 9.5 (16 D1, 22 Q1)
- 7 Keynote Lectures + 1 Invited
- 3 Invited Seminars (ER-C Jülich, Lund Univ., MIT)
- President of the Spanish Microscopy Society
- Elected as Member of the Executive Board of the **International Federation of Societies for Microscopy (IFSM)** (2019-2026)
- Expert Panel Member for the FWO (Belgium), FNP (Poland) & ANEP

ICREA MEMOIR 2018



Joaquín Arribas
Vall d'Hebron Institut d'Oncologia
Life & Medical Sciences

Joaquín Arribas completed his undergraduate studies in biochemistry at the Universidad Autónoma de Madrid in 1987. At the same university he subsequently worked on the regulation of the catalytic activities of the proteasome and received his PhD in Biology in 1991. Sponsored by a fellowship from the Spanish Ministry of Education and Science, he joined the Memorial Sloan-Kettering Cancer Center, New York (USA), as a Postdoctoral Fellow to work with J. Massagué (1992-1996) on the proteolytic processing of transmembrane growth factors. In 1997 he joined the oncology department at Hospital Vall d'Hebron in Barcelona as a Staff Scientist, since then he has lead the research group on Growth Factors. Since 2010 he has served as Director of VHIO's Preclinical Research Program. His research has been recognized through an EMBO Young Investigator Programme (YIP) Award and the Beckman Coulter Award for the Best Young Spanish Investigator in Biochemistry and Molecular Biology.

Research interests

- * Determine the therapeutic value of the anti-p95HER2 antibodies to treat breast cancers.
- * Analyze cellular heterogeneity of HER2-positive breast tumors.
- * Explore the link between HER2-driven senescence and breast cancer invasion.

Selected publications

- Rius Ruiz I, Vicario R, Moranco B, Morales CB, Arenas EJ, Herter S, Freimoser-Grundschober A, Somandin J, Sam J, Ast O, Barriocanal ÁM, Luque A, Escorihuela M, Varela I, Cuartas I, Nuciforo P, Fasani R, Peg V2, Rubio I, Cortés J, Serra V, Escriva-de-Romani S, Sperinde J, Chenna A, Huang W, Winslow J, Albanell J, Seoane J, Scaltriti M, Baselga J, Tabernero J, Umana P, Bacac M, Saura C, Klein C & **Arribas J** 2018, 'p95HER2-T cell bispecific antibody for breast cancer treatment', *Science Translational Medicine*, 10, 461, eaat1445.
- Georgilis A, Klotz S, Hanley CJ, Herranz N, Weirich B, Moranco B, Leote AC, D'Artista L, Gallage S, Seehawer M, Carroll T, Dharmalingam G, Keng Boon DW, Mellone M, Pombo J, Heide D, Guccione E, **Arribas J**, Barbosa-Morais NL, Heikenwalder M, Thomas GJ, Zender L & Gil J 2018 'PTBP1-Mediated Alternative Splicing Regulates the Inflammatory Secretome and the Pro-tumorigenic Effects of Senescent Cells', *Cancer Cell* 34, 85-102.
- Gawrzak S, Rinaldi L, Arenas EJ, Salvador F, Gregorio S, Rojo F, del Barco Barrantes I, Cejalvo JM, Palafox M, Guiu M, Berenguer-Llargo A, Symeonidi A, Urosevic J, Bellmunt A, Kalafatovic D, Arnal-Estapé A, Fernández E, Müllauer B, Groeneveld R, Slobodnyuk K, Stephan-Otto Attolini C, Saura C, **Arribas J**, Cortes J, Ana Rovira A, Muñoz M, Lluch A, Serra V, Albanell J, Prat A, **Nebreda AR**, **Aznar-Benitah S** & **Gomis RR** 2018 'MSK1 regulates luminal cell differentiation and metastatic dormancy in breast cancer', *Nat Cell Biol*, 20, 211-221.
- Cruz C, Llop-Guevara A, Garber JE, Arun BK, Pérez Fidalgo JA, Lluch A, Telli ML, Fernández C, Kahatt C, Galmarini CM, Soto-Matos A, Alfaro V, Pérez de la Haza A, Domchek SM, Antolin S, Vahdat L, Tung NM, Lopez R, **Arribas J**, Vivancos A, Baselga J, Serra V, Balmaña J & Isakoff SJ 2018, 'Multicenter Phase II Study of Lurbinectedin in BRCA-Mutated and Unselected Metastatic Advanced Breast Cancer and Biomarker Assessment Substudy', *J Clin Oncol*, 36, 31, 3134 - 3143.

ICREA MEMOIR 2018



Salvador A. Benitah

Institut de Recerca Biomèdica de 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).

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 maintenance and progression of carcinomas?

Selected publications

- Gawrzak S, Rinaldi L, Gregorio S, Arenas EJ, Salvador F, Urošević J, Figueras-Puig C, Rojo F, del Barco Barrantes I, Cejalvo JM, Palafox M, Guiu M, Berenguer-Llargo A, Symeonidi A, Bellmunt A, Kalafatovic D, Arnal-Estape A, Fernandez E, Mullauer B, Groeneveld R, Slobodnyuk K, Stephan-Otto Attolini C, Saura C, Arribas J, Cortes J, Rovira A, Munoz M, Lluch A, Serra V, Albanell J, Prat A, **Nebreda AR, Aznar Benitah S & Gomis RR** 2018, 'MSK1 regulates luminal cell differentiation and metastatic dormancy in ER+ breast cancer', *Nature Cell Biology*, 20, 2, 211.
- Li H, Yao Q, Mariscal AG, Wu X, Hulse J, Pedersen E, Helin K, Waisman A, Vinkel C, Thomsen SF, Avgustinova A, **Aznar-Benitah S**, Lovato P, Norsgaard H, Mortensen MS, Veng L, Rozell B & Brakebusch C 2018, 'Epigenetic control of IL-23 expression in keratinocytes is important for chronic skin inflammation', *Nature Communications*, 9, 1420.
- Ladanyi A, Mukherjee A, Kenny HA, Johnson A, Mitra AK, Sundaresan S, Nieman KM, Pascual G, **Aznar Benitah S**, Montag A, Yamada SD, Abumrad NA & Lengyel E 2018, 'Adipocyte-induced CD36 expression drives ovarian cancer progression and metastasis', *Oncogene*, 37, 17, 2285 – 2301.
- Avgustinova A, Symeonidi A, Solé L, Martín M, Castellanos A, **Supek F, Lehner B & Benitah SA** 2018, 'Loss of G9a preserves mutation patterns but increases chromatin accessibility, genomic instability and aggressiveness in skin tumours', *Nat Cell Biol*, 20(12):1400-1409.
- Salzer M, Lafzi A, Avgustinova A, Solanas G, Peixoto F, Castellanos A, Prats N, Martin-Caballero J, Heyn H & **Benitah SA** 2018, 'Identity noise and adipogenic traits characterize dermal fibroblast aging', *Cell*, 175, 6, 1575.
- Pascual G, Domínguez D, **Benitah SA** 2018, 'The contributions of cancer cell metabolism to metastasis', *Dis Model Mech*. 11(8), dmm032920.

ICREA MEMOIR 2018



Àlex Bach

Institut de Recerca i Tecnologia Agroalimentàries
Life & Medical Sciences

Àlex holds a Master and a PhD in Dairy Science from the University of Minnesota. After a few years working as a research manager of a multinational company, Dr. Bach returned to academia as ICREA Research Professor and Head of the Department of Ruminant Production of IRTA. He has received several awards in recognition to his research activities (the last one this year from the 'Royal Academy of Veterinary Sciences of Spain), has spoken at more than 130 international congresses, is author or co-author of more than 135 peer-reviewed publications, more than 90 extension articles, and more than 20 books (or book chapters). He has served as a scientific expert in several committees of the European Food Safety Authority. He is section editor and sits in the editorial boards of several scientific journals, and is member of various scientific committees.

Research interests

Àlex Bach conducts research in ruminant production systems. His research focuses on optimizing the growth curve of dairy replacement heifers, as well as their management and housing systems (group size, behavior, stocking densities...). He also uses mathematical models to simulate work flows of ruminant production systems with the aim of helping the decision-making process in dairy enterprises. In addition, Àlex conducts basic research to understand the physiology and metabolism of ruminants with especial emphasis on the impact of nutrition and management during early development on future metabolic function.

Selected publications

- **Bach A**, Guasch I, Elcoso G, Chaucheyras-Durand F, Castex M, Fabregas F, Garcia-Fruitos E & Aris A 2018, 'Changes in gene expression in the rumen and colon epithelia during the dry period through lactation of dairy cows and effects of live yeast supplementation', *J. Dairy Sci.*, 101, 3, 2631 - 2640.
- **Bach A**, Guasch I, Elcoso G, Duclos J & Khelil-Arfa H 2018, 'Modulation of rumen pH by sodium bicarbonate and a blend of different sources of magnesium oxide in lactating dairy cows submitted to a concentrate challenge', *J. Dairy Sci.*, 101, 11, 9777 - 9788.
- Genis S, Cerri RLA, **Bach A**, Silper BF, Baylao M, Denis-Robichaud J & Aris A 2018, 'Pre-calving Intravaginal Administration of Lactic Acid Bacteria Reduces Metritis Prevalence and Regulates Blood Neutrophil Gene Expression After Calving in Dairy Cattle', *Frontiers In Veterinary Science*, 5, 135.
- Maynou G, Elcoso G, Bubeck J & **Bach A** 2018, 'Effects of oral administration of acidogenic boluses at dry-off on performance and behavior of dairy cattle', *J. Dairy Sci.*, 101:11342- 11353.
- Berends H, Vidal M, Terré M, Martin-Tereso J, Leal L & **Bach A** 2018, 'Effects of fat inclusion in starter feeds for dairy calves by mixing increasing levels of a high-fat extruded pellet with a conventional highly-fermentable pellet', *J. Dairy Sci.*, 101:10962-10972.

ICREA MEMOIR 2018



Joan Bagaria
 Universitat de Barcelona
 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 Catalanian 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), Univ. Paris VII, CalTech, Mittag-Leffler Institut, 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, Cambridge, UK, Aug. to Dec. 2015. Director of the Barcelona research group on set theory (BCNSETS) and PI of the UB-based Group in Logic.

Research interests

I am a mathematical logician working mainly in set theory, an extremely general mathematical theory whose objects of study are the abstract infinite sets. Set theory is the strongest and most encompassing theory ever developed. It is both the mathematical theory of infinity and the standard foundation for mathematics, in the sense that virtually all of mathematics can be formally reduced to it. I help to develop and apply sophisticated theories and techniques, such as forcing and large cardinals, towards the solution of hard problems in set theory itself and in other areas of logic and mathematics. More interestingly, it is sometimes possible to prove that a given problem cannot be solved using standard mathematical tools, which are embodied in the standard 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 research activities

Invited talks

- The role of Large Cardinals in the semantics of Generalized Provability Logics. The First Mexico/USA Logic Fest, ITAM, Ciudad de México. 9 Jan, 2018
- La Hipótesis del Continuo, 140 años después. Jornada principal del año Cantor. Instituto de Matemáticas de la Universidad de Sevilla (IMUS), 14 Feb. 2018
- Some considerations around the Weak Vopěnka Principle. Accessible categories and their connections. School of Mathematics, University of Leeds (UK). 17-20 July 2018
- Preserving the reflection properties of the set-theoretic universe under forcing. Cantor meets Robinson – Set Theory, Model Theory, and their Philosophy. University of Campinas (Brazil). 12-15 December 2018.

Advanced mini-course

- Strong axioms of infinity as reflection principles. Mini-course consisting of 3 sessions of 90 minutes each. Cantor meets Robinson – Set Theory, Model Theory, and Their Philosophy. Instituto de Matemática e Estatística, Universidade de São Paulo (Brazil). 3-7 December 2018.

Invited participant

- 1st Girona conference on inner model theory. Universitat de Girona (Catalonia). July 16-27, 2018.
- Reflections on Set-Theoretic Reflection. Set Theory Conference, organised in partnership with the Clay Mathematics Institute, in celebration of Joan Bagaria's 60th Birthday. Sant Bernat, Montseny (Catalonia). 16-19 November 2018.

Managerial activities

- Member of the Program Committee. "Novi Sad Conference in Set theory and General Topology" (SETTOP 2018). July 2-5, 2018, Novi-Sad (Serbia).

ICREA MEMOIR 2018



Pau Baizán
 Universitat Pompeu Fabra
 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 in two main areas: a) the study of the trends and patterns of family formation dynamics and, b) the changing patterns and determinants of migration. I explore several theoretical perspectives to explain the observed behaviour and apply quantitative techniques to disentangle the relationships between processes. For instance, I investigate questions such as "To what extent do employment insecurity and de-standardisation of work patterns affect the likelihood to enter a partnership and to have a child?", "How does this impact vary across countries, regions and different welfare state regimes?", "What is the impact of changing gender roles on fertility behaviour?", "What are the causes of African migration?", "How migration influences family behaviour?".

Selected publications

- González-Ferrer A, Kraus E, **Baizán P**, Beauchemin C, Black R & Schoumaker B 2018, '**Migrations between Africa and Europe: Assessing the role of resources, family and networks**', Chapter 4, pp 81-122. In: Beauchemin C. (ed.), *Migration between Africa and Europe*, New York and Heidelberg: Springer.

Selected research activities

- Co-PI of the MINECO project *Socio-Demographic Consequences of the Great Recession: Altered Class and Gender Relations?* (CSO2016-80484-R).

- Co-PI of the project *Low Fertility, Labor Market, and Family: Factors, Outcomes, and Policy Implications*. East-West Center (Honolulu, USA) and Korea Institute for Health and Social Affairs.

Courses:

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

Talks:

"Socio-economic differentials in the effect of formal childcare availability on the timing and level of fertility: Spain 1994-2015" invited talk given at the conference *Low Fertility, Labor Market, and Family: Factors, Outcomes, and Policy Implications*. Organized by the Korea Institute for Health and Social Affairs and the East-West Center, Honolulu, Hawai'i, November 8-9, 2018.

"Welfare regime patterns in the social class-fertility relationship: second births in Austria, France, Norway, and United Kingdom", *European Population Conference 2018*. European Association for Population Studies (EAPS). Brussels, 6-9 June. Presentation given at the session "Class Differences and Fertility". Invited talk given at the conference *Using EU-SILC for demographic analysis in Europe*, 29th of June 2018, National Institute of Demographic Studies (INED) in Paris, France.

ICREA MEMOIR 2018



Pablo Ballester Balaguer

Institut Català d'Investigació Química
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 he decided to return to Pittsburgh and moved to MIT in 1989. From 1991 to 2002 he held the positions of Assistant and Associate Professor at UIB and served as Secretary of the Chemistry Department, Vice-dean of the Faculty of Sciences and Head of Studies of Chemistry at UIB. In 2003 and while enjoying a sabbatical leave at the Scripps Research Institute (USA) with the rank of Associate Professor of Research he got an ICREA Research Professorship and joined ICIQ as Group Leader in 2004. He is the recipient of the 2012 Janssen Cilag Organic Chemistry Prize awarded by the Spanish Royal Society of Chemistry. From 2016 to 2018, he served as ICIQ Vice-Director for BIST affairs .

Research interests

My scientific background lies in the areas of organic chemistry (making molecules) and supramolecular chemistry (study how molecules fit together). My research is mainly focused in 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 work in trying to understand molecular self-assembly processes (non-covalent synthesis) as a methodology to construct large and functional supramolecular assemblies, i.e., molecular machines. A second area of interest 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

- Molina-Muriel R, Aragay G, Escudero-Adan EC & **Ballester P** 2018, 'Switching from Negative-Cooperativity to No-Cooperativity in the Binding of Ion-Pair Dimers by a Bis(calix[4]pyrrole) Macrocycle', *J Org Chem*, 83, 13507-13514.
- Escobar L, Diaz-Moscoso A & **Ballester P** 2018, 'Conformational selectivity and high-affinity binding in the complexation of N-phenyl amides in water by a phenyl extended calix[4]pyrrole', *Chem Sci*, 9, 36.
- Escudero-Adan EC, Bauza A, Lecomte C, Frontera A & **Ballester P** 2018, 'Boron triel bonding: a weak electrostatic interaction lacking electron-density descriptors', *Phys Chem Chem Phys*, 20, 24192-24200.
- Monceli G, Escobar L, Dube H & **Ballester P** 2018, '2-(4-Pyridyl-N-oxide)-Substituted Hemithioindigos as Photoresponsive Guests for a Super Aryl-Extended Calix[4]pyrrole Receptor', *Chem-Asian J*, 13, 1632-1639.
- Sekiya R, Diaz-Moscoso A & **Ballester P** 2018, 'Synthesis and Dimerization Studies of a Lipophilic Photoresponsive Aryl-Extended Tetraurea-Calix[4]pyrrole', *Chem-Eur J*, 24, 2182-2191.
- Escobar L, Arroyave FA & **Ballester P** 2018, 'Synthesis and Binding Studies of a Tetra- Aryl-Extended Photoresponsive Calix[4]pyrrole Receptor Bearing meso-Alkyl Substituents', *Eur J Org Chem*, 9, 1097-1106.
- Pudi R, Rodríguez-Seco C, Vidal-Ferran A, **Ballester P** & **Palomares E** 2018 'o,p-Dimethoxybiphenyl Arylamine Substituted Porphyrins as Hole-Transport Materials: Electrochemical, Photophysical, and Carrier Mobility Characterization', *Eur J Org Chem*, 2064-2070.
- Hossain A, Dey A, Seth Saikat K, Ray PP, **Ballester P**, Pritchard RG, Ortega-Castro J, Frontera A & Mukhopadhyay S 2018, 'Enhanced Photosensitive Schottky Diode Behavior of Pyrazine over 2-Aminopyrimidine Ligand in Copper(II)-Phthalate MOFs: Experimental and Theoretical Rationalization', *ACS Omega*, 3, 9160-9171.

Selected research activities

- Eduardo C. Escudero-Adán (PhD-URV)
- David Villarón (MSc-URV)
- Guest Ed. for the special issue of *Frontiers in Chemistry* on the research topic "Supramolecular Aspects in Catalyst"

ICREA MEMOIR 2018



Xavier Barril

Universitat de Barcelona
Experimental Sciences & Mathematics

Xavier Barril's research focuses on the discovery of bioactive molecules through a combined use of computational and experimental techniques. His group also develops new computational tools for drug discovery and strives to improve the fundamental understanding of molecular events involved in pharmacological response. Prof. Barril received his Ph.D. from the Barcelona University (UB) in 2001 for theoretical studies on the molecular recognition processes. He then joined Vernalis (Cambridge, UK), where he was involved in a range of drug discovery projects. In 2005 he was appointed ICREA Research Professor and went back to the UB. Prof. Barril has co-authored 80 scientific publications and 10 patents. In 2011 he co-founded Minoryx Therapeutics to develop allosteric pharmacological chaperones as new treatments for rare diseases. In 2018 this activity was transferred to Gain Therapeutics where Prof. Barril acts as CSO.

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. I 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

- Rachman MM, **Barril X** & Hubbard RE 2018, 'Predicting how drug molecules bind to their protein targets', *Current opinion in pharmacology*, vol 42, pp 34-39.
- Defelipe LA, Arcon JP, Modenutti CP, Marti MA, Turjanski AG & **Barril X** 2018, 'Solvents to Fragments to Drugs: MD Applications in Drug Design', *Molecules*, vol 23, no. 12, pp 3269.
- Majewski M, Ruiz-Carmona S & **Barril X** 2018, 'Dynamic Undocking: A Novel Method for Structure-Based Drug Discovery' in *Rational Drug Design*. Edited by Mavromoustakos T., Kellici T. Series Methods in Molecular Biology, volume 1824. Humana Press, New York, NY. **2018**. pp. 195-215

Selected research activities

Invited talks

- Lecture series on modern drug Discovery, TU Dortmund (Germany), 6 June 2018
- X Meeting of the Spanish Drug Discovery Network. Bilbao (Spain), 22-23 November 2018
- ISQBP President's Meeting 2018. Barcelona (Spain), 19-21 June 2018

Courses and seminars

- 10th Summer School on Medicines Medicines: from Target to Market. Ribeirão Preto (Brazil), 16-23 March 2018
- 3rd Course on computational biology for drug discovery. Buenos Aires (Argentina), 14-18 May 2018

MSc thesis director

- M. Miñarro, "A Computational Pipeline for Participation in CELPP". MSc Bioinformatics (UPF / UB). 15 Jul 2016

ICREA MEMOIR 2018



Frederic Bartumeus

Universitat de Barcelona Centre de Recerca Ecològica i Aplicacions Forestals, Centre for Advanced Studies of Blanes Life & Medical Sciences

Frederic Bartumeus is an ICREA Research Professor in Computational and Theoretical Ecology at the Centre for Advanced Studies of Blanes (CEAB-CSIC) since November 2013. He also holds the same status at CREAF since 2016. He holds a MSc in Plankton Ecology (1997), and a PhD in Biological Sciences (2005) from the University of Barcelona, Spain, where he applied random walk and generalized diffusion theory to develop animal search theory. He joined the Department of Ecology and Evolutionary Biology at Princeton University, USA (2006-2009), where he went in depth on the stochastic modeling of animal movement and dispersal. Back to Spain, he completed his postdoctoral research on vector-borne diseases at the Institut Català del Clima (IC3). With a Ramón y Cajal position (2010) he founded his own lab, the Movement Ecology Laboratory, focused on animal movement (including humans) and search strategies, disease vectors, and computational ecology.

Research interests

My research is focused in the emerging field of movement ecology, which aims to reveal the complex forces that drive movement and dispersal patterns of animals (including humans). Improved tracking technology (GPS, bio-loggers, smart-phones) demands an integrative view, with new computational tools and modeling frameworks to understand unprecedented levels of detail from a constantly growing number of species. I am contributing to this scientific revolution based on a broad, highly collaborative and interdisciplinary research program, founded solidly on statistical physics and quantitative ecology. A central question in my research is how animals use information and their motor properties to optimize search strategies. The mechanistic linkage between behavioral processes and movement patterns is also key to understanding globalised problems such as the perpetuation of social inequality among humans or the spread of vector-borne infectious diseases.

Selected publications

- Eritja R & **Bartumeus F** 2018. 'Mosquitos invasores a través de la mira del teléfono: contexto, retos y oportunidades', *Boletín SEEA (Sociedad Española de Entomología Aplicada)* n^o3.
- **Bartumeus F**, Oltra A & Palmer JRB 2018, 'Citizen Science: A Gateway for Innovation in Disease-Carrying Mosquito Management?', *Trends in Parasitology*, 34, 9, 727 - 729.
- Palmer JRB, Brocklehurst M, Tyson E, Bowser A, Pauwels E & **Bartumeus F** 2018, 'Global Mosquito Alert'. Chapter 15, pp. 210-215. In: *Citizen Science: Innovation in open science, society and policy*. (Eds.) Susanne Hecker, Muki Haklay, Anne Browser, Zen Makuch, Johannes Vogel, and Aletta Bonn. UCL Press, London
- Several Authors, 2018 'Identificación del mosquito *Aedes japonicus* en Asturias.' *ERR Evaluación Rápida de Riesgo*. Centro de Coordinación de Alertas y Emergencias Sanitarias. Ministerio de Sanidad, Consumo y Bienestar Social (MSCBS).

Selected research activities

- 3 Awards:

- Premi Ciutat Barcelona 2017 en Ciències de la Terra i Ambientals*. Ajuntament de Barcelona.
- Investigador Distinguido CSIC* (2017-2018). Consell Superior d'Investigacions Científiques.
- Ciència en Acció*. 1r Premi en la categoria de Continguts Educatius de Ciència en Format Interactiu. Consell Superior d'Investigacions Científiques, l'Institut de Ciències Matemàtiques, la Reial Societat Espanyola de Física, la Reial Societat Espanyola de Química, la Societat Espanyola de Bioquímica i Biologia Molecular, la Societat Geològica d'Espanya, i la Universitat Nacional d'Educació a Distància.
- **Visiting Researcher** at the ASPEN Centre for Physics. Workshop: *The Physics of Behaviour: Movement, Control and Learning* (Organizers: G.Berman, S.Palmer, G.Stephens). 4-8 June, Colorado, USA
- **Workshop organization**: *Physics and Ecology: Challenges at the Frontier*. XXXIV Scientific Meetings in the Mediterranean. 7-11 October, Menorca, Spain.
- **Teaching**: Complexity Science. Master on Computational Biomedical Engineering (UPF). Oct-Nov 2018

ICREA MEMOIR 2018



Quique Bassat
 Institut de Salut Global Barcelona
 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 has been 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.

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. To do these, I have worked in low and middle-income countries to understand and prevent malaria, yaws and other infectious diseases that most impact child survival. I have investigated in Mozambique, Morocco, Papua New Guinea, Brazil and now Bhutan, the epidemiology, aetiology and clinical characteristics of malaria, pneumonia, diarrhea, neonatal sepsis, Yaws and other infectious diseases significantly affecting child's health. I'm interested in biomarkers of host response as diagnostic and prognostic tools to help triage children and better target antibiotics. For malaria and yaws, my research is contributing to develop and test the new paradigm of disease eradication, by assessing the impact of drugs to specifically interrupt their transmission. More recently, my research has focused on improving the poor existing data on the causes of child mortality. An important contribution has been the validation of a radically innovative minimally invasive autopsy (MIA) sampling protocol.

Selected publications

- Gargano N, Madrid L, Valentini G, D'Alessandro U, Halidou T, Sirima S, Tshefu A, Mtoro A, Gesase S, **Bassat Q** 2018, 'Efficacy and Tolerability Outcomes of a Phase II, Randomized, Open-Label, Multicenter Study of a New Water-Dispersible Pediatric Formulation of Dihydroartemisinin-Piperaquine for the Treatment of Uncomplicated Plasmodium falciparum Malaria in African Infants', *Antimicrobial Agents And Chemotherapy*, 62, 1, e00596-17.
- Madrid L, Amos Maculuvé S, Vilajeliu A, Saez E, Massora S, Cossa A, Varo R, Siteo A, Mosqueda N, Anselmo R, Munguambe K, Soto SM, Moraleda C, Macete E, Menendez C & **Bassat Q** 2018, 'Maternal Carriage of Group B Streptococcus and Escherichia coli in a District Hospital in Mozambique', *Pediatric Infectious Disease Journal*, 37, 11, 1145 - 1153.
- Galatas B, Marti-Soler H, Nhamussua L, Cistero P, Aide P, Saute F, Menendez C, Rabinovich NR, Alonso PL, **Bassat Q** & Mayor A 2018, 'Dynamics of Afebrile Plasmodium falciparum Infections in Mozambican Men', *Clinical Infectious Diseases*, 67, 7, 1045 - 1052.
- Mitja O, Godornes C, Houineï W, Kapa A, Paru R, Abel H, Gonzalez-Beiras C, Bieb SV, Wangi J, Barry AE, Sanz S, **Bassat Q**, Lukehart SA & Sheila A 2018, 'Re-emergence of yaws after single mass azithromycin treatment followed by targeted treatment: a longitudinal study', *Lancet*, 391, 10130, 1599 - 1607.
- Moraleda C, Benmessaoud R, Esteban J, Lopez Y, Alami H, Barkat A, Houssain T, Kabiri M, Bezaïd R, Chaacho S, Madrid L, Vila J, Muñoz-Almagro C, Bosch J, Soto SM & **Bassat Q** 2018, 'Prevalence, antimicrobial resistance and serotype distribution of group B streptococcus isolated among pregnant women and newborns in Rabat, Morocco', *Journal Of Medical Microbiology*, 67, 5, 652 - 661.

ICREA MEMOIR 2018



Eduard Batlle

Institut de Recerca Biomèdica de 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 recognised through several awards/honours such as the Sabadell Banc Award for Biomedical Research (2010), Josef Steiner Award (2013), ERC Starting and Advanced Grants (2007, 2013), the Pezcoller foundation-EACR award (2014), the Lilly Foundation Award for Pre-clinical research (2016) and the Carmen & Severo Ochoa Foundation Prize (2016).

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. It appears that metastasis relies on a tumor cell non-autonomous program driven by TGF-beta in the tumor microenvironment.

Selected publications

- Tauriello DVF, Palomo-Ponce S, Stork D, Berenguer-Llergo A, Badia-Ramentol J, Iglesias M, Sevillano M, Ibiza S, Cañellas A, Hernando-Momblona X, Byrom D, Matarin JA, Calon A, Rivas EI, Nebreda AR, Riera A, Attolini CS & **Batlle E** 2018, 'TGFβ drives immune evasion in genetically reconstituted colon cancer metastasis', *Nature* vol. 554(7693), pp.538-543.

Selected research activities

- MEDAL from the OLOF PALME INTERNATIONAL FOUNDATION for contributions to research in biomedicine.
- MCLA158, a bispecific LGR5xEGFR antibody directed against cancer stem cells, entered phase 1 clinical trials in May 2018. Our laboratory was part of the team that developed this therapeutic agent against metastatic CRC.

ICREA MEMOIR 2018



Maria Carme Belarte

Institut Català d'Arqueologia Clàssica
Humanities

PhD in Geography and History (1995), University of Barcelona, for my research on proto-historic societies in Catalonia through the analysis of domestic architecture. From 1996 to 1998 I was a post-doctoral researcher at the CNRS (Unité Mixte de Recherche 5140 - Lattes, France). From 1999 to 2003, I worked at the University of Barcelona as a post-doctoral researcher. In 2004, I took a position at the ICAC to start a research programme about the protohistoric societies and to create a research group working on this period. I joined ICREA in 2006 as an ICREA researcher, and became an ICREA research professor in 2010. I develop my research at the ICAC in collaboration with researchers of Catalan, French and Tunisian Institutions. I made stays as 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.

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 based on large territorial organizations of the Central and Western Mediterranean Iron Age. My topics of research include urbanization and state formation, settlement patterns, architecture, funerary practices and rituals.

My current research is conducted in North-eastern Iberian Peninsula, South of France and North of Africa, and focuses on two main issues. On the one hand, the urbanization process and its connection with state formation in the central and western Mediterranean. On the other hand, the study of funerary rituals, mortuary practices and the use of funerary space.

Selected publications

- Kallala N, Sanmartí J (dir), **Belarte MC** (ed) 2018, *Althiburos III. La nécropole protohistorique d'Althiburos-massif du Ksour*. Documenta 30, Institut Català d'Arqueologia Clàssica, Tarragona.
- Kallala N, Sanmartí J, Jornet R, **Belarte MC**, Canela J, Chérif S, Campillo J, Montanero D, Miniaoui S, Bermúdez X, Fadrique T, Revilla V, Ramon J, Ben Moussa M 2018, "La recherche de terrain dans la nécropole d'Althiburos-massif du Ksour". Kallala N, Sanmartí J (dir), Belarte MC (ed), *Althiburos III. La nécropole protohistorique d'Althiburos-massif du Ksour*. Documenta 30, Institut Català d'Arqueologia Clàssica, Tarragona.
- **Belarte MC** 2018, 'Casas, familias, linajes, comunidades... el caso del mundo ibérico septentrional', Rodríguez Díaz A, Pavón Soldevila I & Duque Espino D (eds), *Más allá de las casas. Familias, linajes y comunidades en la protohistoria peninsular*, Universidad de Extremadura, Cáceres, pp. 111-138.
- Bertral A, **Belarte MC** & Canela J 2018, 'Colaboración entre arqueólogos y restauradores en el Institut Català d'Arqueologia Clàssica', Doménech MT, Doménech A, *Proceedings of the 3rd Conference on electrochemical techniques applied to the conservation of artworks. New Insights into the technical examination and conservation of metallic heritage artefacts (València, 27 March 2017)*, Universitat Politècnica de València, València, pp. 82-89.

Selected research activities

- PI: *Caracterización de los asentamientos urbanos en la costa de la Iberia septentrional (Siglos VI-III a.C.): teledetección, documentación y restitución de estructuras constructivas* (Mineco HAR2015-67946-C2-2-P).
- PI: *Formes d'ocupació del territori i evolució del poblament a la Cessetània occidental durant la protohistòria* (CLT009/18/00095).
- Teaching at the URV-UAB-ICAC Classical Archaeology Master.
- Member of the Scientific Committee of the 24th European Association of Archaeologists (EAA) Annual Meeting (Barcelona, September 2018).
- Co-organization of two sessions at the 24th EAA Annual Meeting (Barcelona, September 2018).

ICREA MEMOIR 2018



Verònica Benet-Martínez

Universitat Pompeu Fabra
Social & Behavioural Sciences

Before joining ICREA and Pompeu Fabra University in 2010, I held professorship positions at the University of California (Riverside) and the University of Michigan. I obtained a PhD in Psychology from the University of California (Davis) and was a funded Postdoctoral Research Fellow at the University of California (Berkeley). I am an appointed Fellow of the Society for Personality and Social Psychology, 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 (cross)cultural psychology. My research has been funded by government and private grants from the U.S., Catalonia, and the EU, and by intramural funds from the University of Michigan, the University of California, and Pompeu Fabra University.

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

- Repke L & **Benet-Martínez V** 2018, 'The (diverse) company you keep: Content and structure of immigrants' social networks as a window into intercultural relations in Catalonia', *Journal of Cross-cultural Psychology*, 49, 924-944.
- Lilgendahl J, **Benet-Martínez V**, Bishop M, Gilson K, Festa L, Levenson C & Rosenblum R 2018, 'So now, I wonder, what am I?: A narrative approach to Bicultural Identity Integration', *Journal Of Cross-cultural Psychology*, 49, 1596 - 1624.
- Huynh QL, **Benet-Martínez V** & Nguyen A 2018, 'Measuring variations in bicultural identity across US ethnic and generational groups: Development and validation of the Bicultural Identity Integration Scale-Version 2 (BIIS-2)', *Psychological Assessment*, 30, 1581-1596.
- **Benet-Martínez V** 2018, 'Multicultural identity and experiences: Cultural, social, and personality processes', In K. Deaux & M. Snyder (Eds.), *The Oxford Handbook of Personality and Social Psychology* (2nd edition). New York, NY: Oxford University Press.
- Gobel M, **Benet-Martínez V**, Mesquita B & Uskul A 2018, 'Europe's Culture(s): Negotiating Cultural Meanings, Values, and Identities in the European Context', *Journal Of Cross-cultural Psychology*, 49, 858 - 867.

Selected research activities

- *Academic Service*: member of various EC and scientific committees for the Society for Personality and Social Psychology (SPSP); the European Association of Personality Psychology (EAPP); and the European Association of Social Psychology (EASP).
- 4 *invited talks*: 19th SPSP convention, Atlanta, GA (plenary); Iowa State University, U.S.; Pompeu Fabra University, Spain; The Hebrew University of Jerusalem, Israel.
- 3 *conference presentations*: 19th SPSP convention, Atlanta, GA; 3rd meeting of the Spanish Scientific Association of Social Psychology (SCEPS), Cuenca, Spain; EASP Small Group Meeting, Brussels, Belgium.
- *Grant Reviewer*: Social Psychology panel, MINECO, Spain.
- *PhD & Master theses direction*: 2 dissertations; 3 master theses

ICREA MEMOIR 2018



Jens Biegert

Institut de Ciències Fotòniques
Experimental Sciences & Mathematics

Jens Biegert is ICREA Professor at ICFO and heads the Attoscience and Ultrafast Optics group. He received his PhD in 2001 with distinction from the Technical University Munich for which he was awarded the Allen Prize of the Optical Society (OSA) after which he went for his Habilitation at ETH Zurich from 2001 until 2006. Since 2007 he is tenured Professor at ICFO, he is actively involved in the scientific community as author of the whitebook leading to the European Extreme Light Infrastructure (ELI), is elected member of the management board of Laserlab-Europe and LLE-AISBL, chair elect of the Board of Meetings at OSA, panel member of the European Research Council and the Volkswagen Foundation, and traveling lecturer of OSA. He holds an appointment as adjunct professor at the University of New Mexico in the USA, is associate editor of APL Photonics, a fellow of the German Academic Scholarship Foundation and the Optical Society of America, and ERC Advanced Grant holder.

Research interests

Our research in attosecond science accesses the natural time scale of electronic motion, thus providing a unique tool to study the dynamic behaviour of the quantum world within atoms molecules and solids. Presently, we are witnessing an amazing convergence of attosecond physics, ultrafast x-ray science and x-ray free-electron laser research to address fundamental problems across physics, chemistry and material science with revolutionary new tools and methodologies. The power of these investigations with attosecond soft x-ray pulses and quantum microscopy with single electrons is the ability to investigate fundamental problems such as molecular isomerization, energy harvesting, or e.g. superconductivity.

Selected publications

- Baudisch M, Marini A, Cox JD, Zhu T, Silva F, Teichmann S, Massicotte M, **Koppens F**, Levitov LS, **Garcia de Abajo FJ & Biegert J** 2018, 'Ultrafast nonlinear optical response of Dirac fermions in graphene', *Nature Comm.* 9, 1018.
- Suarez N, Chacon A, Pisanty E, Ortmann L, Landsman AS, Picon A, **Biegert J**, **Lewenstein M** & Ciappina MF 2018, 'Above-threshold ionization in multicenter molecules: The role of the initial state', *Physical Review A*, 97, 3, 033415.
- Buades B, Moonshiram D, Sidiropoulos TPH, Leon I, Schmidt P, Pi I, Di Palo N, Cousin SL, Picon A, **Koppens F** & **Biegert J** 2018, 'Dispersive soft x-ray absorption fine-structure spectroscopy in graphite with an attosecond pulse', *Optica*, 5, 5, 502 - 506.

ICREA MEMOIR 2018



Bart Bijmens
 Universitat Pompeu Fabra
 Engineering Sciences

MSc in Electronic Engineering and PhD in Medical Sciences (1997, KU Leuven, Belgium). Associate Professor of Cardiovascular Imaging and Cardiac Dynamics at the Faculty of Medicine in Leuven (1998-2004). He supervised clinical research at St. George's Hospital in London (2005-2006). In 2007, he was resident Visiting Professor at the University of Zagreb, Croatia. Since Sept. 2008, he is an ICREA Research Professor at the Department of Information and Communication Technologies of the Universitat Pompeu Fabra. B. Bijmens is recognised as international expert in pathophysiological concepts and technical implementation in assessing CV diseases, with a reputation of being able to explain basic pathophysiology principles and to put technical developments in context. This resulted in many invitations to lecture at major International Conferences and in leading Research Centres. He is requested by centres all over the world for advice on research projects and papers.

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 processing, 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 machine learning in order to find interpretable and easy to implement/deploy techniques for the identification of patients at risk for adverse events, especially mothers and fetuses in lower-income countries.

Selected publications

- Gomez O, Okumura K, Honjo O, Sun M, Ishii R, **Bijmens B** & Friedberg MK 2018, 'Heart rate reduction improves biventricular function and interactions in experimental pulmonary hypertension', *American Journal Of Physiology-heart And Circulatory Physiology*, 314, 3, H542 - H551.
- Sanchez-Martinez S, Duchateau N, Erdei T, Kunszt G, Aakhus S, Degiovanni A, Marino P, Carluccio E, Piella G, Fraser AG & **Bijmens BH** 2018, 'Machine Learning Analysis of Left Ventricular Function to Characterize Heart Failure With Preserved Ejection Fraction', *Circulation-cardiovascular Imaging*, 11, 4, e007138.
- Yim D, Hui W, Larios G, Dragulescu A, Grosse-Wortmann L, **Bijmens B**, Mertens L & Friedberg MK 2018, 'Quantification of Right Ventricular Electromechanical Dyssynchrony in Relation to Right Ventricular Function and Clinical Outcomes in Children with Repaired Tetralogy of Fallot', *Journal Of The American Society Of Echocardiography*, 31, 7, 822 - 830.
- Garcia-Canadilla P, Dejea H, Bonnin A, Balicevic V, Loncaric S, Zhang C, Butakoff C, AguadoSierra J, Vazquez M, Jackson LH, Stuckey DJ, Rau C, Stampanoni M, **Bijmens B** & Cook AC 2018, 'Complex Congenital Heart Disease Associated With Disordered Myocardial Architecture in a Midtrimester Human Fetus', *Circulation-cardiovascular Imaging*, 11, 10, e007753.
- Paun B, **Bijmens B**, Cook AC, Mohun TJ & Butakoff C 2018, 'Quantification of the detailed cardiac left ventricular trabecular morphogenesis in the mouse embryo', *Medical Image Analysis*, 49, 89 - 104.
- Lopez-Guimet J, Pena-Perez L, Bradley RS, Garcia-Canadilla P, Disney C, Geng H, Bodey AJ, Withers PJ, **Bijmens B**, Sherratt MJ & Egea G 2018, 'MicroCT imaging reveals differential 3D micro-scale remodelling of the murine aorta in ageing and Marfan syndrome', *Theranostics*, 8, 21, 6038 - 6052.

ICREA MEMOIR 2018



David Block
 Universitat de Lleida
 Humanities

I am ICREA Research Professor in Sociolinguistics in the Departament d'Anglès i Lingüística, Universitat de Lleida. There I am a member of the Cercle de Lingüística Aplicada. I am also 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 Political Economy and Applied Linguistics. I joined ICREA in September 2012 after 16 years at the University College London Institute of Education, where I was Professor of Languages in Education. Prior to that, I worked in Barcelona for 18 years as an English teacher in centres such as ESADE, and as a Lecturer in Applied Linguistics at the Universitat de Barcelona and the Universitat Autònoma de Barcelona. I completed my PhD in Applied Linguistics at the University Lancaster (UK) in 1995.

Research interests

I have published articles, chapters and books on a variety of topics in applied and socio linguistics.. At present, I am drawing on political economy to develop frameworks for understanding globalization, internationalisation, multiculturalism, bi/multilingualism, identity and social movements. In my most recent work I have focussed on neoliberalism as the dominant ideology/rationality in contemporary societies, inequality in 21st century societies, and class as a key dimension of being in the world. This orientation is reflected in three books, Neoliberalism and Applied Linguistics (Routledge, 2012; co-authored, with John Gray and Marnie Holborow), Social Class in Applied Linguistics (Routledge, 2014) and Political Economy in Sociolinguistics (Bloomsbury, 2018), as well as numerous articles and book chapters. My latest book, Post-truth and Political Discourse (Palgrave Macmillan, 2019) came out in October 2018.

Selected publications

- **Block D** 2018, *Political Economy in Sociolinguistics: Neoliberalism, Inequality and Social Class*, Bloomsbury, London
- **Block D** 2018, 'Some thoughts on CDS and its Marxist political economy bases', *Critical Discourse Studies*, vol.15, no. 4, pp 390 - 401.
- **Block D** 2018, 'The political economy of language education research (or the lack thereof): Nancy Fraser and the case of translanguaging', *Critical Inquiry in Language Studies*, vol. 15, no. 4, pp 237-257.
- **Block D** 2018, 'What would Karl say? The entrepreneur as ideal (and cool) citizen in 21stcentury societies', *Language Sciences*. vol 70, pp 16-25.
- **Block D** 2018, 'Some thoughts on education and the discourse of global neoliberalism', *Language and Intercultural Communication*, vol. 18, no. 5, pp 576-584.
- **Block D** 2018, 'Class and class warfare', In J Flowerdew & J Richardson (eds) *Routledge handbook of critical discourse analysis* (pp. 345-358). London: Routledge.
- **Block D** 2018, 'The materiality and *semiosis* of inequality, class struggle and warfare: the case of home evictions in Spain', In R Wodak & B Forchtner (eds) *Routledge handbook of language and politics* (pp. 646-659). London: Routledge.
- **Block D** 2018 'Inequality and class in language policy and planning', In J Tollefson & M Pérez-Milans (eds) *The Oxford handbook of language policy and planning* (pp. 568-588). Oxford: Oxford University Press.

Selected research activities

- *Co-PI, MINECO Project FFI2016-76383-P: *Towards an empirical assessment of the impact of English-medium instruction at university: language learning, disciplinary knowledge and academic identities*(ASSEMID), 2016-2019.
- *Post-doc tutor, Juan de la Cierva. IJCI-2015-25191: Victor Corona. Exploring the class and race-based subjectivities of the children of immigrants in Catalonia
- *19 conference papers given in 2018
- *Editor, Routledge book series *Language, Society and Political Economy*
- *Associate Editor, *Applied Linguistics Review*
- *Reviewing academic journal articles, grant proposals and book proposals

ICREA MEMOIR 2018



Cedric Boeckx
Universitat de Barcelona
Humanities

Cedric Boeckx is Research Professor at the Catalan Institute for Advanced Studies (ICREA), a member of the Universitat de Barcelona Institute for Complex Systems, 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), and the editor of numerous volumes. He is also the founding co-editor of the Open Access journal *Biolinguistics*, and the founding editor of the Oxford University Press monograph series 'Oxford Studies in Biolinguistics'.

Research interests

My current research focuses on developing new ways of advancing the biolinguistic program, a growing interdisciplinary enterprise seeking to uncover the biological foundations of the human language faculty, a critical part of 'human cognitive biology'. My graduate training and early career were in theoretical linguistics, but my more recent work has a more explicit biological 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

- Martins PT, Mari M & **Boeckx C** 2018, 'SRGAP2 and the gradual evolution of the modern human language faculty', *Journal of Language Evolution*. 3, 1, 67 - 78.
- **Boeckx C** & Theofanopoulou C 2018. '(Neural) syntax'. In *Language, syntax, and the natural sciences*, ed. A. Gallego and R. Martin, 295-315. Cambridge: Cambridge University Press.
- Benitez-Burraco C, Theofanopoulou C & **Boeckx C** 2018, 'Globalization and domestication', *Topoi*. 37, 2, 265 - 278.
- Duguine M, Irurtzun A & **Boeckx C** 2018. Linguistic diversity and granularity: two case-studies against parametric approaches. *Linguistic Analysis*41, 445-458.

ICREA MEMOIR 2018



Luca Bonatti
 Universitat Pompeu Fabra
 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

- Cesana-Arlotti N, Martín A, Téglás E, Vorobyova L, Cetnarski R & **Bonatti LL** 2018, 'Precursors of logical reasoning in preverbal human infants', *Science*, 359, 6381, 1263 - +, aao3539.

Selected research activities

Selected Conferences

Jan 25, University of Maryland (MD), Cognitive Science Colloquium — Invited Speaker.

May 3, Université Pierre et Marie Curie, Paris. Workshop on Numerical Cognition — Invited Speaker.

June 9-11 McDonnell Foundation Grant Plenary Workshop on The Logic of Quantification. Co-Organizer and Speaker.

June 12 McDonnell Foundation Grant Focused Seminar on The ontogenesis of logic in grammar. Organizer and Speaker.

ICREA MEMOIR 2018



Christian Brander

Institut de Recerca de la Sida - IrsiCaixa
Life & Medical Sciences

Christian Brander obtained his PhD in Immunology from the University of Bern in 1994 for his studies on T-cell hypersensitivity to Penicillin and work on the mechanisms of exogenous antigen re-presentation on HLA class I. He completed his post-doctoral training at Massachusetts General Hospital in Boston focusing on T cell immunity to HIV and studying the impact that host genetics have on these immune responses. He was Associate Professor at Harvard Medical School before joining ICREA in 2008 with an appointment at the IrsiCaixa AIDS Research Institute to continue his work on cellular immunity to viral infections (HIV, HCV and herpesviruses), especially also in the transplantation setting. He is a co-inventor of the HIV "HTI" immunogen, which is developed clinically by Aelix Therapeutics Inc. where he is a co-founder and CSO. He serves as the scientific director of the HIVACAT program and holds an Associate Professor position at the University of Vic and Central Catalonia.

Research interests

Our group aims to understand the cellular immunity to viral infections in the immune compromised host, including HIV infected subjects and individuals undergoing organ transplantation. Using complementary sets of immune analyses and integrated -omics approaches, we seek to identify functional correlates of virus control and to explore their underlying cellular and molecular mechanisms. A main focus lies on the definition of biomarkers of controlled HIV infection, for which we have established unique cohorts of HIV-infected and HIV-exposed, yet uninfected individuals. We developed and apply new ("boosted") flow cytometry tools and combine methylome and communicate analyses to assess to what degree and at what stages of HIV infection the effector function profiles of virus-specific T cells are epigenetically controlled. Our studies aim to help refine future clinical trials of therapeutic HIV vaccination and to guide clinical management of viral infections in transplanted individuals

Selected publications

- Olvera A, **Martinez JP**, Casadella M, Llano A, Rosas M, Mothe B, Ruiz-Riol M, Arsequell G, Valencia G, Noguera-Julian M, Paredes R, **Meyerhans A & Brander C** 2018, 'Benzyl-2-Acetamido-2-Deoxy-alpha-D-Galactopyranoside Increases Human Immunodeficiency Virus Replication and Viral Outgrowth Efficacy In Vitro', *Frontiers In Immunology*, 8, 2010.
- Coll J, Videla S, Ganoza C, Ornelas A, Perez S, Clotet B, **Brander C** & Sanchez J 2018, 'Early diagnosis of HIV infection among men who have sex with men in Lima (Peru). A prospective cohort study', *Clinical Microbiology And Infection*, 24, 7, 793 - 795.
- Beltran-Pavez C, Ferreira CB, Merino-Mansilla A, Fabra-Garcia A, Casadella M, Noguera-Julian M, Paredes R, Olvera A, Haro I, **Brander C**, Garcia F, Gatell JM, Yuste E & Sanchez-Merino V, 2018, 'Guiding the humoral response against HIV-1 toward a MPER adjacent region by immunization with a VLP-formulated antibody-selected envelope variant', *Plos One*, 13, 12, e0208345.
- Mothe B & **Brander C** 2018, 'HIV T-Cell Vaccines', *Hiv Vaccines And Cure: The Path Towards Finding An Effective Cure And Vaccine*, 1075, 31 - 51.
- Kobayashi-Ishihara M, Terahara K, Martinez JP, Yamagishi M, Iwabuchi R, **Brander C**, Ato M, Watanabe T, Meyerhans A & Tsunetsugu-Yokota Y 2018, 'HIV LTR-Driven Antisense RNA by Itself Has Regulatory Function and May Curtail Virus Reactivation From Latency', *Front Microbiol*, 25;9:1066

ICREA MEMOIR 2018



Stefan T. Bromley
 Universitat de Barcelona
 Engineering Sciences

Stefan Bromley (1971) is an ICREA Research Professor at the Institute of Theoretical and Computational Chemistry at the University of Barcelona (IQTC-UB) where he heads the Nanoclusters and Nanostructured Materials group. He obtained his PhD in Computational Physics (University of Southampton, UK) in 1997 and has 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 >160 WoS-listed articles and 8 book chapters, which have received >4500 citations (h-index = 35). He has given many invited talks about his work at international conferences and academic institutions and has edited two books on the theme of computational modelling of nanomaterials and nanoparticles.

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 often display novel size-dependent properties compared to materials at everyday length scales. Using powerful supercomputers and both atomistic and quantum modelling methods, we aim to provide a detailed predictive understanding of the structural, electronic and chemical properties of nanomaterials. Our focus is on how nanomaterials evolve with increasing size, and designing new materials from nanoscale building blocks. Our research follows three main themes: (i) nanoclusters and nanostructured materials for energy applications (e.g. TiO₂, ZnO), (ii) nucleation and properties of astronomically important nanomaterials (e.g. TiC, silicates), (iii) design of nanostructured materials using organic molecular building blocks for electronics/spintronics.

Selected publications

- Pinero JJ, Ramirez PJ, **Bromley ST**, Illas FI, Vines FV & Rodriguez JA 2018, 'Diversity of Adsorbed Hydrogen on the TiC(001) Surface at High Coverages', *Journal Of Physical Chemistry C*, 122, 49, 28013 - 28020.
- Cuko A, Escatllar AM, Calatayud M & **Bromley ST** 2018, 'Properties of hydrated TiO₂ and SiO₂ nanoclusters: dependence on size, temperature and water vapour pressure', *Nanoscale*, 10, 45, 21518 - 21532.
- Cuko A, Calatayud M & **Bromley ST** 2018, 'Stability of mixed-oxide titanosilicates: dependency on size and composition from nanocluster to bulk', *Nanoscale*, 10, 2, 832 - 842.
- Alcon I & **Bromley ST** 2018, 'Triarylmethyl-based 2D covalent networks: virtual screening of chemical functionalisation for optimising strain-induced property control', *Physical Chemistry Chemical Physics*, 20, 7, 5028 - 5035.
- Gobrecht D, Decin L, Cristallo S & **Bromley ST** 2018, 'A global optimisation study of the low-lying isomers of the alumina octomer (Al₂O₃)(8)', *Chemical Physics Letters*, 711, 138 - 147.

Selected research activities

- Edited book: 'Computational Modelling of Nanoparticles', editors Bromley, Stefan T. and Woodley, Scott M., Frontiers of Nanoscience book series, Elsevier, ISBN 987-0-08-102232-0.
- Invited conference talk: 'Tracking The Properties Of Oxides From Nanoscale To Bulk: Implications For Nano-Oxide Based Technologies', IUVSTA Workshop on Physics and Chemistry of Nanoscale Oxide Systems, Avila, Spain, July 2018.
- Invited conference talk: 'Structure and Reactivity of Interstellar Nanodust', at the European Conference on Surface Science, ECOSS 34, Aarhus, Denmark, August 2018.
- Invited conference talk: 'Tracking the Properties of Oxide Materials from Nanoscale to Bulk', at IEEE NANO 2018, Cork, Ireland, July 2018.
- Conference talk: 'Post-graphene organic Dirac materials with tunable spin-polarised and semiconducting states', Graphene Week 2018, San Sebastian, Spain, September 2018.

ICREA MEMOIR 2018



Sandra Bruçet

Universitat de Vic - Universitat Central de Catalunya
Experimental Sciences & Mathematics

I graduated in 1998 and obtained my PhD in Biology in 2003 at University of Girona. After that I was a postdoc at the University of Oslo (2006) and the National Environmental Institute of Denmark (2006-2008). From 2009 to 2012, I worked as a research scientist at the European Commission-Joint Research Centre (Italy). I was also a Visiting Scientist at the Middle East Technical University, Turkey. In 2012, I was hired at University of Vic to set up a research group on aquatic ecology from scratch. In 2013, I obtained a Marie Curie Intra European Senior Fellowship to work at the University of Aarhus for two years (Denmark). In September 2015, I was appointed ICREA Research professor at University of Vic. Currently, I am heading the Research Group on Aquatic Ecology (GEA) that hosts ten members. GEA researchers are members of the newly created Chair on Water, Nature and Wellness.

Research interests

The research of our group focuses on the response of aquatic ecosystems and their biodiversity to global changes, such as eutrophication, habitat destruction or global warming. We use the organisms' size structure as an alternative to taxonomical approaches to assess biodiversity and ecosystem processes. We are also interested in basic and applied aspects of ecological theories relating organisms' body size, metabolism and temperature. Our research is holistic including the whole trophic structure from phytoplankton to fish. We focus on different aquatic ecosystems (lakes, rivers, ponds, wetlands) and use complementary approaches such as experiments, latitudinal comparisons and models. Ultimately, we aim to apply our research results to solving problems related with the conservation of aquatic ecosystems, especially those affecting autochthonous species and degraded habitats.

Selected publications

- **Bruçet S** et al. 2018, 'Size diversity and species diversity relationships in fish assemblages of Western Palearctic lakes'. *Ecography*, vol. 41, no. 7, pp 1064 - 1076.
- Mehner T, Lischke B, Scharnweber K, Attermeyer K, Brothers S, Gaedke U, Hilt S & **Bruçet S** 2018. Empirical correspondence between trophic transfer efficiency in freshwater food webs and the slope of their size spectra. *Ecology*, vol. 99, no. 6, 1463-1472.
- Trochine C, **Bruçet S**, Argillier C, Arranz I, Beklioglu M, Benejam L, Ferreira T, Hesthagen T, Holmgren K, Jeppesen E, Kelly F, Krause T, Rask M, Volta P, Winfield IJ & Mehner T 2018, 'Non-native fish occurrence and biomass in 1943 Western Palearctic lakes and reservoirs and their abiotic and biotic correlates', *Ecosystems*, vol. 21, pp 395-409.
- Benejam L, Tobes I, **Bruçet S** & Miranda R 2018, 'Size spectra and other size-related variables of river fish communities: systematic changes along the altitudinal gradient on pristine Andean streams', *Ecological Indicators*, vol. 90, pp 366-378.
- Bartrons M, Arranz I, Sgarzi S, Cañedo-Arguelles M, Quintana XD, Landkildehus F, Lauridsen TL, **Bruçet S** & Jeppesen E 2018, 'Fish shift the feeding behaviour and trophic niche diversification of their prey in subarctic Lake Mývatn, Iceland', *Hydrobiologia*, vol. 816, pp 243-254

Selected research activities

- PhD thesis Zeynep Ersoy: Biotic and environmental factors shaping body size distributions in freshwater planktonic food webs. Main supervisor: Bruçet.
- Lead Author of IPBES regional assessment report on biodiversity and ecosystem services for Europe and Central Asia.
- GEA Group recognized as an Emergent research group by Catalonia Government (18.920€). PI: Bruçet
- Project funded by The Swedish Research Council: *Climate change effects on structure and processes in aquatic communities* (326.845€).
- Project *Inventory of the fauna and flora of temporary ponds in Cap de Creus Natural Park*. Funded by Natural Park Cap de Creus (5747€). Co-PI: Bruçet

ICREA MEMOIR 2018



Francesc Burjachs

Institut Català de Paleoecologia Humana i Evolució Social
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 340 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

- Brisset E, **Burjachs F**, Ballesteros-Navarro BJ & Fernández-López de Pablo J (2018). 'Socio-ecological adaptation to Early-Holocene sea-level rise in the western Mediterranean'. *Global and Planetary Change*, vol. 169, pp 156-167.
- Fernández-López de Pablo J, Jones SE & **Burjachs F** Eds 2018, 'Late Glacial to Early Holocene socio-ecological responses to climatic instability within the Mediterranean basin', *Quaternary Science Reviews*, vol. 184, pp 1-224 (15 March 2018).
- Revelles J, **Burjachs F**, Palomo A, Piqué R, Iriarte E, Pérez-Obiol R & Terradas X 2018, 'Human-environment interaction during the Mesolithic - Neolithic transition in the NE Iberian Peninsula. Vegetation history, climate change and human impact during the Early-Middle Holocene in the Eastern Pre-Pyrenees', *Quaternary Science Reviews*, vol. 184, pp 183-200.
- Jones SE, **Burjachs F**, Ferrer-García C, Giral S, Schulte L & Fernández-López de Pablo J 2018, 'A multi-proxy approach to understanding complex responses of salt-lake catchments to climate variability and human pressure: A Late Quaternary case study from south-eastern, Spain', *Quaternary Science Reviews*, vol. 184, pp 201-223.
- Piqué-Huerta R, Revelles J, **Burjachs F**, Caruso-Fermé L & Pérez-Obiol R 2018, 'Interdisciplinary approach to the landscape and firewood exploitation during the Holocene at La Garrotxa (Girona, NE Iberia)'. *Quaternary International*, vol. 463 (part B), pp 401-413.
- Vacchi M, Ghilardi M, Melis RT, Spada G, Giaime M, Marriner N, Lorscheid Th, Morhange Ch, **Burjachs F** & Rovere A (2018). New relative sea-level insights into the isostatic history of the Western Mediterranean. *Quaternary Science Reviews*, vol. 201, pp 396-408.

Selected research activities

- Co-organiser of Session #420: *Sensitivity and resilience of human communities to coastal environmental changes during the Early to Mid-Holocene*. 24th Annual Meeting of the European Association of Archaeologists (EAA).
- Guest Editor, *Quaternary Science Reviews*.
- Researcher of PALEODEM (ERC-Consolidator Grant-683018).

ICREA MEMOIR 2018



Andreu Cabot

Institut de Recerca en Energia de Catalunya
Engineering Sciences

I graduated in Physics in 1998, and in 2003 I received my PhD from the University of Barcelona. I then worked from 2004 to 2007 as a postdoctoral researcher in 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 approximately 15 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, production and manipulation of nanocrystals and nanomaterials, their functional characterization and their technological application in the energy field. I use solution-based processes to produce these nanocrystals and to assemble them to the macroscale. Solution-based methods allow both a unique control over composition and crystal phase at the nanometer scale and a high versatility in the development of socially and economically-relevant technologies. From an application point of view, I have centered my work in the development of materials for energy conversion and storage. In particular, my group develops solution-processed solar cells using spray deposition technologies, thermoelectric nanocomposites from the bottom-up assembly of colloidal nanocrystals and multi-metallic and metal-metal oxide nano-heterostructures for catalysis, including photo and electrocatalysis.

Selected publications

- Zhang Y, Liu Y, Lim KH, Xing C, Li M, Zhang T, Tang P, **Arbiol J**, Llorca J, Ng KM, Ibañez M, Guardia P, Prato M, Cadavid D & **Cabot A** 2018, 'Tin Diselenide Molecular Precursor for Solution-Processable Thermoelectric Materials', *Angew Chem*, 130, 17309-17314.

- Liu Y, Zhang Y, Lim KH, Ibañez M, Ortega S, Li M, David J, Martí-Sánchez S, Ng KM, **Arbiol J**, Kovalenko MV, Cadavid, D & **Cabot A** 2018, 'High Thermoelectric Performance in Crystallographically Textured n-Type Bi₂Te_{3-x}Se_x Produced from Asymmetric Colloidal Nanocrystals', *ACS nano*, 12, 174-184.

- Liu Y, Zhang Y, Ortega S, Ibañez M, Lim KH, Grau-Carbonell A, Martí-Sánchez S, Ng KM, **Arbiol J**, Kovalenko MV, **Cabot A** 2018, 'Crystallographically Textured Nanomaterials Produced from the Liquid Phase Sintering of Bi_xSb_{2-x}Te₃ Nanocrystal Building Blocks', *Nano letters*, 18, 2557-2563.

- Morata A, Pacios M, Gadea G, Flox Ca, Cadavid D, **Cabot A** & **Tarancón A** 2018, 'Large-area and adaptable electrospun silicon-based thermoelectric nanomaterials with high energy conversion efficiencies', *Nat Commun*, 9, 4759.

- Liu J, Meyns M, Zhang T, **Arbiol J**, **Cabot A** & Shavel A 2018, 'Triphenyl Phosphite as the Phosphorus Source for the Scalable and Cost-Effective Production of Transition Metal Phosphides', *Chem Mater*, 30, 1799-1807.

- Li J, Luo Z, Zuo Y, Liu J, Zhang T, Tang P, **Arbiol J**, Llorca J & **Cabot A** 2018, 'NiSn bimetallic nanoparticles as stable electrocatalysts for methanol oxidation reaction', *Applied Catalysis B: Environmental*, 234, 10-18.

- Berestok T, Guardia P, Ibanez M, Meyns M, Colombo M, Kovalenko MV, Peiro F & **Cabot A** 2018, 'Electrostatic-Driven Gelation of Colloidal Nanocrystals', *Langmuir*, 34, 9167-9174.

- Liu J, Wang Z, David J, Llorca J, Li J, Yu X, Shavel A, **Arbiol J**, Meyns M & **Cabot A** 2018, 'Colloidal Ni_{2-x}CoxP nanocrystals for the hydrogen evolution reaction', *J Mater Chem A*, 6, 11453-11462.

Selected research activities

2 graduated PhD students

3 new PhD student

2 new research projects

Editor special issue in *Nanomaterials*

ICREA MEMOIR 2018



Jordi Cabot
 Universitat Oberta de Catalunya
 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

- Cosentino V, Canovas Izquierdo JL & **Cabot J** 2018, 'GITANA: A software project inspector', *Science Of Computer Programming*, 153, 30 - 33.
- Benelallam A, Gomez A, Tisi M & **Cabot J** 2018, 'Distributing relational model transformation on MapReduce', *Journal Of Systems And Software*, 142, 1 - 20.
- Martinez S, Gerard S & **Cabot J** 2018, 'On Watermarking for Collaborative Model-Driven Engineering', *Iee Access*, 6, 29715 - 29728.
- **Cabot J**, Cánovas Izquierdo JL & Cosentino V 2018, 'Are CS conferences (too) closed communities?', *Communications of the ACM* 61(10): 32-34.
- Afzal W, Brunelière H, Di Ruscio D, Sadovykh A, Mazzini S, Cariou E, Truscan D, **Cabot J**, Gómez A, Gorroñoigoitia J, Pomante L, Smrz P 2018, 'The MegaM@Rt2 ECSEL project: MegaModelling at Runtime – Scalable model-based framework for continuous development and runtime validation of complex systems', *Microprocessors and Microsystems - Embedded Hardware Design* 61: 86-95.
- **Cabot J** 2018, 'WorkdPress: A Content Management System to Democratize Publishing', *IEEE Software* 35(3): 89-92.
- Cánovas Izquierdo JL & **Cabot J** 2018, 'The role of foundations in open source projects', *ICSE-SEIS*, 3-12

Selected research activities

- Started the Modelia.eu initiative aimed at studying how Artificial Intelligence can improve software development. And vice versa, how software development can help democratize the creation of AI applications
- Elected chair of the Steering Committee of the ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MODELS)
- Software Engineering in Society Paper Award for our paper "The Role of Foundations in Open Source Projects" by JL Canovas and J. Cabot. ICSE SEIS 2018
- A Sosym Journal best paper award for our paper "A feature-based survey of model view approaches" by H. Bruneliere, E. Burger, J. Cabot and M. Wimmer.

ICREA MEMOIR 2018



Xavier Cabré

Universitat Politècnica de Catalunya
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.

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

- **Cabré X**, Fall MM & Weth T 2018, 'Delaunay hypersurfaces with constant nonlocal mean curvature', *Journal de Mathématiques Pures et Appliquées*, vol. 110, no. 9, pp 32-70.
- **Cabré X**, Fall MM & Weth T 2018, 'Near-sphere lattices with constant nonlocal mean curvature', *Mathematische Annalen*, vol. 370, no. 3-4, pp 1513-1569.
- **Cabré X**, Lucia M, Sanchon M & Villegas S 2018, 'Antisymmetry of solutions for some weighted elliptic problems', *Communications In Partial Differential Equations*, vol. 43, no. 3, pp. 506-547.
- **Cabré X** & Poggesi G 2018, 'Stable solutions to some elliptic problems: minimal cones, the Allen-Cahn equation, and blow-up solutions', in *Geometry of PDEs and Related Problems*, Lecture Notes in Mathematics 2220, CIME Foundation Subseries, Springer.
- **Cabré X**, Fall MM, Solà-Morales J & Weth T 2018, 'Curves and surfaces with constant nonlocal mean curvature: meeting Alexandrov and Delaunay', *J. Reine Angew. Math.* vol. 745 (2018), pp 253-280.

ICREA MEMOIR 2018



Mario Cáceres

Universitat Autònoma de Barcelona
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 got 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 at the Institut de Biotecnologia i de Biomedicina (IBB) of the UAB, where he is also an associate professor.

Research interests

The genomic revolution has unveiled extraordinary possibilities unthought-of before. In particular, we are interested in understanding genomic structural variation and gene-expression changes, and how they relate to individual and species 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 in the human genome, which aims to investigate the biological significance of one of the less known types of variants in humans. This ranges from the development of new methods for inversion study 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 complex traits.

Selected research activities

- Ruth Gómez Master Thesis. Title: Improving interoperability between InvFEST and PopHuman. Universitat Autònoma de Barcelona, October 5, 2018.
- Claudia Ramírez Master Thesis. Title: Characterization, validation and genotyping of inversions predicted with new genomic techniques, July 12, 2018.
- Invited speaker at the 4th Annual Danish Bioinformatics Conference, August 29-30 2018. Odense, Denmark.
- Co-organizer of the VI Bioinformatics and Genomics Symposium of the Societat Catalana de Biologia. December 20, 2018. Barcelona, Spain.
- Member of the Programme Committee of the Next Generation Sequencing Conference 2018 (NGS 2018). April 9-11, 2018. Barcelona, Spain.
- Coordinator of the Genomics and Proteomics Section of the Societat Catalana de Biologia.
- Member of the Committee of the Antoni Prevosti Award for the Best Oral Communication of the XVIII Symposium of Evolutionary Biology from the Societat Catalana de Biologia. June 25, 2018. Barcelona, Spain.
- BMC Genomics Associate Editor.
- Genes Journal Associate Editor.

ICREA MEMOIR 2018



Caterina Calsamiglia Costa

Institute for Political Economy and Governance
Social & Behavioural Sciences

Currently a Research Professor at IPEG and affiliate researcher at CEPR. She obtained her PhD from the Department of Economics at Yale University in 2005. She was an assistant and associate professor at UAB until 2015. 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. Since 2011 she is a member of the Human Capital and Economic Opportunity group at the University of Chicago. In 2015 she moved to CEMFI as a Research Professor, where she remains an affiliate researcher. She recently started working on measuring and assessing non cognitive traits by leading an interdisciplinary group of researchers. She's the scientific advisor of Escola Nova 21, an alliance of schools and other public and civil society institutions for an advanced education system.

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.

Selected publications

- **Calsamiglia C** & Güell M 2018 "Priorities in school choice: the case of the Boston mechanism in Barcelona" *Journal of Public Economics*, Volume 163, July 2018, pages 20-36.

ICREA MEMOIR 2018



Paula Casal
 Universitat Pompeu Fabra
 Humanities

Paula Casal is an ICREA Professor at the Law Department of Universitat Pompeu Fabra. She was previously a Lecturer and a Reader in Moral and Political Philosophy at Reading University (2004-8), and a Lecturer at Keele University (1996-2004). She was also Fellow in Ethics at Harvard University (1999-2000), Keele Junior Research Fellow, also at Harvard (2000-1), Hoover Fellow at Université Catholique de Louvain (2001-02), and Leverhulme Research Fellow at Oxford University (2002-4). Her work has appeared in such journals as *Ethics*, *Economics and Philosophy*, *Journal of Medical Ethics*, *Journal of Political Philosophy*, *Hypatia*, *Political Studies* and *Utilitas*. She is an Associate Editor of *Politics, Philosophy and Economics*, co-editor of *LEAP*, President of the Great Ape Project-Spain, Academics Stand Against Poverty-Spain, and co-director of the UPF Center for Animal Ethics.

Research interests

I work on how social institutions should distribute resources. This requires assessing the general principles (such as equality, priority, and sufficiency) governing distributive decisions as well as more specific policies designed to promote social or global justice. I am particularly concerned with policy responses to global poverty, climate change and gender inequality, including various forms of taxation. I am also interested in the intersection between ethics and primatology, including the origins of empathy and resource-sharing as well as violence and gender inequality, the moral status of non-human animals, and the distinction between natural and social inequality. I have also written about how the costs of raising children should be distributed, sea-access for landlocked states, the moral limits to religious accommodation, and the difference medical ethics draws between therapy and enhancement.

Selected publications

- Casal P 2018, 'Distributive Justice and Human Nature', in *The Oxford Handbook of Distributive Justice*, ed. S. Olsaretti, Oxford University Press, Oxford, pp. 259-283.
- Casal P 2018, 'Los derechos homínidos. Una defensa ecuménica', *Daimon*, 73, pp. 7-25.
- Casal P 2018, 'Interview with Robert Trivers', *Mètode* 98, pp. 23-28.
- Bartolini S, Brennan G, Casal P, Clayton M, Jaeggi R, Gopal N, Kelbessa W and Satz D 2018, 'Social Progress: A Compass' in International Panel on Social Progress, *Rethinking Society for the 21st Century*. Cambridge: Cambridge University Press, 3 vols.

Selected research activities

- Awards: Christopher Family Fellow at Stanford University.
- Papers delivered: 'Conservative and Conservationist Sufficiency' UPF, 1/2/18; Conference on Global Justice and Climate Change, Univ. of Costa Rica 30/4/2018; Environmental Humanities Dept, Stanford University 6/6/2018; 'Ethics and Evolutionary Science', ICREA Colloquium 24/3/2018; 'The Rights of Persons and Other Animals', Center for Health and Wellbeing, Princeton University 25/3/2018; 'Ethical Principles and Climate Change', Univ. of Costa Rica 9/5/2018; 'Persons That Are Not Human' to the entire St George School of Barcelona 6/11/2018; 'Why Inequality Matters', Fundació Catalunya-Europa 7/11/2018; 'Distributive Justice and Female Longevity', Palau Macaya 20/11/2018; and with A. Williams 'Asymmetric Procreative Justice. A Defence', McCoy Center for Ethics and Society, Stanford Univ. 11/5/2018 and 'Reflecting on Inequality', Palau Macaya 19/11/2018.
- Supervised: Antonio Barboza's PhD *Justice and Public Health* and Enric Bea's PhD *Parental Transmission of Ethical and Political Values* (both with A Williams); and Giovanni Massaro's MA *Moral Bioenhancement*.
- Conferences organized: *Sufficiency. Never Enough?* (L Shields, Y Benbaji, K Lippert-Rasmussen, S Segall, D Axelsen, R Huseby...) 1/2/2018; Symposium on K Lippert-Rasmussen's *Relational Egalitarianism* 5/10/2018.
- Evaluated: Intertalentum Grants.

ICREA MEMOIR 2018



Gustau Catalán

Institut Català de Nanociència i Nanotecnologia
Experimental Sciences & Mathematics

Gustau Catalán graduated in Physics at the Universitat de Barcelona (1997) and gained 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 Indian Himalayas (Draoich Parvat, 6200m, Garwhal). Upon returning to research, he has been a scientist at the Mediterranean Institute for Advanced Studies (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 Nanociència i Nanotecnologia (ICN2). His research centres on the physics of materials at the nanoscale.

Research interests

A common denominator of my work is the search for original physics and emerging effects at the nanoscale. Recently, most of my research has focused on the effects of strain gradients on electrical polarization (a phenomenon known as flexoelectricity); the European Research Council (ERC) has funded me to set up in Barcelona the world's first specialized laboratory dedicated to this phenomenon. Prominent discoveries in this area have been the giant flexoelectricity of semiconductors, and the existence of flexoelectricity in bones, where the effect is thought to play a physiological role in bone repair.

In parallel, I have also worked on other nanoscale phenomena, mostly to do with ferroelectric oxides: the physics of domain walls (domain wall nanoelectronics), antiferroelectricity and giant photovoltaic effects in polar materials.

Selected publications

- Abollahi A, Vasquez-Sancho F & **Catalán G** 2018, 'Piezoelectric Mimicry of Flexoelectricity', *Physical Review Letters*, vol. 121, pp 205502.
- Vales-Castro P, Roleder K, Zhao L, Li J-F, Kajewski D & **Catalán G** 2018, 'Flexoelectricity in antiferroelectrics', *Applied Physics Letters*, 113, 13, 132903.
- Perez-Tomas A, Lima A, Billon Q, Shirley I, **Catalán G**, Lira-Cantu M 2018, 'A Solar Transistor and Photoferroelectric Memory', *Advanced Functional Materials*, 28, 17, 1707099.
- Vasquez-Sancho F, Abdollahi A, Damjanovic D & **Catalán G** 2018, 'Flexoelectricity in Bones', *Advanced Materials*, 30, 9, 1705316.

Selected research activities

Doctoral theses directed

- *Flexoelectricity in Biomaterials*, by Fabian Vasquez-Sancho, Universitat Autònoma de Barcelona.
- *Effect of flexoelectricity on the nanomechanical properties of ferroelectrics*, by Kumara Cordero-Edwards, Universitat Autònoma de Barcelona.

Conferences & Workshops

- 'Flexoelectricity: bending induced polarization, from bytes to bones'. 13 Simposio en Ciencia de Materiales Avanzados y Nanotecnología (SCIMAN-2018), Costa Rica. 10 Dec, 2018 - Keynote speaker
- 'Breaking not-so-bad: fracture flexoelectricity' 25th International Workshop on Oxide Electronics (iWOE 25)', Les Diablerets, Switzerland. 1 Oct, 2018
- 'Breaking flexoelectrics' European MRS (E-MRS) Fall Meeting', Warsaw. Poland. 17 Sep, 2018
- iFlexoelectricity: From Nanomechanics to Bone Healing Third Seminar on the Mechanics of Multifunctional Materials, Germany. 13 Jun, 2018
- 'Influence of Flexoelectricity on Nanomechanical Properties of Ferroelectrics. Joint meeting of the European Physics Society (EPS) and the Deutsche Physikalischen Gesellschaft (DPG)', Germany . 15 Mar, 2018

ICREA MEMOIR 2018



Miguel Ángel Cau
 Universitat de Barcelona
 Humanities

I am an archaeologist focused on the Late Antique Mediterranean and on archaeometry of ceramics. After obtaining my PhD (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 ICREA Research Professor since 2003. I am the director of the Equip de Recerca Arqueològica i Arqueomètrica, University of Barcelona (ERAAUB). I have participated in national and EU projects, such as GEOPRO, CERAMED and Progetto Classe at the 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 am a Mediterranean archaeologist with a major focus on Roman and Late Antique Archaeology, and in pottery studies especially in the analysis of coarse and cooking wares. One of my main interests is to investigate the transformation of the Roman world with a particular interest in Mediterranean islands. I am scientific director of excavations, surveys, and ceramic ethnoarchaeology expeditions in the Balearics and Sardinia. I am leading the excavations at the Roman and Late Antique city of Pollentia and the Early Christian complexes of Son Peretó (Mallorca) and Illa del Rei (Menorca). I have specialised in the study of archaeological ceramics to investigate their provenance, technology, distribution and consumption using physico-chemical, mineralogical and petrographic techniques. I have a broad interest in the analytical study of ceramic materials including the theoretical foundations of the discipline and in the study of living pottery-making traditions.

Selected publications

- **Cau Ontiveros MÁ**, Martínez Farreras V, Pecci A, Mas Florit C & Fantuzzi L 2018, 'Archaeometric Analysis for Provenance and Content of Roman Amphorae from the Site of Sa Mesquida (Mallorca, Spain)', *Mediterranean Archaeology & Archaeometry*, 18, 2, 87-105.
- Fantuzzi L & **Cau Ontiveros MÁ** 2018, 'Archaeometric characterisation of amphorae from the Late Antique city of Iluro (Mataró, Spain)', *Journal of Archaeological Science: Reports*, 21, 1079-1090.
- Fantuzzi L & **Cau Ontiveros MÁ** 2018, 'Archaeometric analysis of Late Roman amphorae from Africa in the ancient city of Iluro (Mataró, Catalonia, Spain)', *Archaeological and Anthropological Sciences*, 10, 4, 759-780.
- Mas Florit C, **Cau Ontiveros MÁ**, Meyer C, Goossens L, Sala R & Ortiz, H 2018, 'Geophysical survey of two rural sites in Mallorca (Balearic Islands, Spain): unveiling Roman villae', *Journal of Applied Geophysics*, 150, 101-117.
- Riutort J, **Cau Ontiveros MÁ**, Roig Buxó J 2018, 'Archaeometric characterisation of regional Late Roman Cooking Wares from the area of Vallés (Catalonia, Spain): the case of two rural sites', *Journal of Archaeological Science Reports*, 21, 1091-1102.
- Tsantini E, Minami T, Takahashi K & **Cau Ontiveros MÁ** 2018, 'Analysis of sulphur isotopes to identify the origin of cinnabar in the Roman wall paintings from Badalona (Spain)', *Journal of Archaeological Science: Reports*, 18, 300-307.

Selected research activities

Fieldwork in 2018 in Mallorca (Balearic Islands): Excavations at the Roman city of Pollentia, Geophysical surveys of rural sites, Excavations at the early Christian complex of Son Peretó.

PI of the project Archaeology, Remote Sensing, and Archaeometry: A Multidisciplinary Approach to Landscapes and Ceramics from the Roman to the Medieval Period in Mallorca (Balearic Islands) (ARCHREMOTELANDS) (HAR2017-83335-P).

ICREA MEMOIR 2018



Andrea Cerutti

Institut Hospital del Mar d'Investigacions Mèdiques
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*, *Science*, *Nature*, *Immunity*, *Nature Immunology*, *Nature Medicine*, *Nature Communications*, *The Journal of Experimental Medicine*, etc. He is a member of The American Society for Clinical Investigation, The American Association of Immunologists, and The Henry Kunkel Society and serves as Associate Editor of *Mucosal Immunology*. He contributed to the organization of 2014 and 2016 Keystone Symposia meetings, published over 130 research articles in top-ranked immunology journals, and regularly lectures in international meetings as well as American and European universities.

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 immunodeficiency. Our research is relevant to infections, inflammation, autoimmunity, immunodeficiency, and vaccine development.

Selected publications

- Garcia-Carmona Y, Ting AT, Radigan L, Divakar SKA, Chavez J, Meffre E, **Cerutti A**, & Cunningham-Rundles C 2018, 'TAC1 isoforms regulate ligand binding and receptor function.' *Frontiers Immunology*, vol. 9, no. 2125. doi: 10.3389/fimmu.2018.02125
- Shan M, Carrillo J, Yeste A, Gutzeit C, Segura DG, Walland C, Pybus M, Grasset EK, AJR, Matthews DB, van de Veen W, Comerma L, He B, Boonpiyathad T, Lee H, Julià B, Osborne LC, Siracusa MC, Akdis M, Artis D, Saurabh M, Sampson HA, Berin MC, Chen K, & **Cerutti A** 2018, 'Secreted IgD amplifies humoral T helper-2 responses by binding basophils via galectin-9 and CD44'. *Immunity* 2018, vol. 49, no. 4, pp 709-724
- Gutzeit C, Chen K & **Cerutti A** 2018, 'The enigmatic function of IgD: some answers at last', *European Journal of Immunology*, vol. 48, n. 7, pp 1101 - 1113.
- Barbet G, Sander LE, Geswell M, Leonardi I, **Cerutti A**, Iliev I & Blander JM 2018, 'Sensing microbial viability through bacterial RNA augments T follicular helper cell and antibody responses', *Immunity*, vol. 48, no. 3, pp 584 - 598.

Selected research activities

- Invited speaker, European Academy of Allergy and Clinical Immunology, Munich, May 2018
- Invited speaker, Seminars in Immunology, The Crick Institute, London, June 2018
- Invited speaker, The 25th International Symposium on Molecular Cell Biology of Macrophages, Osaka, June 2018
- Invited speaker, The Barcelona Debates on the Human Microbiome, Barcelona, June 2018
- Invited speaker, European Congress of Immunology, Amsterdam, September 2018
- Invited speaker, Ofatumumab Educational Seminar and Round Table Meeting ,Novartis, Basel, October 2018
- Invited speaker, New Trends in Developmental and Molecular Immunology, University of Basel, Basel, November 2018
- Invited Speaker, Immunology Retreat, University of Pennsylvania, Philadelphia, November 2018

ICREA MEMOIR 2018



Darrick Chang
Institut de Ciències Fotòniques
Experimental Sciences & Mathematics

Darrick Chang is an ICREA Research Professor at The Institute of Photonic Sciences (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. He has participated in or currently participates in several international projects, including serving as a PI and scientific coordinator of European FET-Open project GRASP, as a PI in the Quantum Flagship project QIA, and as a foreign collaborator in US MURI projects QOMAND and Photonic Quantum Matter.

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

- **Chang DE**, Douglas JS, Gonzalez-Tudela A, Hung C-L & Kimble HJ 2018, 'Colloquium: Quantum matter built from nanoscopic lattices of atoms and photons', *Reviews Of Modern Physics*, 90, 3, 031002.
- Neumeier L & **Chang DE** 2018, 'Exploring unresolved sideband, optomechanical strong coupling using a single atom coupled to a cavity', *New Journal Of Physics*, 20, 083004.
- Munro E, Asenjo-Garcia A, Lin Y, Kwek LC, Regal CA & **Chang DE** 2018, 'Population mixing due to dipole-dipole interactions in a one-dimensional array of multilevel atoms', *Physical Review A*, 98, 3, 033815.
- Manzoni MT, Moreno-Cardoner M, Asenjo-Garcia A, Porto JV, Gorshkov AV & **Chang DE** 2018, 'Optimization of photon storage fidelity in ordered atomic arrays', *New J. Phys.* **20**, 083048.
- Neumeier L, Northup TE & **Chang DE** 2018, 'Reaching the optomechanical strong-coupling regime with a single atom in a cavity', *Physical Review A*, 97, 6, 063857.

ICREA MEMOIR 2018



Miguel Chillón

Institut de Ciències Fotòniques
Universitat Autònoma de Barcelona, Vall d'Hebron Institut de Recerca
Life & Medical Sciences

Born in Barcelona in 1966. PhD in Genetics at Hospital Duran i Reynals and Universitat de Barcelona, 1994. National Award in Human Genetics by the Spanish Association of Human Genetics in 1995. HHMI postdoctoral fellow on Gene Therapy for Cystic Fibrosis, at the Internal Medicine Dept, University of Iowa, USA (1994-1997). EMBO fellow in Genethon III (Evry, France) (1997-1999) on Development of 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, a technological platform to produce viral vectors, since 2004. Assistant Professor of the Biochemistry and Molecular Biology Dept. at the UAB since 2005. Co-founder of two spin-off companies in biotechnology, NanoTherapix in 2009, and Kogenix Therapeutics in 2016. He has published more than 70 papers and generated 7 patents in viral vectors.

Research interests

Medicine still has many challenges to solve specially on complex diseases where a large number of both, genetic and environmental factors, are involved. Among them, autoimmune disorders have attracted attention because there are no effective curative treatments for them. Some of these autoimmune diseases affect the central 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 in three main objectives: (1) gene therapy strategies for autoimmune diseases; (2) gene therapy strategies for diseases affecting the nervous system, such as neuromuscular and neurodegenerative disorders, and (3) development of more efficient and less immunogenic viral vectors.

Selected publications

- Ontiveros M, Miravet S, Piedra J, Penalva C, Miralles M & **Chillon M** 2018, 'UPV: production of customized high quality viral vectors at a joint UAB-VHIR technological platform', *Human Gene Therapy*, 29, 12, A163 – A163.

Selected research activities

Award "Transferència UAB" 2018, by the Consell Social of the Universitat Autònoma de Barcelona.

ICREA MEMOIR 2018



Paul Christou
 Universitat de Lleida
 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 led 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 Department, Fraunhofer Institute Molecular Biotechnology & Applied Ecology, Aachen, Germany. Currently at 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 Gates grants, one ongoing. PI in 12 EU projects over past 25 years 2 as coordinator and 2 as deputy coordinator

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. More recently we established 3 active collaborations with industry which have led to one patent application filed in Nov 2017 (in the process of being licensed to an industrial collaborator) and 2 other patent applications in preparation. A recent 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.

Selected publications

- Díaz-Benito P, Banakar R, Rodríguez-Menéndez S, Capell T, Pereiro R, **Christou P**, Abadia J, Fernandez B & Alvarez-Fernandez A 2018, 'Iron and Zinc in the Embryo and Endosperm of Rice (*Oryza sativa* L.) Seeds in Contrasting 2 '-Deoxymugineic Acid/Nicotianamine Scenarios', *Frontiers In Plant Science*, 9, 1190.
- L. Pérez, E. Soto, G. Villorbina, L. Bassie, V. Medina, P. Muñoz, T. Capell, C. Zhu, **P. Christou** & G. Farré. 2018, 'CRISPR/Cas9-induced monoallelic mutations in the cytosolic AGPase large subunit gene *APL2* induce the ectopic expression of *APL2* and the corresponding small subunit gene *APS2b* in rice leaves', **Transg Res** 27: 423-439
- C. Zhu, G. Farré, D. Zanga, J. Lloveras, A. Michelena, J.P. Ferrio, J. Voltas, G. Slafer, R. Savin, R. Albajes, M. Eizaguirre, C. Lopez, C. Cantero-Martínez, J. Díaz-Gómez, C. Nogareda, J.A. Moreno, E. Angulo, J. Estany, R. N. Pena, M. Tor, M. Portero-Otin, N. Eritja, G. Arjó, J.C.E. Serrano, X. Matias-Guiu, R. M. Twyman, G. Sandmann, T. Capell & **P. Christou** 2018, 'High-carotenoid maize: development of plant biotechnology prototypes for human and animal health and nutrition', *Phytochem Rev* 17:195-209
- E. Vamvaka, G. Farré, L.M. Molinos-Albert, A. Evans, A. Canela-Xandri, R. M. Twyman, J. Carrillo, R.A. Ordóñez, R. Shattock, B.R. O'Keefe, B. Clotet, J. Blanco, G. S Khush, **P. Christou** & T. Capell 2018, '**Unexpected synergistic HIV neutralization by a triple microbicide produced in rice endosperm**'. *Proc Natl Acad Scie USA* 115: E7854-E7862.

Selected research activities

Invited Lectures

- Biofortified staple crops through metabolic engineering and synthetic biology strategies. Plant Biotechnology in the 21st Century. Univ Inter Menendez Pelayo & CIB Madrid.
- Metabolic engineering through synthetic biology in cereals. Jaques Monod Conference. First International Plant Systems Biology Meeting, Roscoff, France.
- Engineering natural products in plants for enhanced nutrition; 43rd FEBS Congress, Prague, The Czech Republic.

ICREA MEMOIR 2018



Rebekah Clements
 Universitat Autònoma de Barcelona
 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 (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). From 2015-2018 she held a lectureship and then an associate professorship at Durham University. She joined ICREA in October 2018.

Research interests

Prof. Clements is a 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 the linguistic and religious networks of exchange that linked seventeenth and early eighteenth century Japanese elites with Chinese and Korean exiles present in Japan following the Imjin War of 1592-1598 and the fall of the Ming Dynasty. This work takes place within her project funded by the European Research Council, "The Aftermath of the East Asian War of 1592-1598".

Selected research activities

- PI of European Research Council Starting Grant (grant agreement No 758347), 1 November 2018-31st October 2023, *Aftermath of The East Asian War of 1592-1598*. €1.444.980. Grant amendment completed and grant transferred to the Universitat Autònoma de Barcelona, starting on 1 November 2018.
- Invited speaker at *Global Japan, International Conference*, L'École des hautes études en sciences sociales, Paris. Title of Talk: "The Aftermath of the "First East Asian War" of 1592-1598: Thoughts on writing Japan as part of regional and global history". 8 November, 2018.
- Invited speaker at *La vie culturelle et intellectuelle du Japon des Tokugawa au prisme des livres*, University Paris Diderot. Title of Talk "The Discovery of Language in Early Modern Japan", 16th Nov 2018.
- Stay of Research: Cambridge, U.K., 14th October-25th October 2018. Archival research using Japanese materials in the Aoi Pavilion of the Cambridge University Library.

ICREA MEMOIR 2018



Alejandro Coroleu
 Universitat Autònoma de Barcelona
 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 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 Renaissance literary culture.

Research interests

Classical and Comparative Literature: Latin literary culture in Europe (1500-1780). Intellectual History and Renaissance Studies: Hispanic, Italian and European Humanism. The reception of Greek and Roman literatures in Catalunya (1480-1750).

Selected publications

- Cabré L, **Coroleu A**, Ferrer M, Lloret A & Pujol J 2018, *The Classical Tradition in Medieval Catalan, 1300-1500: Translation, Imitation, Literacy*, Martlesham: Boydell & Brewer.
- Battista Alberti L 2018, *Els avantatges i els desavantatges de les lletres*, introducció i traducció del text llatí a cura d'**Alejandro Coroleu**, Martorell: Editorial Adesiara.
- **Coroleu A** 2018, 'Sobre la obra poética de Antonio Telesio, amigo de Garcilaso', in *Contexto latino y vulgar de Garcilaso en Nápoles: Redes de relaciones de humanistas y poetas (manuscritos, cartas, academias)*, edited by Eugenia Fosalba and Gáldrick de la Torre Ávalos (Bern: Peter Lang), pp. 171-84
- **Coroleu A** & Coll-Vinent S 2018, 'Joan Estelrich and the Reception of Vives in Interwar Europe', in *Acta Conventus Neo-Latini Vindobonensis: Proceedings of the Sixteenth International Congress of Neo-Latin Studies (Vienna, 2015)*, edd. Astrid Steiner-Weber & Franz Römer, Leiden-Boston: Brill, pp. 197-205
- **Coroleu A** 2018, 'The reception of Poliziano's letters in sixteenth-century France', *Camena*, no. 22, pp. 1-9

Selected research activities

I enjoyed a short research stay at the Ludwig Boltzmann Institut für Neulateinische Studien (Universität Innsbruck)
 I gave three papers in Barcelona, Naples and Innsbruck.
 I co-organised the *Jornades internacionals sobre el món clàssic en honor de Carles Miralles* at the IEC
 I served as assessor for Ikerbasque (Junior Research Call). I served as referee for the Research Council KU Leuven and for the Postdoctoral Research Fellowship Competition awarded by the Research Foundation-Flanders
 I sat on the editorial board of ITACA: Quaderns de Cultura Clàssica (Universitat de Barcelona), and on the advisory board of the journals Futuro Classico (Università di Bari), Studia Aurea (Universitat de Girona) and *Humanistica Lovaniensia* (Leuven)
 Secretary of the *Societat Catalana d'Estudis Clàssics*
 I wrote five peer reviews for international journals
 Guest lecturer: University of Portland (Salzburg Program)

ICREA MEMOIR 2018



Alfred Cortés

Institut de Salut Global Barcelona
Life & Medical Sciences

After obtaining a PhD for work on *Drosophila* DNA binding proteins (CID-CSIC, Barcelona), he gave a strong turn to his career to apply his molecular biology skills to study malaria parasites. He worked for four years as Head of the Molecular Parasitology lab at the Papua New Guinea IMR, where his research mainly focused on basic malaria parasite biology, but also on epidemiological aspects of the disease. Back to Europe, he worked for over two years at the MRC-NIMR (London) on epigenetic regulation of gene expression and invasion of erythrocytes by malaria parasites. In 2006 he moved to IRB Barcelona with an ICREA jr contract. In 2011 he joined CRESIB-ISGlobal, and in 2012 he was appointed ICREA Research Professor. His current research focuses on epigenetic regulation of gene expression in malaria parasites, which plays a key role in their adaptation to changes in the environment and in the control of sexual conversion, among other host-parasite interactions.

Research interests

We recently found that the malaria parasite *Plasmodium falciparum* regulates at the epigenetic level the expression of a multitude of genes that participate in host-parasite interactions (clonally variant genes). These genes can be found in either an active or a silenced state, which is clonally transmitted from one generation to the next. At the malaria epigenetics lab we study the chromatin-based mechanisms involved in the epigenetic regulation of clonally variant gene expression in malaria parasites. Another major interest of the lab is characterizing how these parasites adapt to changes in their environment, e.g. using stochastic transcriptional variation. We combine studies at a genome-wide level with studies on specific clonally variant genes that control important processes such as solute uptake or sexual conversion. Sexual conversion, which is necessary for malaria transmission, is currently one of our major interests.

Selected publications

- Ruiz JL, Tena JJ, Bancells C, **Cortés A***, Gómez-Skarmeta JL*, Gómez-Díaz E. 2018, 'Characterization of the accessible genome in the human malaria parasite *Plasmodium falciparum*', *Nucleic Acids Res.* 46(18):9414-9431. *equal contribution

Selected research activities

- PhD thesis completed: "A new mechanism of antimalarial drug resistance regulated at the epigenetic level", Sofía Mira-Martínez, thesis defended at UB (Barcelona) / VU (Amsterdam). Scientific supervisors: A. Rosanas-Urgell, A. Cortés.
- New predoctoral fellowship (FPI, Spanish Government) awarded to a student to conduct a PhD in the Malaria Epigenetics Lab (supervisor: A. Cortés).
- Best oral presentation prize to a PhD student of the team (E. Tintó-Font) at the Molecular Parasitology Meeting (MPM), Woods Hole, USA.

ICREA MEMOIR 2018



Pia Cosma

Centre de Regulació Genòmica
Life & Medical Sciences

ICREA Research Professor and Senior Scientist at Centre for Genomic Regulation (CRG), Barcelona, 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. She has given invited talks at major international conferences and Research Institutes. She has been awarded several prizes including: EMBO Young Investigator (YIP), 2003; Marie Curie Excellence Award, 2005; "Vanguardia de la Ciència" prize, 2014; City of Barcelona prize, 2015. She is Order of Merit of the Italian Republic: Knight, 2007. ERC Starting Grant awardee, 2009 and HFSP Grant awardee, 2010. She is EMBO Member since 2010. She is coordinator of H2020 FET-Open from 2016 and awarded La Caixa Health, 2018

Research interests

Main interests of Cosma's group are to dissect mechanisms and factors controlling somatic cell reprogramming and tissue regeneration in mammals. We showed that activation of the Wnt/ β -catenin signalling pathway enhances reprogramming of somatic cells after their fusion with embryonic stem cells. We are dissecting gene networks and reprogramming factors controlled by the activation of Wnt/ β -catenin pathway. Furthermore, by using super resolution microscopy we are investigating on the remodelling and looping of the chromatin fiber during the reprogramming process. The activation of Wnt pathway controls regeneration in response to damage in lower and higher vertebrates. We found that the Wnt/ β -catenin signalling is also key to control cell-fusion-mediated regeneration in mammals. We recently showed that in vivo reprogramming of neurons and hepatocytes after fusion with hematopoietic stem and progenitor cells is a mechanism for tissue regeneration.

Selected publications

- Neguembor MV, Sebastian-Perez R, Aulicino F, Gomez-Garcia PA, **Cosma MP** & Lakadamyali M 2018, '(Po)STAC (Polycistronic SunTAg modified CRISPR) enables live-cell and fixed-cell super-resolution imaging of multiple genes', *Nucleic Acids Research*, 46, 5, e30.
- Pesaresi M, Bonilla-Pons SA, Simonte G, Sanges D, Di Vicino U & **Cosma MP** 2018, 'Endogenous Mobilization of Bone-Marrow Cells Into the Murine Retina Induces Fusion-Mediated Reprogramming of Muller Glia Cells', *Ebiomedicine*, 30, 38 - 51.
- Pesaresi M, Bonilla-Pons SA & **Cosma MP** 2018, 'In vivo somatic cell reprogramming for tissue regeneration: the emerging role of the local microenvironment', *Current Opinion In Cell Biology*, 55, 119 - 128.

Selected research activities

Invited Talks:

- Biotech forum, EMBO conference, Dresda, Germany, 1-3 March 2018;
- Cell Viewer annual meeting, Cyprus, 10-11 April 2018;
- 11th International Conference on Stem Cells and Regenerative Medicine in Guangzhou, China, 26-28 November 2018
- Guangzhou Insitute of Biomedicine and Health, China, 20th September 2018

Awards:

La Caixa Health Research Award

Service in committees:

Member of Group Leader recruitment panels, head of tech transfer panel and member of thesis committees

ICREA MEMOIR 2018



Albert Costa Martínez

Universitat Pompeu Fabra
Social & Behavioural Sciences

Albert Costa (1970-2018) received his PhD in psychology in 1997 (Universitat de Barcelona). In 1998, he started his post-doctoral career at the Brain and Cognitive Sciences department at MIT, thanks to a grant from the Catalan Government. From 1999 to 2000, he was a post-doctoral fellow at the Cognitive Neuropsychology laboratory at Harvard University with a Fulbright scholarship. In 2001, he moved to the Cognitive Neuroscience department at the International School for Advanced Studies in Trieste. From 2002 to 2005 he was a Ramón y Cajal research fellow at the UB, and in 2006 he became an Associate Professor in the Department of Psychology of the same university. Since 2008, he was ICREA Research Professor, and since its creation member of the Center for Brain and Cognition at Universitat Pompeu Fabra.

Research interests

Dr. Costa studied the cognitive and neural underpinnings of language processing, and in particular how two languages are represented and processed in the brain. He sought answers to various questions related to bilingual language processing such as: what are the neural structures involved in the ability of bilinguals to keep two languages apart during speech production?, what are the effects of neurodegenerative diseases for the two languages of a bilingual?, is there any linguistic cost and attentional advantage linked to bilingualism?, how learning a second language affects the first language processing? More recently, he started working on how language context (foreign vs. native) can affect people's preferences, judgments and decisions. He addressed these issues by conducting experiments using both experimental psychology techniques and brain imaging and electrophysiological techniques, exploring both brain-damaged individuals (Alzheimer and Parkinson) and healthy ones.

Selected publications

- Calabria M, **Costa A**, Green DW & Abutalebi J 2018, 'Neural basis of bilingual language control', *Annals Of The New York Academy Of Sciences*, 1426, 1, 221 - 235.
- Vives M-L, Aparici M & **Costa A** 2018, 'The limits of the foreign language effect on decision-making: The case of the outcome bias and the representativeness heuristic', *Plos One*, 13, 9, e0203528.
- Lluís Vives M, Repke L & **Costa A** 2018, 'Does bilingualism really affect social flexibility?', *Bilingualism-Language And Cognition*, 21, 5, 952 - 956.
- Rodríguez-Cuadrado S, Baus C & **Costa A** 2018, 'Foreigner talk through word reduction in native/non-native spoken interactions', *Bilingualism: Language and Cognition*, 21, 2, 419 - 426.
- **Costa A**, Corey JD, Hayakawa S, Aparici M, Vives ML & Keysar B 2018, 'The role of intentions and outcomes in the foreign language effect on moral judgements' *Quarterly Journal of Experimental Psychology*, 72, 1, 8 - 17.
- Hayakawa S, Lau BKY, Holtzmann S, **Costa A** & Keysar B 2018, 'On the reliability of the foreign language effect on risk-taking', *Quarterly Journal of Experimental Psychology*, 72, 1, 29 - 40.
- García-Palacios A, **Costa A**, Castilla D, del Río E, Casaponsa A & Andoni Dunabeitia J 2018, 'The effect of foreign language in fear acquisition', *Scientific Reports*, 8, 1157.
- Frances C, **Costa A** & Baus C 2018, 'On the effects of regional accents on memory and credibility', *Acta Psychologica*, 186, 63 - 70.
- Reverberi C, Kuhlén AK, Seyed-Allaei S, Sreulich RS, R. **Costa A**, Abutalebi J, Haynes J-D 2018, 'The neural basis of free language choice in bilingual speakers: Disentangling language choice and language execution', *Neuroimage*, 177, 108 - 116.
- Timmer K, Calabria M, Branzi FM, Baus C & **Costa A** 2018, 'On the Reliability of Switching Costs Across Time and Domains', *Frontiers In Psychology*, 9, 1032.

ICREA MEMOIR 2018



Josep Dalmau

Institut d'Investigacions Biomèdiques August Pi i Sunyer
Life & Medical Sciences

Dr. Dalmau received his MD, PhD from Autònoma 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

- Haselmann H, Mannara F, Werner C, Planagumà J, Miguez-Cabello F, Schmidl L, Grünwald B, Petit-Pedrol M, Kirmse K, Classen J, Demir F, Klöcker N, Soto D, Doose S, **Dalmau J** & Hallermann S, Geis C 2018, 'Human autoantibodies against the AMPA receptor subunit GluA2 induce receptor reorganization and memory dysfunction', *Neuron* 99:1-15.
- **Dalmau J** & Graus F 2018, 'Antibody-Mediated Encephalitis', *New England Journal Of Medicine*, 378:840 - 851.
- Armangue T, Spatola M, Vlasea A, Mattozzi S, Carceles-Cordon M, Martinez-Heras E, Llufríu S, Muchart J, Erro ME, Abaira L, Moris G, Monros-Gimenez L, Corral-Corral I, Montejo C, Toledo M, Bataller L, Secondi G, Arino H, Martinez-Hernandez E, Juan M, Marcos MA, Alsina L, Saiz A, Rosenfeld MR, Graus F & **Dalmau J** 2018, 'Frequency, symptoms, risk factors, and outcomes of autoimmune encephalitis after herpes simplex encephalitis: a prospective observational study and retrospective analysis', *Lancet Neurology*, 17, 9, 760 - 772.
- Ladepeche L, Planaguma J, Thakur S, Suarez I, Hara M, Borbely JS, Sandoval A, Laparra-Cuervo L **Dalmau J** & Lakadamyali M 2018, 'NMDA Receptor Autoantibodies in Autoimmune Encephalitis Cause a Subunit-Specific Nanoscale Redistribution of NMDA Receptors', *Cell Reports*, 23, 13, 3759 - 3768.
- Petit-Pedrol M, Sell J, Planagumà J, Mannara F, Radosevic M, Haselmann H, Ceanga M, Sabater L, Spatola M, Soto D, Gasull X, **Dalmau J***, Geis C* (*shared) 2018, 'LGI1 antibodies alter Kv1.1 and AMPA receptors changing synaptic excitability, plasticity, and memory' *Brain*, 141(11):3144-3159.
- Spatola M, Sabater L, Planaguma J, Martinez-Hernandez E, Armangue T, Pruess H, Iizuka T, Caparo Oblitas RL, Antoine J-C, Li R, Heaney N, Tubridy N, Munteis Olivás E, Rosenfeld MR, Graus F & **Dalmau J** 2018, 'Encephalitis with mGluR5 antibodies Symptoms and antibody effects', *Neurology*, 90, 22, E1964 - E1972.

ICREA MEMOIR 2018



Xavier Daura
Universitat Autònoma de Barcelona
Life & Medical Sciences

I studied Biological Sciences at UAB, Barcelona, where I graduated in 1991 and obtained the PhD in 1996. I then moved to the lab of WF van Gunsteren at ETH Zurich, a main reference in the field of computational modelling and simulation of biomolecular systems. These were extraordinary years in which we performed seminal work on the simulation of polypeptide folding by molecular-dynamics methods. In 2002 I was appointed as ICREA Research Professor and returned with this position to the Institute of Biotechnology and Biomedicine (IBB) of UAB, starting a new group in Computational Biology. Today, we focus our efforts on the identification and development of new strategies to combat infections by multidrug-resistant bacteria, using a range of computational and experimental approaches. In 2005 I was appointed Adjunct Professor at UAB to combine my research activities as an ICREA Professor with teaching at the post-graduate level. In the period 2011-2017 I served as Director of 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 accumulate. The discovery of new drug targets and modes of action (MoA), less propitious to the evolution 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 responses. Much of this work is done in collaboration with the group of Bacterial Molecular Genetics of IBB.

Selected publications

- Huedo P, Coves X, **Daura X**, Gibert I & Yero D 2018, 'Quorum Sensing Signaling and Quenching in the Multidrug-Resistant Pathogen *Stenotrophomonas maltophilia*', *Frontiers in Cellular and Infection Microbiology*, 8: 122.
- Capelli R, Peri C, Villa R, Nithichanon A, Conchillo-Solé O, Yero D, Gagni P, Chiari M, Lertmemongkolchai G, Cretich M, **Daura X**, Bolognesi M, Colombo G & Gourlay LJ 2018, 'BPSL1626: Reverse and Structural Vaccinology Reveal a Novel Candidate for Vaccine Design against *Burkholderia pseudomallei*', *Antibodies*, 7(3): 26.
- Martínez-Servat S, Yero D, Huedo P, Marquez R, Molina G, **Daura X** & Gibert I 2018, 'Heterogeneous Colistin-Resistance Phenotypes Coexisting in *Stenotrophomonas maltophilia* Isolates Influence Colistin Susceptibility Testing'. *Frontiers in Microbiology* 9: 2871.

Selected research activities

- Invited speaker at the workshop "Clinical Management and Prevention of Major and Hidden Health Care Problems in Greater Mekong Subregion", 12-13 February 2018, Khon Kaen, Thailand.

ICREA MEMOIR 2018



Gustavo Deco
 Universitat Pompeu Fabra
 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 led the Computational Neuroscience Group at Siemens Corporate Research Center in Munich, Germany. He obtained in 1997 his Habilitation (maximal academic 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 with the ERC Advanced Grant.

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

- Saenger VM, Ponce-Alvarez A, Adhikari M, Hagmann P, **Deco G** & Corbetta M 2018, 'Linking Entropy at Rest with the Underlying Structural Connectivity in the Healthy and Lesioned Brain', *Cerebral Cortex*, 28(8):2948-2958.
- Hindriks R, Micheli C, Bosman CA, Oostenveld R, Lewis C, Mantini D, Fries P & **Deco G** 2018, 'Source-reconstruction of the sensorimotor network from resting-state macaque electrocorticography', *Neuroimage*, 181:347-358.
- Gilson M, Tauste Campo A, Chen X, Thiele A & **Deco G** 2018, 'Nonparametric test for connectivity detection in multivariate autoregressive networks and application to multiunit activity data', *Network Neuroscience*, 1(4):357-380.
- Tauste Campo A, Principe A, Ley M, Rocamora R & **Deco G** 2018, 'Degenerate time-dependent network dynamics anticipate seizures in human epileptic brain', *PLoS Biology*, 16(4):e2002580.
- Daffertshofer A, Ton R, Kringelbach ML, Woolrich M & **Deco G** 2018, 'Distinct criticality of phase and amplitude dynamics in the resting brain', *Neuroimage*, 180(Pt B):442-447.
- Daffertshofer A, Ton R, Pietras B, Kringelbach ML & **Deco G** 2018, 'Scale-freeness or partial synchronization in neural mass phase oscillator networks: Pick one of two?', *Neuroimage*, 180(Pt B):428-441.
- **Deco G**, Cruzat J, Cabral J, Knudsen GM, Carhart-Harris RL, Whybrow PC, Logothetis NK, Kringelbach ML 2018, 'Whole-Brain Multimodal Neuroimaging Model Using Serotonin Receptor Maps Explains Non-linear Functional Effects of LSD', *Current Biology*, 28(19):3065-3074.
- Glomb K, Ponce-Alvarez A, Gilson M, Ritter P & **Deco G** 2018, 'Stereotypical modulations in dynamic functional connectivity explained by changes in BOLD variance', *Neuroimage*, 171:40-54.
- **Deco G**, Cabral J, Saenger VM, Boly M, Tagliazucchi E, Laufs H, Van Someren E, Jobst B, Stevner A & Kringelbach ML 2018, 'Perturbation of whole-brain dynamics in silico reveals mechanistic differences between brain states', *Neuroimage*, 169:46-56.

ICREA MEMOIR 2018



Ruth de Diego-Balaguer

Universitat de Barcelona
Social & Behavioural Sciences

After a Degree in Psychology I specialised at the University of Barcelona (UB) in Psycholinguistics and Cognitive Neuroscience during my PhD. 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. 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

- **Hinzen W**, Rosselló J, Morey C, Càmara E, García-Gorro C, Salvador R & **de Diego-Balaguer R** 2018, 'A systematic linguistic profile of spontaneous narrative speech in pre-symptomatic and early stage Huntington's disease', *Cortex*, 100:71-83
- García-Gorro C, **de Diego-Balaguer R**, ..., Camara E 2018, 'Reduced striato-cortical and inhibitory transallosal connectivity in the motor circuit of Huntington's disease patients'. *Human Brain Mapping*, 39(1):54-71.
- Havas V, Taylor J, Vaquero L, **de Diego-Balaguer R**, **Rodríguez-Fornells A** & Davis MH 2018, 'Semantic and phonological schema influence spoken word learning and overnight consolidation', *Q J Exp Psychol*, 71(6):1469-1481.
- Giavazzi M, Sambin S, **de Diego-Balaguer R**, Le Stanc L, Bachoud-Levi A-C & Jacquemot C 2018, 'Structural priming in sentence comprehension: A single prime is enough', *PLoS ONE*, 13(4): e0194959.

Selected research activities

- President of the Spanish Society for Experimental Psychology
- Member of the Internal Scientific Committee of IDIBELL
- SH4 Panel Member of the ERC-Starting Grants

Organization of International Events

- International Workshop Bridging Attention and Prediction, Institut d'Estudis Catalans, Barcelona, Spain.
- Prediction Workshop Max Plank Institute (MPI), Nijmegen, The Netherlands.

Supervision

- 1 PhD: Anna Martínez-Alvarez (Doctoral Program in Brain, Cognition and Behaviour. Dept of Cognition, Dev and Educ Psychology. Universitat de Barcelona);
- 3 International Master Thesis: Univ Polytechnique de Lausanne, Switzerland; Univ of Bordeaux, France, Univ Pisa, Italy

Invited Talks

- BrainCom Summerschool. Barcelona.
- MPI Colloquium, Nijmegen. The Netherlands.
- Language Dev Group. MPI, Nijmegen. The Netherlands
- Talk for the Scientific Advisory Board evaluation of the Institute of Neuroscience UB
- Cold Spring Harbor. New York, USA

PhD committees

- Julia Monte, Dept de Tec. Info, UPF
- Alejandro Coello, Fac Medecine, UB
- Lydia Viñals-Castonguay, University of Cambridge, UK

ICREA MEMOIR 2018



Gianni De Fabritiis

Universitat Pompeu Fabra
Experimental Sciences & Mathematics

ICREA research professor at Universitat Pompeu Fabra (UPF) and group leader of the computational science laboratory and associate professor at UPF. I have a bachelor degree in applied mathematics (1997, University of Bologna) and a PhD in computational chemistry (2002, Queen Mary University of London). I have worked at the CINECA supercomputing center (1998-1999), at University College London (2003-2006) and later I won a 5 year Ramon y Cajal tenure-track fellowship at University Pompeu Fabra and the I3 program, before becoming ICREA Professor. I have published 80 articles in international journals (PNAS, JACS, Nat. Chem., Nat. Commun., etc). My h-index is 30 with over 3200 citations. In the last four years I gave 30 oral presentations at international conferences (18 as invited speaker) and lectures in many pharmaceutical companies. I am associate editor of "In-silico pharmacology".

Research interests

My group research interests are centered in the application of computing as a fundamental methodology to problem solving. In particular simulations in biomedicine, machine learning of biological data and machine intelligence.

Research lines

Biomedicine. We use large distributed computational resources (GPUGRID.net) with thousands of GPUs for molecular dynamics simulations, binding prediction, binding kinetics, Markov state models, online sampling methods (ACEMD, HTMD). The approach is computational driven but we like to collaborate with experimental laboratories and pharmaceutical companies.

Machine Intelligence. In this research line we develop machine learning approaches applied to biological data. We are particularly interested in behavioral intelligence, artificial neural networks, sparse coding, deep and hierarchical learning.

Selected publications

- De Mol E, Szulc E, Di Sanza C, Martínez-Cristóbal P, Bertocini CW, Fenwick RB, Frigolé-Vivas Marta, Masín M, Hunter I, Buzón V, Brn-Heath I, García J, **De Fabritiis G**, Estébanez-Perpiñá E, McEwan IJ, **Nebreda A**, **Salvatella X** 2018, 'Regulation of Androgen Receptor Activity by Transient Interactions of Its Transactivation Domain with General Transcription Regulators', *Structure*, 26(1):145-152.e3.
- Ferruz N, Doerr S, Vanase-Frawley MA, Zou Y, Chen X, Marr ES, Nelson RT, Kormos BL, Wager TT, Hou X, Villalobos A, Sciabola S & **De Fabritiis G** 2018, 'Dopamine D3 receptor antagonist reveals a cryptic pocket in aminergic GPCRs', *Scientific Reports*, 8, 897.
- Jimenez J, Skalic M, Martinez-Rosell G & **De Fabritiis G** 2018, 'K-DEEP: Protein-Ligand Absolute Binding Affinity Prediction via 3D-Convolutional Neural Networks', *Journal Of Chemical Information And Modeling*, 58, 2, 287 - 296.
- Martinez-Rosell G, Harvey MJ & **De Fabritiis G** 2018, 'Molecular-Simulation-Driven Fragment Screening for the Discovery of New CXCL12 Inhibitors', *Journal Of Chemical Information And Modeling*, 58, 3, 683 - 691.
- Perez A, Martinez-Rosell G & **De Fabritiis G** 2018, 'Simulations meet machine learning in structural biology', *Current Opinion In Structural Biology*, 49, 139 - 144.
- PlayMolecule BindScope: Large scale CNN-based virtual screening on the web, M Skalic, G Martínez-Rosell, J Jiménez, G De Fabritiis. *Bioinformatics*, Ahead 30/1/2019

ICREA MEMOIR 2018



Coen de Graaf
 Universitat Rovira i Virgili
 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

Changing properties of materials by shining light on it is an interesting phenomenon. It becomes even more exciting when the initial state can be repopulated by irradiation with light of different wave length. The material becomes then switchable and technological applications appear at the horizon. Insight in the mechanisms of light-induced properties may eventually lead to new materials. We apply techniques from computational chemistry to obtain information about the light-induced electronic state and the deactivation to the final state. The interplay between the electronic structure and the movement of the nuclei plays an important role in the deactivation. We aim to go beyond the traditional static description by introducing the dynamics of the nuclear movement and obtain a more complete picture of the switching mechanism.

Selected publications

- Sousa C, Domingo A & **de Graaf C** 2018, 'Effect of Second-Order Spin-Orbit Coupling on the Interaction between Spin States in Spin-Crossover Systems', *Chemistry-a European Journal*, 24, 20, 5146 - 5152.
- Alcover-Fortuny G, Wu J, Caballol R & **de Graaf C** 2018, 'Quantum Chemical Study of the Interligand Electron Transfer in Ru Polypyridyl Complexes', *Journal Of Physical Chemistry A*, 122, 4, 1114 - 1123.
- Sousa C, Llundell M, Domingo A & **de Graaf C** 2018, 'Theoretical evidence for the direct (MLCT)-M-3-HS deactivation in the light-induced spin crossover of Fe(II)-polypyridyl complexes', *Physical Chemistry Chemical Physics*, 20, 4, 2351 - 2355.
- Zhang X, Wang Y, Morales-Martinez R, Zhong J, **de Graaf C**, Rodriguez-Fortea A, Poblet J M, Echegoyen L, Feng L & Chen N 2018, '**U-2@I-h(7)-C-80: Crystallographic Characterization of a Long-Sought Dimetallic Actinide Endohedral Fullerene**', *Journal Of The American Chemical Society*, 140, 11, 3907 - 3915.
- Notario-Estevez A, Kozłowski P, Linnenberg O, **de Graaf C**, Lopez X & Monakhov KY 2018, '**Decoding the role of encapsulated ions in the electronic and magnetic properties of mixed-valence polyoxovanadate capsules {X@V22O54} (X = ClO4-, SCN-, VO2F2-): a combined theoretical approach**', *Physical Chemistry Chemical Physics*, 20, 26, 17847 - 17858.
- Francese T, Ribas-Ariño J, Novoa JJ, Havenith RWA, Broer R, **de Graaf C** & Deumal M 2018, 'The magnetic fingerprint of dithiazolyl-based molecule magnets', *Physical Chemistry Chemical Physics*, 20, 20406.
- Linnenberg O, Moors M, Notario-Estévez A, López X, **de Graaf C**, Peter S, Baeumer C, Waser R & Monakhov K 2018, 'Addressing Multiple Resistive States of Polyoxovanadates: Conductivity as a Function of Individual Molecular Redox States', *Journal of the American Chemical Society*, 140, 16635–16640

ICREA MEMOIR 2018



Xavier de la Cruz
 Vall d'Hebron Institut de Recerca
 Life & Medical Sciences

My career revolves around the application of bioinformatics tools to biological problems. My Ph.D. was about the study of the protein structure principles underlying function, a work that I extended during my stay at the NIH (1993-1997) and the UCL (1997-2000). This topic is at the core of my subsequent activities as ICREA researcher (PCB, 2001-2009; IBMB-CSIC, 2009-2012), although it has gradually evolved towards the study of pathological mutations. In 2012, I joined the Institute of Research at the Vall d'Hebron Hospital (VHIR), to increase the applicability of our work, and bring it closer to healthcare professionals and patients. As part of this effort, we are trying to involve all stakeholders in the health system, including companies.

Research interests

Since we joined the Institute of Research of the Vall d'Hebron Hospital, our first goal has been the understanding of the molecular-level processes underlying disease, focusing on the impact that sequence variants have on protein structure and function. Our approach is computational and aims at the obtention of predictive models that summarize large amounts of biological information. We are making a real effort to translate our results into actual improvements in patient care, working together with hospital teams involved in molecular medicine. In the last year (2018), we have made significant advances in understanding the functional effect of BRCA1/2 protein variants underlying hereditary breast and ovarian cancers.

Selected publications

- Fueyo R, Iacobucci S, Pappa S, Estarás C, Lois S, Vicioso-Mantis M, Navarro C, Cruz-Molina S, Carlos Reyes J, Rada-Iglesias A, **de la Cruz X** & Martínez-Balbás MA 2018, 'Lineage specific transcription factors and epigenetic regulators mediate TGF -dependent enhancer activation' *Nucleic Acids Res*, 46:3351-3365.
- Brasil S, Leal F, Vega A, Navarrete R, Ecay MJ, Desviat LR, Riera C, Padilla N, **de la Cruz X**, Couce ML, Martín-Hernández E, Morais A, Pedrón C, Peña-Quintana L, Rigoldi M, Specola N, de Almeida IT, Vives I, Yahyaoui R, Rodríguez-Pombo P, Ugarte M, Pérez-Cerda C, Merinero B, Pérez B 2018, 'Improving the diagnosis of cobalamin and related defects by genomic analysis, plus functional and structural assessment of novel variants', *Orphanet J Rare Dis*. 13:125

Selected research activities

Sharing our research:

- "Understanding the static component of systems biology: sequence variability from molecules to networks", Invited talk for the celebration of Dia de la Immunologia, Acadèmia de Ciències Mèdiques i de la Salut de Catalunya i de Balears, Barcelona.
- Opening new paths: our student Natàlia Padilla has received the 'Best Poster Award' from the Science Editor at the HGM 2018, Yokohama, Japan, for her work 'Co-location of paralogs in TADs may explain why the effect of some deleterious mutations is suppressed'.

ICREA MEMOIR 2018



Susana de la Luna
 Centre de Regulació Genòmica
 Life & Medical Sciences

She obtained the BS in Biology in 1985 at Universidad Autónoma de Madrid. For her PhD studies she 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 she stayed in Ortín's lab at CNB until 1994 when she moved to London to the lab of Nick La Thangue at the National Institute for Medical Research. There, she 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 she returned to Spain with a reintegration contract to join the HSA21/Down syndrome Research group lead by Xavier Estivill (IRO, Barcelona). In 2002, she joined ICREA and established her own line of research on the functional characterization of the family of kinases DYRK and their relationship with disease at the CRG in Barcelona.

Research interests

The view on how protein kinases translate cell signaling into the regulation of gene expression programs has been expanded in the possible substrates beyond the paradigmatic transcription factors to encompass histones, chromatin remodelers or other components of the basal transcription machinery that are directly modified at specific genomic loci thus regulating the expression of coding and non-coding RNAs. Our group is interested in these regulatory activities of the DYRK family of kinases. Dysregulation of DYRKs leads to disease in humans. In particular, DYRK1A overexpression in Down syndrome (DS) individuals correlates with a wide range of the DS pathological phenotypes. In addition, truncating mutations in one DYRK1A allele have been described in patients with general growth retardation and severe primary microcephaly, highlighting the extreme dosage sensitivity of this gene. We aim to dissect how DYRK activities are linked to human pathology.

Selected publications

- Rozen EF, Roewenstrunk J, Barallobre MJ, Di Vona C, Jung C, Figueredo AF, Luna J, Arbones ML, Graupera M, Valverde MA & **de la Luna S** 2018. 'DYRK1A kinase positively regulates angiogenic responses in endothelial cells', *Cell Reports*, 23, 1867-1878.

Selected research activities

- Director of PhD thesis "Chromatin-bound DYRK1A: promoter occupancy and implications in the regulation of ribosomal protein gene expression" by Laura Barba .Universitat Pompeu Fabra, Jun 2018.
- Ongoing PhD supervision (3 students).
- SGR (Grups de Recerca Reconeguts). AGAUR. DYRK protein kinases and disease (2017-SGR-1163).
- Member of the "Agencia Nacional de Evaluación y Prospectiva" (ANEP), Biomedicine Section (MINECO, Spanish Government).

ICREA MEMOIR 2018



Hernando A. del Portillo

Universitat Pompeu Fabra Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Institut de Salut Global Barcelona 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 sabbatical 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 unveil molecular basis of anaemia and splenomegaly and to use this information in rationale vaccine development. To pursue spleen studies, we are implementing the usage of humanized mouse models and microfluidic approaches. In addition, we are exploring the use of exosomes as novel vaccines and biomarkers in *vivax* malaria aimed for elimination. Last, we are immortalizing human hematopoietic stem cells to develop a continuous in vitro culture system for blood stages of this malaria species, a major technological key-gap to advance studies of this neglected human malaria.

Selected publications

- Gualdron-Lopez M, Flannery EL, Kangwanrangan N, Chuenchob V, Fernandez-Orth D, Segui-Barber J, Royo F, Falon-Perez JM, Fernandez-Becerra C, Lacerda Marcus VG, Kappe SHI, Sattabongkot J, Gonzalez JR, Mikolajczak SA & **del Portillo HA** 2018, 'Characterization of *Plasmodium vivax* Proteins in Plasma-Derived Exosomes From Malaria-Infected Liver-Chimeric Humanized Mice', *Frontiers In Microbiology*, 9, 1271.
- Diaz-Varela M, de Menezes-Neto A, Perez-Zsolt D, Gamez-Valero A, Segui-Barber J, Izquierdo-Useros N, **Martinez-Picado J**, Fernandez-Becerra C & **del Portillo HA** 2018, 'Proteomics study of human cord blood reticulocyte-derived exosomes', *Scientific Reports*, 8, 14046.
- Montaner-Tarbes S, Novell E, Tarancón V, Borrás FE, Montoya M, Fraile L & **del Portillo HA** 2018, 'Targeted-pig trial on safety and immunogenicity of serum-derived extracellular vesicles enriched fractions obtained from Porcine Respiratory and Reproductive virus infections', *Scientific Reports*, 8:17487.
- Elizalde-Torrent A, Val F, Cardoso CI, Monteiro WM, Ferreira LCL, Fernandez-Becerra C, **del Portillo HA** & Lacerda MVG 2018, 'Sudden spleen rupture in a *Plasmodium vivax*-infected patient undergoing malaria treatment', *Malaria Journal*, 17, 79.
- Théry C, Witwer K, Hill EF, Lotval J, Aikawa E, et al., 2018, 'Minimal Information for Studies of Extracellular Vesicles 2018 (MISEV2018): a position statement of the International Society for Extracellular Vesicles', *J Extracell Vesicles*, 7(1).

Selected research activities

Member of the International Scientific Committee and President of the local Organizing Committee for the International Society of Extracellular Vesicles Meeting. Barcelona 2-6 May.

Invited lectures at CIDR, Seattle, Washington USA, Essen University Hospital, Essen, Germany, Vivax Malaria Research Unit, Mahidol University, Bangkok, Thailand and International Congress for Parasitology, Daegu, South Korea

ICREA MEMOIR 2018



Hugues de Riedmatten

Institut de Ciències Fotòniques
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 Masters in Physics from the Swiss Federal Institute of Technology (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 fiber. He was then postdoctoral scholar at Caltech, where he worked on initial demonstrations of quantum networks with 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 85 articles in peer-reviewed journals and has given over 60 talks, both in international conferences and in invited seminars. He was the recipient of the Barcelona City Prize 2017, and of a Starting Grant from the European Research Council (ERC).

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

- Farrera P, Heinze G & de **Riedmatten H**, 2018, 'Entanglement between a Photonic Time-Bin Qubit and a Collective Atomic Spin Excitation', *Phys. Rev. Lett.* **120**, 100501
- Rieländer D, Lenhard A, Jiménez Fariás O, Máttar A, Cavalcanti D, Mazzera M, Acín A & de **Riedmatten H** 2018, '*Frequency-bin entanglement of ultra-narrow band non-degenerate photon pairs*', *Quantum Sci. Technol.*, **3**, 014007.
- Abellan, C, *et al*, (The Big Bell Test collaboration) 2018, 'Challenging local realism with human choices', *Nature*, **557**, 7704, 212 .
- Maring N, Lago-Rivera D, Lenhard A, Heinze G & **de Riedmatten H** 2018, 'Quantum frequency conversion of memory-compatible single photons from 606 nm to the telecom C-band', *Optica*, **5**, 5, 507
- Seri A, Corrielli G, Lago-Rivera D, Lenhard A, **de Riedmatten H**, Osellame R & Mazzera M 2018, 'Laser-written integrated platform for quantum storage of heralded single photons', *Optica*, **5**, 8, 934.
- Casabone B, Benedikter J, Huemmer T, Oehl F, Lima de Oliveira KI, Haensch T W, Ferrier A, Goldner P, **de Riedmatten H** & Hunger D 2018, 'Cavity-enhanced spectroscopy of a few-ion ensemble in Eu³⁺:Y₂O₃', *New J. Phys.*, **20**, 095006.
- Ho M, Teo C, **de Riedmatten H** & Sangouard N 2018, 'Optimal photon generation from spontaneous processes in cold atoms', *New J. Phys.*, **20**, 123018

Selected research activities

Awards:

- Prize Ciutat de Barcelona 2017 in Experimental Sciences and Technology
- Prize Vanguardia de la Ciencia, 2nd position

Selected Invited talks

- *Photonic Quantum State transfer between disparate quantum nodes*, invited talk at the conference Quantum Networks - from building blocks to applications, February 6th 2018, Bad Honnef, Germany
- *Quantum Communication between disparate quantum nodes*, keynote talk at the conference "The Quantum Internet; Charting the critical path", June 21 2018, Toronto, Canada

Other Activities :

- Program committee member, Conference on Integrated Quantum Optics (ICIQC2018), CLEO-IQEC Europe 2019. Local organizing Committee ICAP 2018

ICREA MEMOIR 2018



Margarita Díaz-Andreu
 Universitat de Barcelona
 Humanities

I have been an ICREA Research Professor in Archaeology at the University of Barcelona since 2012, having moved from Durham Univ. (1996-2011). I am the author of about 250 publications, including 22 authored and edited books. My work has been published by OUP, Routledge, CUP, Cotsen Institute (UCLA), Springer and Marcial Pons, among other prestigious publishers. Some of my articles have been included in readers and others have been translated into five different languages. I have supervised 10 PhD students through to completion and I am currently supervising 6 others. Of a total of 18 PhD students, I am now supervising 6 of them. In 2018 I was the main organiser of the European Association of Archaeologists Annual Meeting 2018 which attracted 3000 archaeologists to Barcelona and great media attention. My ERC Artsoundscapes project started in October 2018

Research interests

The three main research areas in which I have been active and led research groups in the last few years are still in place: archaeoacoustics (ERC Artsoundscapes project, Palarq project), the history of archaeology (interarqweb.wordpress.com) and heritage (gapp.cat). For my work in archaeoacoustics I undertook fieldwork in Baja California (Mexico) in Spring 2018. In this year in the history of archaeology the high point has been the publication of an article on the relationship between imperialism and archaeology (Cotsen Institute Press, UCLA) and the organisation of sessions on Interdisciplinarity in the history of archaeology at two international conferences. An article in Routledge about archaeological heritage and migration highlights the role archaeological heritage can play in social cohesion. In all these areas I am leading groups of academics and students supported by research projects.

Selected publications

- **Díaz-Andreu M** 2018, 'Archaeological heritage and migration - well-being, place, citizenship and the social', In Holtorf, C. et al. (eds.), *Cultural Heritage, Ethics and Contemporary Migrations*. London, Routledge: 178-194.
- **Díaz-Andreu M** 2018, 'Archaeology and Imperialism: From Nineteenth-Century New Imperialism to Twentieth-Century Decolonization', In Effros, B. and Lai, G. (eds.), *Unmasking Ideology in Imperial and Colonial Archaeology: Vocabulary, Symbols, and Legacy*. Ideas, Debates, and Perspectives 8. Los Angeles, UCLA, Cotsen Institute Press: 28-64.
- **Díaz-Andreu M** 2018, REVIEW - 'Archaeologists in Print: Publishing for the People', by Amara Thornton. *Times Higher Education* September 6, 2018.
- **Díaz-Andreu M** 2018, *Una vita in un giorno, Intervista al prof. Emmanuel Anati*. Capo di Ponte, Atelier.
- **Díaz-Andreu M** 2018. 'Prólogo', In Hernández Godoy ST (ed.) *La arqueología cubana: génesis y desarrollo (1847-1940)*. Matanzas, Ediciones Matanzas: 11-14.

Selected research activities

- Keynote speaker - Symposium 'Future Archaeologies: the Legacy of Reuven's', 10 October 2018
- Invited papers at conferences at UK, France
- Invited talks in Madrid, currently 6 PhD students. 4 post-docs.
- PI HAR2016-80271-P, GENCAT 2018 & GAPP research groups. Funded research in Mexico.
- Leading EAA Annual Meeting 2018. Head of the EAA 2018 Nomination Committee, Scientific Committee EAA 2019
- Vice-president of the UISPP History of Archaeology Commission
- Advisory panels & evaluation: COST, AEI, Ikerbasque, AGAUR.
- Social impact in journals & radio programmes EAA 2018 and Artsoundscapes

ICREA MEMOIR 2018



Luciano Di Croce
 Centre de Regulació Genòmica
 Life & Medical Sciences

1996 PhD Dept. Cellular and Developmental Biology, University of Rome, Italy. 1996-2000 Postdoctoral work at the University of Marburg, Germany. 2000-2002 Senior Investigator at the European Institute of Oncology, Milan, Italy. 2003 Group Leader at the Centre de Regulació Genòmica (CRG), Barcelona, Spain. Research Professor, Institució Catalana de Recerca i Estudis Avançats (ICREA). 2013 Elected EMBO Member. Luciano Di Croce is the coordinator of a new Marie Curie ITN project entitled “Chromatin architecture and Design - ChromDesign” (GA 813327) granted by the European Commission’s H2020-MSCA-ITN-2018 program.

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.

Selected publications

- Mas G, Blanco E, Ballaré C, Sansó M, Spill YG, Hu D, Aoi Y, Le Dily F, Shilatifard A, Marti-Renom M, and **Di Croce L** 2018, ‘Promoter bivalency favors an open chromatin architecture in embryonic stem cells’, *Nature Genetics*, 50, 10, 1452-1462.
- Conway E, Jerman E, Healy E, Ito S, Holoch D, Deevy O, **Di Croce L**, Margueron R, Cagney G, Koseki H & Bracken AP 2018, ‘A Family of Vertebrate-Specific Polycombs Encoded by the LCOR/LCORL Genes Balance PRC2 Subtype Activities’, *Molecular Cell*, 70, 3, 408-421.
- Pascual-Reguant L, Blanco E, Galan S, Le Dily F, Cuartero Y, Serra-Bardenys G, Di Carlo V, Iturbide A, Cebrià-Costa JP, Nonell L, de Herreros AG, **Di Croce L**, **Marti-Renom MA** & Peiró S 2018, ‘Lamin B1 mapping reveals the existence of dynamic and functional euchromatin lamin B1 domains’, *Nat Commun.* 9(1):3420.

Selected research activities

Organizer of several international conferences, including for 2018 Epigenetics: from mechanisms to disease, Cancun (Mexico)
 Since 2015: co-organizer of the “The Barcelona Institute of Science and Technology” (BIST) Master school
 Since 2014, co-organizer of the Cold Spring Harbour Laboratories Summer course on “Chromatin, Epigenetics and Transcription”
 Since 2012 Chair of the Graduate Programme at CRG
 ERC Panel Member for 2016-2022
 Human Frontier Science Program (HFSP) Panel Member for 2018-2020
 Since 2018 Expert for the Italian Ministry of Health (field of Biomedicine)
 EMBO Member (since 2013)

ICREA MEMOIR 2018



Julian di Giovanni
Universitat Pompeu Fabra
Social & Behavioural Sciences

Julian di Giovanni is an ICREA Research Professor at Universitat Pompeu Fabra, the Deputy Director for Research and a Research Professor at the Barcelona GSE, a Research Associate at the CREI, and a Research Fellow of the CEPR. He worked for the Research Department of the IMF from 2004-2013. He has been a Visiting Assistant Professor at the University of Toronto, and a Visiting Scholar at numerous central banks and international organizations. He was awarded an International Incoming Fellowship from the European Research Council Marie Curie Actions (2014), and a European Research Council Consolidator Grant (2016). He has published in the *American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Journal of the European Economic Association*, and other leading economic journals. He received his PhD in Economics at the University of California, Berkeley in 2004.

Research interests

I work in international economics and macroeconomics broadly defined, with a recent focus on empirical work using big data. The underlying aim in the majority of my work is to provide a better understanding of how different forms of cross-country integration impact domestic economic outcomes. One strand of my current research studies how shocks at the firm transmit across countries via production linkages, and the implications for macroeconomic interdependence. This work builds on past research that studies the importance of micro shocks and large firms in driving macroeconomic fluctuations. I have also worked on the transmission of monetary shocks across borders, and I am currently involved in projects studying (i) the impact of the global financial cycle on local credit markets in emerging markets, and (ii) the impact of government procurement projects on allocative efficiency and aggregate productivity.

Selected publications

- **di Giovanni J**, Levchenko AA & Mejean I 2018, 'The Micro Origins of International Business-Cycle Comovement', *American Economic Review*, 108, 1, 82 - 108.
- **di Giovanni J** & Bems R 2018, 'The Welfare Consequences of Income-Induced Expenditure Switching', *American Economic Association: Papers & Proceedings*, 108, 2018 82-108

ICREA MEMOIR 2018



Francisco Javier Doblas-Reyes

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
Experimental Sciences & Mathematics

I started working on climate variability at the Universidad Complutense de Madrid (Spain) in 1992, where I did my PhD. I then worked as a postdoc in Météofrance (Toulouse, France), at the Instituto Nacional de Técnica Aeroespacial (Torrejón, Spain) and for ten years at the European Centre for Medium-Range Weather Forecasts (Reading, UK). I led the Climate Forecast Unit at the Institut Català de Ciències del Clima (IC3) from 2010 to 2015. I am currently the head of the Department of Earth Sciences of the Barcelona Supercomputing Center (BSC-CNS). The Department hosts more than 70 engineers, physicists, mathematicians and social scientists who try to bring the latest developments in supercomputing and data analysis to provide the best information and services on climate and air quality. I am author of more than 130 peer-reviewed papers (h index 36, scopus), member of several international scientific committees and supervisor of several postdocs, engineers and two 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 socio-economic 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

- Turco M, Jerez S, **Doblas-Reyes F**, AghaKouchak A, Llasat MC & Provenzale A 2018, 'Skilful forecasting of global fire activity using seasonal climate predictions', *Nature Communications*, 9, 2718.
- Ceglár A, Toreti A, Prodhomme C, Zampieri M, Turco M & **Doblas-Reyes FJ** 2018, 'Land-surface initialisation improves seasonal climate prediction skill for maize yield forecast', *Scientific Reports*, 8, 1322.
- Menegoz M, Bilbao R, Bellprat O, Guemas V & **Doblas-Reyes FJ** 2018, 'Forecasting the climate response to volcanic eruptions: prediction skill related to stratospheric aerosol forcing', *Environmental Research Letters*, 13, 6, 064022.
- Lledo L, Bellprat O, **Doblas-Reyes FJ** & Soret A 2018, 'Investigating the Effects of Pacific Sea Surface Temperatures on the Wind Drought of 2015 Over the United States', *Journal Of Geophysical Research-atmospheres*, 123, 10, 4837 - 4849.
- Saurral Rl, **Doblas-Reyes FJ** & García-Serrano J 2018, 'Observed modes of sea surface temperature variability in the South Pacific region', *Climate Dynamics*, 50, 3-4, 1129 - 1143.
- Macleod D, Torralba V, Davis M & **Doblas-Reyes FJ** 2018, 'Transforming climate model output to forecasts of wind power production: how much resolution is enough?', *Meteorological Applications*, 25, 1, 1 - 10.
- Exarchou E, Prodhomme C, Brodeau L, Guemas V & **Doblas-Reyes FJ** 2018, 'Origin of the warm eastern tropical Atlantic SST bias in a climate model', *Climate Dynamics*, 51, 1819-1840.

Selected research activities

- Coordinating lead author of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)
- Co-chair of the World Climate Research Programme Modeling Advisory Council.
- Co-author of 14 peer-reviewed publications in 2018.
- Member of the Research Advisory Committee of the Indian Institute of Tropical Meteorology (Pune, India).

ICREA MEMOIR 2018



Inés Domingo
 Universitat de Barcelona
 Humanities

Inés is ICREA Research professor in the Section of Prehistory and Archaeology (Universitat de Barcelona) since 2010, and Vice-president of the World Archaeological Congress (2017-2020). Through her current and previous positions at the Universities of Valencia (Spain) and Flinders (Australia) she explores the 'Archaeologies' of rock art from a multidisciplinary approach. Her performance in archaeology has earned her a number of academic awards and distinctions: Honorary Associate Researcher at the Dep. of Archaeology, Flinders University (Australia) since 2009; Blaze O'Connor memorial award (WAC, Jordan, 2013); Honorary appointment as guest professor at HeTao University (Inner Mongolia, China) (2010); Honorary Research Fellow of Inner Mongolia Rock Art Protection and Research Association, and Inner Mongolia Rock Art Research Academy (2010) and a PhD University Award (Premio extraordinario de doctorado) (2006).

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 has been recently awarded an ERC CoG (2018). Her primary aim is to achieve a holistic view of this art by combining a multidisciplinary (Archaeology, Heritage Science, IT and Ethnoarchaeology) and a multiscale 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

- May SK, Marshall M, **Domingo I** & Smith C 2018 'Reflections on the Pedagogy of Archaeological Field Schools within Indigenous Community Archaeology Programmes in Australia', *Public Archaeology*, 16 (2017) (3-4), 172-190.
- **Domingo I**, May SK & Smith C 2018, 'Etnoarqueología y arte rupestre en el siglo XXI: de la analogía directa a la redefinición del método arqueológico'. In Garate D. (Coord.), *Redescubriendo el arte parietal paleolítico. Últimas novedades sobre los métodos y las técnicas de investigación*. Kobie (anejos), 16 (2017), pp. 163-180.
- Jalandoni A, **Domingo I** & Taçon P 2018 'Testing the value of low-cost Structure-from-Motion (SfM) photogrammetry for metric and visual analysis of rock art'. *Journal of Archaeological Science: Reports*, 17, 605-616.
- May SK, Johnston IG, Taçon PSC, **Domingo I** & Goldhahn J 2018, 'Early Australian Anthropomorphs: Jabiluka's Dynamic Figure Rock Paintings', *Cambridge Archaeological Journal*, 28, 1, 67 - 83.

Selected research activities

Session organizer at 24th meeting EAA, Barcelona:

- with Marshall, M. and Rodríguez, I.: Conservation issues and preventive measures in open air rock art sites.
- with Wesley, D. et al.: Rock art and Archaeological Science.

Session organizer at 20th IFRAO conference, Italy:

- with Smith, C. and May, S.: Rock art and Ethnoarchaeology.

Invited talks:

- Challenging archaeological approaches to Palaeolithic rock art from ethnoarchaeology. mages, gestures, voices, lives. What can we learn from Palaeolithic art?. Tübingen, Germany.
- A conservación preventiva na arte rupestre Levantina. VIII Encontro de Conservación e Restauración. Museo de Pontevedra.
- Redefinint l'art Llevantí des de la interdisciplinarietat. Workshop art rupestre i Neolitització. Museu d'Arqueologia de Catalunya.
- Nuevas ventanas al pasado. Los últimos descubrimientos de Arte Rupestre en Castellón (I. Domingo y D. Román). Programa d'activitats del Museu de Belles Arts (Castelló).

ICREA MEMOIR 2018



Ruben Durante
 Universitat Pompeu Fabra
 Social & Behavioural Sciences

I am ICREA Research Professor in the Department of Economics at Universitat Pompeu Fabra (UPF). I am also Affiliated Faculty of the Barcelona GSE and of the Institute of Political Economy and Governance, and Research Affiliate of the Centre for Economic and Policy Research. I hold master degrees from Sorbonne and Brown University and a Ph.D. from Brown University. Prior to joining UPF, I was post-doctoral fellow at Yale University, and assistant and then associate professor of economics at Sciences Po (Paris). My work has been published in some of the world's most renowned reviews in economics including the *Journal of Political Economy*, the *American Economic Review*, the *American Economic Journal: Applied Economics*, the *Economic Journal*, and the *Journal of the European Economic Association*. In 2018 I was awarded a five-year 1.5M€ starting grant from the European Research Council for a project on "Independence and Quality of Mass Media in the Internet Age".

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 policy-making process, v) the determinants of beliefs about fairness and preferences for redistribution, vi) the design of policies to alleviate inter-ethnic tensions in Sub-Saharan Africa.

Selected research activities

Publications (pre-ICREA)

- R. Durante and E. Zhuravskaya, "Attack when the World is not Watching? U.S. Media and the Israeli-Palestinian Conflict", *Journal of Political Economy*, 2018, vol. 126, n. 3, pp. 1085-1133.
- F. Campante, R. Durante, and F. Sobbrío, "Politics 2.0: the Multifaceted Effect of Broadband Internet on Political Participation", *Journal of the European Economic Association*, 2018, vol. 16, n. 4, pp. 1094-1136.

Conferences

- University of Chile Political Economy & Political Science Workshop (Santiago)
- UK Political Economy Workshop (Bath)
- 2018 Economics of Media and Communications Conference (Chicago)
- 3rd Economics of Media Bias Conference (keynote address; Cologne)
- Political Economy of Conflict and Development Workshop (Villars)

Invited Seminars

- Bank of Italy;
- Einaudi Institute for Economic and Finance;
- Boston University;
- Universidad Carlos III de Madrid;
- Collegio Carlo Alberto;

Teaching

- 1st Lancaster PhD Summer School on Applied Microeconomics, lecture "Political Economy of Traditional and New Media".

ICREA MEMOIR 2018



Turgut Durduran
 Institut de Ciències Fotòniques
 Engineering Sciences

November 2015 - ICREA Research Professor; February 2009 - Group Leader - Medical Optics. Dr. Turgut Durduran is a group leader at ICFO. He founded the ICFO-Medical Optics group in 2009 when he joined ICFO and in 2014 he received his tenure and became a professor/group leader. In 2015, he became an ICREA (Catalan Institution for Research and Advanced Studies) Professor at ICFO. Over the years, the group has grown exponentially, currently, with a large number of PhD students, post-docs and engineers collaborating with about a dozen hospitals and biomedical institutes world-wide. He has participated in many advisory boards, grant review boards ranging from the National Institutes of Health to the review of the FP7 projects at the European Commission. He has authored over hundred peer-reviewed papers and delivered over a hundred and fifty invited talks in international conferences and colloquia.

Research interests

Turgut is a physicist who is an expert in biomedical optics. He studies the physics of photon propagation in biological tissues and builds machines that can see through our bodies like never before. His group is highly multi-disciplinary: physicists, engineers and medical doctors, and collaborates closely with hospitals and biomedical centers all around the world. Turgut's current focus is the measurement of hemodynamics and oxygen metabolism. His dream is to see these devices becoming standard clinical equipment for the doctors of the future.

Selected publications

- Dragojevic T, Hollmann JL, Tamborini D, Portaluppi D, Buttafava M, Culver JP, Villa F & **Durduran T** 2018, 'Compact, multi-exposure speckle contrast optical spectroscopy (SCOS) device for measuring deep tissue blood flow', *Opt. Express* 9, 322-334
- Giovannella M, Ibañez D, Gregori-Pla C, Kacprzak, Mitjà G, Ruffini G & **Durduran T** 2018, 'Concurrent measurement of cerebral hemodynamics and electroencephalography during transcranial direct current stimulation', *Neurophotonics*, 5(1), 015001
- Delgado-Mederos R, Gregori-Pla C, Zirak P, Blanco I, Dinia L, Marín R, **Durduran T** & Martí-Fàbregas J 2018, 'Transcranial diffuse optical assessment of the microvascular reperfusion after thrombolysis for acute ischemic stroke', *Biomedical Optics Express* Vol. 9, Issue 3, pp. 1262-1271
- Gregori-Pla C, Cotta G, Blanco I, Zirak P, Giovannella M, Mola A, Fortuna A, **Durduran T** & Mayos M, 'Cerebral vasoreactivity in response to a head-of-bed position change is altered in patients with moderate and severe obstructive sleep apnea', *PLoS ONE* 13(3): e0194204.
- Pagliuzzi M, Konugolu Venkata Sekar S, Di Sieno L, Colombo L, **Durduran T**, Contini D, Torricelli A, Pifferi A & Dalla Mora A 2018, 'In vivo time-gated diffuse correlation spectroscopy at quasi-null source-detector separation', *Optics Letters*, 43, 11, 2450 - 2453.
- Zirak P, Gregori-Pla C, Blanco I, Fortuna A, Cotta G, Bramon P, Serra i, Mola A, Solà-Soler, Giraldo-Giraldo B, **Durduran T** & Mayos M 2018, "Characterization of the microvascular cerebral blood flow response to obstructive apneic events during night sleep" *Journal of SPIE.digital library, Neurophotonics, volume 5, issue 4*

ICREA MEMOIR 2018



Konstantin Dyakonov

Universitat de Barcelona
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** 2018, 'Remembering Victor Petrovich Havin', In: Baranov A, Kisliakov S & Nikolski N (eds) '50 Years with Hardy Spaces', pp. 75-80, Operator Theory: Advances and Applications, vol. 261, Birkhäuser, Cham.
- **Dyakonov KM** 2018, 'A free interpolation problem for a subspace of H^∞ ', *Bulletin of the London Mathematical Society*, vol. 50, no. 3, 477-486.
- **Dyakonov KM** 2018, 'Interpolating by functions from model subspaces in H^1 ', *Integral Equations and Operator Theory*, Vol. 90, No. 4, Art. 42, pp. 1-7.

Selected research activities

- * Problem solving classes in Complex Analysis, taught at the UB in February-May 2018.
- * Problem solving classes in Mathematical Analysis, taught at the UB in September-December 2018.
- * Problem solving classes in Introduction to Differential Calculus, taught at the UB in September-December 2018.
- * Editorial boards: Journal of Complex Analysis (Hindawi Publ. Corp.), Journal of Function Spaces (Hindawi Publ. Corp.), Abstract and Applied Analysis (Hindawi Publ. Corp.), Applied Mathematics (Sci. Res. Publ.).
- * A number of invited talks at various conferences and seminars in Russia, France and Spain.
- * Coordinator on behalf of the UB Complex Analysis group for the Spanish research network "*Variable compleja, espacios de funciones y operadores entre ellos*" (until September 2018).
- * Member of the jury for a PhD defense held at the UAB.
- * Served as referee for a number of mathematical journals.

ICREA MEMOIR 2018



Majid Ebrahim-Zadeh
 Institut de Ciències Fotòniques
 Engineering Sciences

Majid Ebrahim-Zadeh received his PhD from St Andrews, UK, in 1989. He was a Royal Society Research Fellow from 1993 to 2001, and appointed ICREA Professor in 2003. He has over 580 publications, including 190 journal papers, 105 invited talks, 18 book chapters, invited journal papers 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, on Joint Council on Quantum Electronics (USA), International Council on Quantum Electronics, and on advisory board and evaluation panel of several scientific councils and funding agencies. He is the founder, president and chief scientist of Radiantis, a Fellow of OSA and SPIE, recipient of the Royal Society Merit Award (1995, 1999), Innova Prize, Spain (2004), and Berthold Leibinger Innovation Prize, Germany (2010).

Research interests

The 7th His research is focused on the development of new technologies for the generation and manipulation of coherent light in new spectral and temporal domains, which are inaccessible to conventional lasers. The main goal is the exploitation of nonlinear optics, in particular optical 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 research results from his laboratory at ICFO into cutting-edge photonic products through the creation of a spin-off company, Radiantis, in Barcelona, in 2005. Radiantis is a leading manufacturer of state-of-the-art frequency conversion systems and instrumentation, and a certified supplier to major suppliers of laser technology in the world.

Selected publications

- Wei J, Kumar SC, Ye H, Schunemann PG & **Ebrahim-Zadeh M** 2018, *Opt. Mat. Exp.* 8, 555-567.
- O'Donnell CF, Kumar SC, Zawilski KT, Schunemann PG & **Ebrahim-Zadeh M** 2018, *IEEE J. Sel. Top. Quantum Electron.* 24, 5, 1601409.
- O'Donnell CF, Kumar SC, Zawilski KT, Schunemann PG & **Ebrahim-Zadeh M** 2018, *Opt. Lett.* 43, 1507-1510.
- Kumar SC, Casals JC, Parsa S, Zawilski KT, Schunemann PG & **Ebrahim-Zadeh M** 2018, *Appl. Phys. B* 124, 6, 100.
- Devi K, Padhye A, Schunemann PG & **Ebrahim-Zadeh M** 2018, *Opt. Lett.* 43, 2284-2287.
- Ye H, Kumar SC, Wei J, Schunemann PG & **Ebrahim-Zadeh M** 2018, *Opt. Lett.* 43, 2454-2457.
- Sharma V, Kumar SC, Samanta GK & **Ebrahim-Zadeh M** 2018, *Opt. Lett.* 43, 3606-3609.
- Nandy B, Kumar SC, Casals JC, Ye H & **Ebrahim-Zaded M** 2018, *J. Opt. Soc. Am. B* 35, C57-C67.

Selected research activities

Selected Invited Talks (International Conferences):

- Keynote Lecture, *Field Laser Applications in Industry and Research (FLAIR)*, Assisi (Italy).
- Invited Talk, *The 40th Progress In Electromagnetics Research Symposium (PIERS)*, Toyama (Japan).
- Invited Talk, *Latin America Optics & Photonics (LAOP) Conference*, Lima (Peru).
- Invited Talk, *International Conference on Fiber Optics and Photonics (Photonics-2018)*, Delhi (India).

Conference Organisation:

- General Chair, *Mid-Infrared Coherent Sources and Applications (MICS) Conference*, Strasbourg (France).
- General Chair, *The 8th EPS-QEOD Europhoton Conference*, Barcelona (Spain).
- Topic Chair, *The 31st IEEE Photonics Conference (IPC)*, Reston, Virginia (USA).
- Technical Program Committee, *SPIE Photonics West*, San Francisco (USA).
- Steering Committee, *EPS-QEOD Europhoton Conference*.

Editorial Activities:

- Associate Editor, *Optica*, Optical Society of America (USA).
- Guest Editor, *Journal of the Optical Society of America B* (USA).

PhD Theses:

- Shahrzad Parsa (Excellent Cum Laude).
- Josep Canals Casals (Excellent Cum Laude).
- Junxiong Wei (Excellent Cum Laude).

ICREA MEMOIR 2018



Jan Eeckhout
Universitat Pompeu Fabra
Social & Behavioural Sciences

Jan Eeckhout is ICREA research professor at UPF, Barcelona. He has teaching and research interests in the labor market and market power. His work has been published in the AER, Econometrica, the REStud, the JPE, and several government grants, including funding from the NSF and the ERC, as well as private grants have supported his research. Jan Eeckhout has been a tenured professor at the University of Pennsylvania, where he was for 9 years. He has also taught at Princeton and NYU Stern and visited MIT. At UPF he has been the chairman of the Department of Economics and Business. He has been editor of the International Economic Review and is currently on the editorial board of the Review of Economic Dynamics and the Journal of Economic Theory, and is past editorial board member of the Journal of the European Economic Association. He is a fellow of the European Economic Association and a member of the Academia Europaea. He received his Ph.D. in Economics from LSE in 1998.

Research interests

Jan Eeckhout has research interests in labor markets and applied economic theory, with a special emphasis on the theory of matching and search. His models develop tools and testable hypotheses for several market applications both in micro and macroeconomics. He studies unemployment, knowledge spillovers, inequality and local labor markets.

Selected publications

- **Eeckhout J & Kircher P** 2018, 'Assortative Matching with Large Firms,' *Econometrica* 86(1), 85-132.
- Chade H & **Eeckhout J** 2018, 'Matching information', *Theoretical Economics*, 13, 1, 377 - 414.
- **Eeckhout J** 2018, 'Sorting in the Labor Market,' *Annual Review of Economics*, 10, 1-29

ICREA MEMOIR 2018



Roberto Emparan

Universitat de Barcelona
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 at Universitat de Barcelona. In 2016 I was awarded an Advanced Grant from the European Research Council.

Research interests

I try to understand the nature of spacetime at its most fundamental level. We know since Einstein that, due to the existence of gravity, spacetime is a dynamical entity. So I study the classical and quantum aspects of gravity and its most basic objects: the black holes. The natural starting point is the theory of General Relativity and the theories that naturally incorporate the ideas of holographic spacetime, namely, String and M-Theory and the AdS/CFT correspondence.

Selected publications

- **Emparan R**, Martinez M & Zilhao M 2018, 'Black hole fusion in the extreme mass ratio limit', *Phys. Rev. D* 97, 044004.
- **Emparan R**, Luna R, Martinez M, Suzuki R & Tanabe K 2018, 'Phases and stability of non-uniform black strings', *Journal Of High Energy Physics*, 5, 104.
- Andrade T, **Emparan R** & Licht D 2018, 'Rotating black holes and black bars at large D', *Journal Of High Energy Physics*, 9, 107.

Selected research activities

Plenary talks at "General Relativity - The Next Generation", Kyoto; "Black holes, quantum information, and space-time reconstruction", CERN, Geneva

Invited talks and colloquia at QMAP UC Davis; Universita di Padova; ITFA University of Amsterdam; EREP 2018 Palencia, Universidad Católica de Chile; ICCUB

Invited graduate lectures "Black hole physics", 22nd Asia Pacific Center for Theoretical Physics Winter School, Pohang, South Korea

Dissemination

Book: "Iluminando el lado oscuro del Universo" (Ed. Ariel)

29 interviews in radio, press, tv. 10 public talks (cultural centers and high schools)

Invited participation in Hay Festival (Arequipa) and Hay Forum (Santiago de Chile)

Committee member of the International Society on General Relativity and Gravitation

Committee member of the Spanish Society of Gravitation and Relativity

Guarantor of ICCUB for María de Maeztu Award

Editorial Board member of Journal of High Energy Physics and International Journal of Modern Physics D

MSc thesis supervisor of JC Morales and B Mula, U. Barcelona

ICREA MEMOIR 2018



Ruben Enikolopov
Universitat Pompeu Fabra
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*, *Proceedings of National Academy of Science*, *American Political Science Review*, *American Economic Journal: Applied Economics*, *Journal of Public 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 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. Using field experiment methodology I also show the extent of electoral fraud in Russian parliamentary elections.

Selected publications

- **Enikolopov R, Petrova M** & Sonin K 2018, 'Social Media and Corruption', *American Economic Journals: Applied Economics*, 10(1): 150-174.

ICREA MEMOIR 2018



José Ramón Espinosa
 Institut de Física d'Altes Energies
 Experimental Sciences & Mathematics

I obtained my PhD (UAM 1994) working on Particle Physics beyond the Standard Model at IEM (CSIC, Madrid) under the supervision of Mariano Quirós. After postdoctoral stays at DESY (Hamburg, Germany), University of Pennsylvania (Philadelphia, USA) and CERN (Geneva, Switzerland), in 1999 I joined IMAFF (CSIC, Madrid) and then IFT-UAM/CSIC (Madrid) with a permanent position as 'Científico Titular' being promoted to 'Investigador Científico' in 2005 and to 'Profesor de Investigación' in 2008. In November of that year I joined ICREA as Research Professor to work at IFAE.

Research interests

The ultimate goal of my field of research, Particle Physics, is to understand nature at the most fundamental level determining its building blocks and the laws that govern them. In the path (of ever increasing energies) towards that goal, the Standard Model -the theory that describes how all phenomena observed so far can be explained in terms of a small number of particle species interacting according to a well defined mathematical framework- stands as an impressive achievement. In spite of this, it leaves open too many questions to be considered the ultimate theory, and strong reasons lead us to believe in physics beyond this Standard Model. As a theorist, I work at this high energy frontier exploring what theories might supersede the Standard Model and what experimental implications they would have. The Large Hadron Collider now in operation at CERN and a other experiments will provide us in coming years with crucial data to guide research in this fundamental field.

Selected publications

- **Espinosa JR**, Racco D & Riotto A 2018, 'Cosmological Signature of the Standard Model Higgs Vacuum Instability: Primordial Black Holes as Dark Matter', *Physical Review Letters*, 120, 12, 121301.
- **Espinosa JR**, Racco D & Riotto A 2018, 'Primordial black holes from Higgs vacuum instability: avoiding fine-tuning through an ultraviolet safe mechanism', *European Physical Journal C*, 78, 10, 806.
- **Espinosa JR**, Racco D & Riotto A 2018 'A Cosmological Signature of the Standard Model Higgs Vacuum Instability: Gravitational Waves', *Journal of Cosmology and Astroparticle Physics*, 1809, 012
- **Espinosa JR** 2018, 'A fresh look at the calculation of tunneling actions', *Journal Of Cosmology And Astroparticle Physics*, , 7, 036.
- **Espinosa JR** & Konstandin T 2018, 'Resummation of Goldstone infrared divergences: A proof to all orders', *Physical Review D*, 97, 5, 056020.
- **Espinosa JR** & Cline JM 2018, 'Axionic Landscape for Higgs Coupling Near-Criticality', *Physical Review D* 97, 035025.
- **Espinosa JR** 2018, 'Cosmological implications of Higgs near-criticality', *Philosophical Transactions Of The Royal Society A-mathematical Physical And Engineering Sciences*, 376, 2114, 20170118.

Selected research activities

Invited Seminars:

SISSA, Trieste, Italy.
 DESY, Hamburg, Germany.
 Bonn Univ., Germany.
 Heidelberg Univ., Germany.
 CERN-TH, Geneva, Switzerland.

Invited Plenary Talks at International Conferences/ Workshops:

KEK Theory Meeting on Particle Physics Phenomenology. KEK, Tsukuba (Japan).
 Cosmological probes of BSM - from the Big Bang to the LHC. Benasque (Spain).

Conference Organizer:

Strong and Electroweak Matter, Barcelona
 Pre-SUSY Summer School, Barcelona
 The International Conference on *Supersymmetry* and Unification of Fundamental Interactions, SUSY18, Barcelona

Stays of Research:

IFT-UAM/CSIC, Madrid (Spain)
 CERN, Geneva (Switzerland)

Reviewer:

Rapporteur for the European Cooperation in Science and Technology (COST) programme.

Prizes and Awards:

First Prize of the 2018 edition of the Buchalter Cosmology Prize

ICREA MEMOIR 2018



Manel Esteller

Institut d'Investigació Biomèdica de Bellvitge
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, Dr. Esteller was a researcher at the Johns Hopkins University and School of Medicine (Baltimore, USA) where he was decisive in establishing promoter hypermethylation of tumour suppressor genes as a common hallmark of all human tumours. From October 2001 to September 2008 he was CNIO Cancer Epigenetics Laboratory's leader. Dr Esteller is Director of the Cancer Epigenetics and Biology Program (PEBC) of the Bellvitge Biomedical Research Institute (IDIBELL) and Chairman of Genetics at the School of Medicine in the University of Barcelona. He has been elected as Director of the Josep Carreras Research Institute (IJC).

Research interests

-Definition of the Epigenome 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 Machinery and Mechanisms: Role and function of DNA methyltransferases (enzymes that maintain DNA methylation), 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

- Duruisseaux M, Martínez-Cardús A, Calleja-Cervantes ME, Moran S, Castro de Moura M, Davalos V, Piñeyro D, Sanchez-Cespedes M, Girard N, Breve M, Giroux-Leprieur E, Dumenil C, Pradotto M, Bironzo P, Cappelletto E, Novello S, Cortot A, Copin MC, ..., Moran T, Perez L, Ramos I, Xiao Q, Fernandez AF, Fraga MF, Gut M, Gut I, Teixidó C, Vilariño N, Prat A, Reguart N, Benito A, Garrido P, Barragan I, Emile JF, Rosell R, Brambilla E & **Esteller M** 2018, 'Epigenetic prediction of response to anti-PD-1 treatment in non-small-cell lung cancer: a multicenter, retrospective analysis', *The Lancet Respiratory Medicine*, 6, 10, 771-781.
- Perez-Salvia M, Aldaba E, Vara Y, Fabre M, Ferrer C, Masdeu C, Zubia A, San Sebastian E, Otaegui D, Llinàs-Arias P, Rosselló-Tortella M, Berdasco M, Moutinho C, Setien F, Villanueva A, González-Barca E, Muncunill J, Navarro JT, Piris MA, Cossio FP & **Esteller M** 2018, 'In vitro and in vivo activity of a new small-molecule inhibitor of HDAC6 in mantle cell lymphoma'. *Haematologica*, 103, 11, e537-e540.
- Jorge-Torres OC, Szczesna K, Roa L, Casal C, Gonzalez-Somermeyer L, Soler M, Velasco CD, Martínez-San Segundo P, Petazzi P, Sáez MA, Delgado-Morales R, Fourcade S, Pujol A, Huertas D, Llobet A, Guil S & **Esteller M** 2018, 'Inhibition of Gsk3b reduces NFκ-B signaling and rescues synaptic activity to improve the Rett syndrome phenotype in Mecp2-knockout mice'. *Cell Reports*, 23, 6, 1665-1677.
- Davalos V, Blanco S & **Esteller M** 2018, 'Snapshot: Messenger RNA modifications'. *Cell*, 174 (2):498-498.e1.

Selected research activities

- Scientific Achievements Prize, Foundation for the Excellence in Oncology (ECO)
- Scientific Innovation Award Team in Clinical Research, Pfizer Foundation
- Innovation Health Award in Oncology by Celgene Endowment
- Award for the Best Science and Humanities Dissemination Activities by the Board of Trustees and the Doctors' Senate of the University of Barcelona (UB)
- Highly Cited Researcher (Top 1% by Citations, Decade 2008-2018) by Clarivate Analytics

ICREA MEMOIR 2018



Eduardo Eyras
 Universitat Pompeu Fabra
 Life & Medical Sciences

E Eyras is ICREA Research Professor since January 2005. After graduating in Physics (U. of Granada, 1995) he did a PhD in Mathematics (U. of Groningen, The Netherlands, 1999) and postdoc (U. of Cambridge, UK) (1999-2001). In 2001, Eyras joined the Sanger Institute, Cambridge, UK (2001-2004), where he worked on methods for alternative splicing prediction and participated in the analyses of the human, mouse and rat genomes. He has also contributed to the analyses of alternative splicing in the chicken and cow genome genomes and since 2007, he has been organizer of the RNA workshop of the ISMB conference. In 2008 he was awarded a Young Investigator Grant of the EURASNET network, and in 2013 he was a visiting professor at the U. of Toronto. E. Eyras leads a research group on Computational RNA Biology and Disease and teaches Machine Learning in genomics in the Masters of Bioinformatics for Health of the UPF.

Research interests

My group works on the development of computational tools to study mechanisms of RNA processing and its role in disease. We develop tools to identify RNA splicing signatures of therapeutic vulnerability in rare diseases and cancer, and develop new algorithms to facilitate the systematic implementation of long-read RNA sequencing in precision medicine.

Selected publications

- Singh B, Trincado JL, Tatlow PJ, Piccolo SR & **Eyras E** 2018, 'Genome Sequencing and RNA-Motif Analysis Reveal Novel Damaging Noncoding Mutations in Human Tumors', *Molecular Cancer Research*, 16, 7, 1112 - 1124.
- Trincado JL, Entizne JC, Hysenaj G, Singh B, Skalic M, Elliott DJ & **Eyras E** 2018, 'SUPPA2: fast, accurate, and uncertainty-aware differential splicing analysis across multiple conditions', *Genome Biology*, 19, 40.
- Jayasinghe RG, Cao S, Gao Q, Wendl MC, Vo NS, Reynolds SM, Zhao Y, Climente-Gonzalez H, Hector; Chai S, Shengjie; Wang F, Varghese R, Huang M, Liang W-W, Wyczalkowski MA, Sengupta S, Li Z, Payne SH, Fenyo D, Miner JH, Walter MJ, Vincent B, **Eyras E**, Chen K, Shmulevich I, Chen F & Ding L 2018, 'Systematic Analysis of Splice-Site-Creating Mutations in Cancer', *Cell Reports*, 23, 1, 270
- Dotu I, Adamson SI, Coleman **B**, Fournier C, Ricart-Altimiras E, **Eyras E** & Chuang JH 2018, 'SARNAclust: Semi-automatic detection of RNA protein binding motifs from immunoprecipitation data', *Plos Computational Biology*, 14, 3, e1006078.
- Pagès A, Dotu I, Pallarès-Albanell J, Martí E, Guigó R & **Eyras E** 2018 'The discovery potential of RNA processing profiles', *Nucleic Acids Res.* 46(3):e15.

Selected research activities

- Co-organizer of the RNA track of the ISMB (Intelligent Systems for Molecular Biology) 2018 in Chicago 2018
- Co-organizer of the Conference *Bermuda Principles - Impact on Splicing* 2018 in Bermuda
- Interviewed by the Bermuda Broadcasting Company <https://twitter.com/ZBMNews9/status/966464840662437888>
- Keynote speaker at the 2nd *Caparica Splicing Conference "Splicing 2018"*. Portugal, 16-19 July 2018.
- Invited speaker at the *RNA Metabolism* session of the Annual AACR conference, 14-18 April, 2018, Chicago.
- Invited speaker at the *New Scientific Approaches* session of the 2018 European Congress of Endocrinology, 19-22 May Barcelona.

ICREA MEMOIR 2018



Alberto Fernández de las Nieves

Universitat de Barcelona

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. I have performed research in soft matter, making substantial contributions to the physics of geometrically frustrated liquid crystals, surface-tension-driven instabilities and the thermodynamics of colloidal polymer gels. 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.

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 are also interested in fluid mechanics and hydrodynamic instabilities.

Selected publications

- Ellis W, Nayani K, McInerney JP, Rocklin DZ, Park JO, Srinivasarao M, Matsumoto EA & **Fernandez-Nieves A** 2018, 'Curvature-Induced Twist in Homeotropic Nematic Tori', *Physical Review Letters*, 121, 24, 247803.

Selected research activities

Talks: (i) Invited seminar, Gregorio Milán Barbary Institute of Fluid Dynamics, Nanoscience and Industrial Mathematics, Universidad Carlos III, Madrid (Spain), 18 Dec 2018. (ii) Colloquium, Department of Physics, University of Fribourg (Switzerland), 12 Dec 2018. (iii) Keynote talk, Parque de las Ciencias de Granada, 6 Sep 2018.

Experiments in large-scale facilities: (i) Small angle neutron scattering (SANS), 24-26 Oct 2018, Paul Scherrer Institute (Switzerland). (ii) SANS, 12-15 Nov 2018, Oak Ridge National Laboratory (USA)

Refereeing: (i) Projects: NASA (USA), Liquid crystal projects for the international space station & Oak Ridge National Laboratory (USA), SANS proposals. (ii) Journals: *Physical Review Letters*, *Physical Review E*, *Physical Review Fluids*, *Proceedings of the National Academy of Sciences*, *Nature Physics*, *Nature Materials*, *Nature Communications*, *Journal of the Royal Society of Interface*

Submitted proposals: (i) MINECO, Sep 2018, PI. (ii) American Chemical Society Petroleum Research Foundation, Oct 2018, PI. (iii) Junta de Andalucía, Dic 2018, Researcher

ICREA MEMOIR 2018



Alexander Fidora
 Universitat Autònoma de Barcelona
 Humanities

Alexander Fidora, born 1975 in Offenbach (Germany), studied philosophy at the University of Frankfurt and the Universitat Autònoma de Barcelona. 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 fall 2018). He has been a Visiting Professor at Saint Louis University, Universidad Panamericana in Mexico, University of Erlangen-Nuremberg and University of Pennsylvania. His work has been distinguished with the "Premi Internacional Catalònia" (2011) and the "Samuel Toledano Prize" (2012). Co-editor of "Journal of Transcultural Medieval Studies" and "Revista Española de Filosofía Medieval"; Secretary of "Arxiu de Textos Catalans Antics". Vice-president of SIEPM and of SOFIME. Member of YAE and Academia Europaea.

Research interests

Alexander Fidora is working on the interreligious dimensions of medieval Hispanic philosophy. In particular, he studies cultural contacts between Judaism, Christianity and Islam, such as: reception, interpretation and transformation of philosophical and theological translations from Arabic by Jewish and Christian authors; Latin philosophy into Hebrew; Polemics, controversial theology and interreligious dialogue in the Middle Ages; and Consequences of the confrontation between the three religions of the Book for the formation of European culture (ERC-Research Projects "Latin Philosophy into Hebrew" (2008-2012) and "The Latin Talmud" (2014-2019)).

Selected publications

- Lola Badia, Alexander Fidora and Maribel Ripoll (eds.) 2017 (2018), *Actes del Congrés d'Obertura de l'Any Lull "En el setè centenari de Ramon Lull: El projecte missional i la pervivència de la devoció"*, Barcelona/Palma: UB/UIB.
- Maria Cabré Duran and Alexander Fidora (eds.) 2018, *De relatione = Special issue of Enrahonar. An International Journal of Theoretical and Practical Reason* 61.
- Maria Cabré, Alexander Fidora and Jaume Mensa (eds.) 2018, *Relation, Reason and Reality: Studies in Medieval Philosophy (= Supplement of Enrahonar)*, Bellaterra: Servei de Publicacions de la Universitat Autònoma de Barcelona.
- Alexander Fidora 2017 (2018), 'The Latin Talmud and Its Place in Anti-Jewish Polemics', in Ulisse Cecini and Eulàlia Vernet (eds.), *Studies on the Latin Talmud*, Bellaterra: Servei de Publicacions UAB, pp. 13-21.
- Alexander Fidora 2018, 'Marsilio de Padua en la Península ibérica: la Confutatio errorum quorundam magistrorum de Guido Terrena', in Celia López Alcalde, Josep Puig and Pedro Roche Arnas (eds.), *Legitimation of Political Power in Medieval Thought*, Turnhout: Brepols, pp. 159-170.
- Alexander Fidora 2018, 'The Latin Talmud and the Extension of Papal Jurisdiction over Jews', in: *Jewish-Christian-Muslim Intellectual Exchanges in the Medieval & Early Modern Mediterranean, Symposium Proceedings, Storrs, Connecticut, October 25-26, 2017*, Storrs: UConn, p. 12.
- Alexander Fidora 2018, 'Sicut oleum super aquam. Sobre la relació entre fe y razón en Ramon Lull', *Enrahonar. An International Journal of Theoretical and Practical Reason* 61, pp. 121-138.

Selected research activities

- Invited lectures in Erlangen, Beersheva & Oxford.
- Co-organiser of 'The Latin Talmud Joint Workshop', February 13th, 2018, Ben-Gurion University of the Negev, Beersheva/Israel.
- Academic coordinator of 'Building Bridges: Annual General Meeting of the Academia Europaea', November 28th-29th, 2018, Barcelona Knowledge Hub, Institut d'Estudis Catalans, Barcelona.

ICREA MEMOIR 2018



Toni Gabaldón

Centre de Regulació Genòmica
Life & Medical Sciences

I'm a biochemist and molecular biologist by training (Universities of Valencia and Mainz). After several years working on a molecular biology lab, and attracted by the emerging fields of genomics and bioinformatics, in 2001 I moved to the comparative genomics group of Martijn Huynen in the NCMLS, The Netherlands. In 2005, I obtained a PhD in Medical Sciences (Radbout University Nijmegen), and then moved, thanks to an EMBO fellowship, to the bioinformatics department at CIPF (Valencia). In September 2008 I started my own group in the Bioinformatics and Genomics department at CRG. In 2013 I was awarded an ERC starting grant and an ICREA research professorship. In 2017 I was awarded the ERC consolidator Grant and the Margaret Dayhoff Award. 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

- Willis JR, Gonzalez-Torres P, Pittis AA, Bejarano LA, Cozzuto L, Andreu-Somavilla N, Alloza-Trabado M, Valentin A, Ksiezopolska E, Company C, Onywere H, Montfort M, Hermoso A, Iraola-Guzman S, Saus E, Labeeuw A, Carolis C, Hecht J, Ponomarenko J & **Gabaldon T** 2018, 'Citizen science charts two major "stomatotypes" in the oral microbiome of adolescents and reveals links with habits and drinking water composition', *Microbiome*, 6, 218.
- Kotlobay AA, Sarkisyan, et. al.. 2018, 'Genetically encodable bioluminescent system from fungi', *Proceedings Of The National Academy Of Sciences Of The United States Of America*, 115, 50, 12728 - 12732.
- Carreté L, Ksiezopolska E, Pegueroles C, Gómez-Molero E, Saus E, Iraola S, Loska D, Bader O, Fairhead C & **Gabaldón T** 2018, 'Patterns of genomic variation in the opportunistic pathogen *Candida glabrata* suggest the existence of mating and a secondary association with humans', *Current Biology*, 28, 1, 15
- Mixão V & **Gabaldón T** 2018, 'Hybridization and emergence of virulence in opportunistic human yeast pathogens', *Yeast*, 35, 1, 5 - 20.
- Julca I, Marcet-Houben M, Vargas P & **Gabaldon T** 2018, 'Phylogenomics of the olive tree (*Olea europaea*) reveals the relative contribution of ancient allo- and autopolyploidization events', *Bmc Biology*, 16, 15.
- Saus E, Willis JR, Prysycz LP, Hafez A, Llorens C, Himmelbauer H & **Gabaldon T** 2018, 'nextPARS: parallel probing of RNA structures in Illumina', *Rna*, 24, 4, 609 - 619.
- Ropars J et. al. 2018, 'Gene flow contributes to diversification of the major fungal pathogen *Candida albicans*', *Nature Communications*, 9, 2253.
- Gonzalez-Torres P & **Gabaldon T** 2018, 'Genome Variation in the Model Halophilic Bacterium *Salinibacter ruber*', *Frontiers In Microbiology*, 9, 1499.

ICREA MEMOIR 2018



José Ramón Galán-Mascarós
 Institut Català d'Investigació Química
 Experimental Sciences & Mathematics

J.R. Galán-Mascarós holds a Degree in Chemistry from the University of Valencia and the Imperial College (London) and a PhD from the University of Valencia under the supervision of Prof. E. Coronado (1999). Between 1999 and 2002 he was post-doctoral researcher at Texas A&M University (College Station) working with Prof. Kim R. Dunbar. In 2002 he joined ICMOL (U. de Valencia) as Ramón y Cajal Fellow. In 2009 he took a position at ICIQ, where he currently leads a research group focused on future applications of coordination chemistry for Renewable Energies and Materials Sciences. In september 2010 he became ICREA Research Professor. Galán-Mascarós has received several awards, including the Olivier Kahn International Award (2008) and an ERC Starting Grant (2012-2016). He is the coordinator of the collaborative project H2020-FETPROACT A-LEAF (2017-2020): a major European public investment for the realization of a viable artificial photosynthesis platform.

Research interests

Our research team is devoted to the development of novel materials with the desired chemical and physical properties for applications in the fields of Materials Sciences and Renewable energies. 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, with particular interest in water oxidation catalysis. In Materials Sciences, we are designing multifunctional smart materials able to exhibit novel phenomena from unusual combination of physical properties (redox, magnetic, electrical and/or optical, etc...).

Selected publications

- Blasco-Ahicart M, Soriano-Lopez J, Carbo, JJ, Poblet JM & **Galan-Mascaros JR** 2018, 'Polyoxometalate electrocatalysts based on earth-abundant metals for efficient water oxidation in acidic media', *Nature Chemistry*, 10, 1, 24 - 30.
- Rodriguez-Garcia B, Reyes-Carmona A, Jimenez-Morales I, Blasco-Ahicart M, Cavaliere S, Dupont M, Jones D, Roziere J, **Galan-Mascaros JR** & Jaouen F 2018, 'Cobalt hexacyanoferrate supported on Sb-doped SnO₂ as a non-noble catalyst for oxygen evolution in acidic medium', *Sustainable Energy & Fuels*, 2, 3, 589 - 597.
- Martin-Sabi M, Soriano-Lopez J, Winter RS, Chen J, Vila-Nadal L, Long D, **Galan-Mascaros JR** & Cronin L 2018, 'Redox tuning the Weakley-type polyoxometalate archetype for the oxygen evolution reaction', *Nature Catalysis*, 1, 3, 208 - 213.
- Promdet P, Rodriguez-Garcia B, Henry A, Nguyen C, Khuu T, **Galan-Mascaros JR** & Sorasaene K 2018, 'Multimodal Prussian blue analogs as contrast agents for X-ray computed tomography', *Dalton Transactions*, 47, 34, 11960 - 11967.
- Moneo-Corcuera A, Nieto-Castro D, Saenz de Pipaon C, Gomez V, Maldonado-Illescas P & **Galan-Mascaros JR** 2018, 'Tuning the spin crossover behavior of the polyanion [(H₂O)₆Fe₃(L)₆]⁶⁻: the case of the cesium salt', *Dalton Transactions*, 47, 34, 11895 - 11902.
- Soriano-Lopez J, Song F, Patzke GR & **Galan-Mascaros JR** 2018, 'Photoinduced Oxygen Evolution Catalysis Promoted by Polyoxometalate Salts of Cationic Photosensitizers', *Frontiers In Chemistry*, 6, 302.
- Sahadevan SA, Abherve A, Monni N, Saenz de Pipaon C, **Galan-Mascaros JR**, Waerenborgh JC, Vieira BJC, Auban-Senzier P, Pillet S, Bendeif E, Alemany P, Canadell E, Mercuri ML & Avarvari N 2018, 'Conducting Anilate-Based Mixed-Valence Fe(II)Fe(III) Coordination Polymer: Small-Polaron Hopping Model for Oxalate-Type Fe(II)Fe(III) 2D Networks', *Journal Of The American Chemical Society*, 140, 39, 12611 - 12621.

Selected research activities

- Founder and scientific advisor of Orchestra Scientific SL

ICREA MEMOIR 2018



Eric Galbraith

Universitat Autònoma de Barcelona
Experimental Sciences & Mathematics

A native of Halifax, Canada, Galbraith completed an undergraduate degree in Earth and Planetary Science at McGill University in 1997, then worked as an exploration geologist in Peru and a tour guide on polar expedition cruises before undertaking a PhD at the University of British Columbia, completed in 2006. This was followed by three years of postdoctoral research at Princeton University, developing and using Earth System models, with a focus on ocean biogeochemistry and long-term climate variability. Galbraith returned to McGill University as a professor, where he worked until joining ICREA in 2015.

Research interests

Over the past century, humans have emerged as a dominant component of the Earth system. For decades, it has been clear that we are on an increasingly unsustainable trajectory due to rapid alteration of climate, biogeochemical cycles and ecosystems at the global scale. Despite this clarity, we have not yet made the large changes in trajectory that are required to ensure sustainability. Part of this lack of action can be attributed to an incomplete understanding of the emergent properties of the human-Earth system, including the behavioural motivations of humans and outcomes for human experience and well-being. I am interested in using statistical analyses, simple theory and numerical models to improve our predictive understanding of the coupled human-Earth system. Most of my past work has addressed uncertainty in the natural science side of the system, including the study of past, natural climate changes, and the controls on the chemical composition and large-scale ecology of the global ocean. My focus is now on developing integrated, quantitative descriptions of the two-way coupling between natural and human elements by bridging Earth system modeling methods with social science. Most of my current work is developing these approaches for the global marine fishery, through the ERC-funded BIGSEA project.

Selected publications

- Claret M, **Galbraith ED**, Palter JB, Bianchi D, Fennel K, Gilbert D & Dunne JP 2018, 'Rapid coastal deoxygenation due to ocean circulation shift in the northwest Atlantic', *Nature Climate Change*, 8, 10.
- Kavanagh L & **Galbraith E** 2018, 'Links between fish abundance and ocean biogeochemistry as recorded in marine sediments', *Plos One*, 13, 8, e0199420.
- Hoogakker BAA, Lu Z, Umling N, Jones L, Zhou X, Rickaby REM, Thunell R, Cartapanis O & **Galbraith E** 2018, 'Glacial expansion of oxygen-depleted seawater in the eastern tropical Pacific', *Nature*, 562, 7727.
- McGee D, Moreno-Chamarro E, Marshall J & **Galbraith ED** 2018, 'Western U.S. lake expansions during Heinrich stadials linked to Pacific Hadley circulation', *Science Advances*, 4, 11, eaav0118.
- Eggleston, Sarah; Galbraith, Eric D. 2018, 'The devil's in the disequilibrium: multi-component analysis of dissolved carbon and oxygen changes under a broad range of forcings in a general circulation model', *Biogeosciences*, 15, 12, 3761 - 3777.
- Cartapanis O, **Galbraith ED**, Bianchi D & Jaccard S 2018. 'Carbon burial in deep-sea sediment and implications for oceanic inventories of carbon and alkalinity over the last glacial cycle', *Climate of the Past*, 14 (11), pp. 1819-1850.

ICREA MEMOIR 2018



Elena Galea

Universitat Autònoma de Barcelona
Life & Medical Sciences

1985: BS Biology, Universidad Autónoma de Madrid. 1990: PhD Biology, Department of Physiology, School of Medicine, Universidad Autónoma de Madrid. 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. 2008-2010: Vice Director, Institute of Neurosciences, Universitat Autònoma de Barcelona. 2012-2013: Visiting scholar, Massachusetts General Institute for Neurodegenerative disease, Harvard Medical School, Boston.

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

- Eraso-Pichot A, Brasó-Vives M, Golbano A, Menacho C, Claro E, **Galea E*** & Masgrau R* 2018, ‘Gene set enrichment analysis of mouse and human mitochondriomes reveals fatty-acid oxidation in astrocytes’, *GLIA*, 66, 8, 1724 - 1735.
- Romeo-Guitart D, Fores J, Herrando-Grabulosa M, Valls R, Leiva-Rodriguez T, **Galea E**, Gonzalez-Perez F, Navarro X, Petegnief V, Bosch A, Coma M, Manuel Mas J & Casas C 2018, ‘Neuroprotective Drug for Nerve Trauma Revealed Using Artificial Intelligence’, *Scientific Reports*, 8, 1879.
- Gomez-Arboledas A, Davila JC, Sanchez-Mejias E, Navarro V, Nunez-Diaz C, Sanchez-Varo R, Sanchez-Mico MV, Trujillo-Estrada L, Fernandez-Valenzuela JJ, Vizuite M, Comella JX, **Galea E**, Vitorica J & Gutierrez A 2018, ‘Phagocytic clearance of presynaptic dystrophies by reactive astrocytes in Alzheimer’s disease’, *Glia*, 66, 3, 637 - 653.

Selected research activities

Gordon Research Conference, Neurobiology of Brain disorders, Castelldefels, Barcelona. ApoE4-elicited lysosomal and mitochondrial dysfunction in astrocytes. 5-10 August, 2018.

ICREA MEMOIR 2018



Patrick Gámez

Universitat de Barcelona

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. His research group is financed by the MICINN and is recognized by the Catalan Government. He is the (co-)author of over 238 publications (h-index: 53; >10990 citations). He is a member of the Spanish Bioinorganic Chemical Society (AEBIN), the Society of Biological Inorganic Chemistry (SBIC), the RSC, the RSEQ and the Advisory Board of Inorganic Chemistry Frontiers (IF = 5.106). He has been Associate Editor of RSC Advances (2015-2017). Since June 2016, he is Fellow of the RSC.

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. My current research interests are aimed at developing novel Nanotechnology strategies for the development of efficient diagnostic and therapeutic tools (theranostics; drug delivery and detection) against these two important public health issues (www.bio-inorganic-chemistry-icrea-ub.com).

Selected publications

- Mena S, Mirats A, Caballero AB, Guirado G, Barrios LA, Teat SJ, Rodriguez-Santiago L, Sodupe M & **Gamez P** 2018, *Chemistry: A European Journal*, vol. 24, pp 5153-5162
- Presa A, Vázquez G, Barrios L, Roubeau O, Korrodi-Gregório L, Perez-Tomas R & **Gamez P** 2018, *Inorganic Chemistry*, vol. 57, pp 4009-4022.
- Grau J, Renau C, Caballero AB, Caubet A, Pockaj M, Lorenzo J & **Gamez P** 2018, *Dalton Transactions*, vol. 47, pp 4902-4908.
- Castro-Ramirez R, Ortiz-Pastrana N, Caballero AB, Zimmerman MT, Stadelman BS, Gaertner AAE, Brumaghim JL, Korrodi-Gregorio L, Perez-Tomas R, **Gamez P** & Barba-Behrens N 2018, *Dalton Transactions*, vol. 47, 22, 7551 - 7560.
- Barrera-Guzmán VA, Rodríguez-Hernández EO, Ortíz-Pastrana N, Domínguez-González, Caballero AB, **Gamez P** & Barba-Behrens N 2018, *Journal of Biological Inorganic Chemistry*, vol. 23, no. 7, pp 1165-1183.
- Brissos R, Clavero P, Gallen A, Grabulosa A, Barrios L, Caballero AB, Korrodi-Gregório L, Perez-Tomas R, Muller G, Soto-Cerrato V & **Gamez P** 2018, *Inorganic Chemistry*, vol. 57, no. 23, pp 14786-14797.
- Brissos RF, Korrodi-Gregório L, Pérez-Tomás R, Roubeau O & **Gamez P** 2018, *Chemistry Squared*, vol. 2, 4.

Selected research activities

- Member of the Scientific Committee of the network HC3A between Occitanie and Catalonia ([website](#)); Leader of Work Group 4.
- Session Organizer at ICC2018 Sendai ([website](#)).
- President of the Association Science Squared (www.sci2.org).
- Editor-in-chief of Chemistry Squared (www.chem2.org).
- Vice-president of the Spanish Bioinorganic Chemical Society (www.aebin.es).
- Evaluator for various national and international research funding agencies.
- Member of five PhD defense committees.

ICREA MEMOIR 2018



F. Javier García de Abajo

Institut de Ciències Fotòniques
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 in Berkeley National Lab., he became staff scientist at CSIC (Spain) and he was promoted to Research Professor in 2008. He is currently leading the Nanophotonics Theory group at ICFO. He has worked in atomic collisions, surface science, electron microscope spectroscopies, plasmonics, and theoretical nanophotonics. He has coauthored 350+ papers that have accumulated 24,000+ citations and a h index of 76 (WoK, Jan. 2019). 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 with electron-microscope spectroscopies 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, and graphene plasmonics. 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, optoelectronics, and nonlinear optics.

Selected publications

- Yu R, Guo Q, Xia F & **Garcia de Abajo FJ** 2018, 'Photothermal Engineering of Graphene Plasmons', *Physical Review Letters*, 121, 5, 057404.
- Mkhitaryan V, Meng L, Marini A & **Garcia de Abajo FJ** 2018, 'Lasing and Amplification from Two-Dimensional Atom Arrays', *Physical Review Letters*, 121, 16, 163602.
- Cox JD & **García de Abajo FJ** 2018, 'Nonlinear atom-plasmon interactions enabled by nanostructured graphene', *Physical Review Letters* 121, 257403.
- Guo Q, Yu R, Li C, Yuan S, Deng B, **Garcia de Abajo FJ** & Xia F 2018, 'Efficient electrical detection of mid-infrared graphene plasmons at room temperature', *Nature Materials*, 17, 11, 986 - 992.
- Vanacore GM, Madan I, Berruto G, Wang K, Pomarico E, Lamb RJ, McGrouther D, Kaminer I, Barwick B, **Garcia de Abajo FJ** & Carbone F 2018, 'Attosecond coherent control of free-electron wave functions using semi-infinite light fields', *Nature Communications*, 9, 2694.
- Cox JD & **Garcia de Abajo FJ** 2018, 'Transient nonlinear plasmonics in nanostructured graphene', *Optica*, 5, 4, 429 - 433.
- Baudisch M, Marini A, Cox JD, Zhu T, Silva F, Teichmann S, Massicotte M, **Koppens FHL**, Levitov LS, **García de Abajo FJ** & **Biegert J** 2018, 'Ultrafast nonlinear optical response of Dirac fermions in graphene', *Nature Communications*, vol. 9, p. 1018

Selected research activities

Javier García de Abajo has given 17 invited talks at international conferences during 2018, including 3 plenary talks and 4 keynote talks.

ICREA MEMOIR 2018



Maria F. García-Parajo
 Institut de Ciències Fotòniques
 Engineering Sciences

María F. García-Parajo obtained her PhD in Physical Electronics in 1993 at Imperial College, London, UK, working on the fabrication and photoluminescence spectroscopy of quantum structures based on GaAs/AlGaAs. After acquiring extensive expertise in scanning probe microscopy (STM, NSOM, AFM) at the L2M-CNRS, Bagneux, France (1993-1995) and University of Barcelona, Spain (1995-1996) she moved in 1996 to the Applied Optics group of the University of Twente, the Netherlands. Her main research topics have been single molecule detection and spectroscopy using near- and far-field optical techniques with focus in photophysics of organic and autofluorescent proteins, molecular photonics and biophysics. Since 2005 she is ICREA Research Professor, first hosted at the IBEC - Institute for Bioengineering of Catalonia and since July 2011 at ICFO - The Institute of Photonic Sciences, leading the Single Molecule Biophotonics group.

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 (STED, STORM, NSOM) as well as photonic antennas 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.

Selected publications

- P. A. Gomez-Garcia ... **M.F. Garcia-Parajo**, M. Lakadamyali*. Excitation-multiplexed multicolor superresolution imaging with fm-STORM and fm-DNA-PAINT. *PNAS* **115**, 12991-12996.
- L. Martínez-Muñoz, J. M. Rodríguez-Frade, ... **M.F. García-Parajo**, M. Mellado. Separating actin-dependent chemokine receptor nanoclustering from dimerization indicates a role for clustering in CXCR4 signaling and function. *Mol. Cell* **70**, 106-119.
- P.M. Winkler, R. Regmi, ... J. Wenger, **M. F. Garcia-Parajo**. Optical antenna-based fluorescence correlation spectroscopy to probe the nanoscale dynamics of biological membranes. *J. Phys. Chem. Lett.* **9**, 110-119
- E.T. Garbaciak, M. Sanz-Paz, ... **M.F. Garcia-Parajo**. Frequency-encoded multicolor fluorescence imaging with single-photon counting color-blind detection. *Biophys. J.* **115**, 725-736. Highlighted in Nat. Methods.
- I. Raote, ... **M.F. Garcia-Parajo**, F. Campelo, **V. Malhortra**. TANGO1 builds a machine for collagen export by recruiting and spatially organizing COPII, tethers and membranes, *Elife*, **7**, e32723.
- M. Sanz-Paz, C. Ernandes, ..., **M.F. Garcia-Parajo**, S. Bidault, M. Mivelle. Enhancing magnetic light emission with all-dielectric optical nanoantennas. *Nano Lett.* **18**, 3481-3487.
- V. Porto, ... **M.F. Garcia-Parajo**, ... M.A. Lopez-Quintela, F. Dominguez. Silver atomic quantum clusters of three atoms for cancer therapy: targeting chromatin compaction to increase the therapeutic index of chemotherapy. *Adv. Mat.* **30**, 1801317.
- A. Sosa-Costa, J.K. Piechocka, ... **M.F. Garcia-Parajo**, C. Manzo. PLANT: a method for detecting changes of slope in noisy trajectories. *Biophys. J.* **114**, 2044-2051.

Selected research activities

ERC Investigator, Life Sciences, Adv. Grant
 12 invited lectures at international conferences and workshops.
 Member of evaluation panel ERC- Life Sciences, Adv. Grants-
 President of the jury "Premis de la Ciutat de Barcelona", Experimental Sciences and Technology.
 Member of WISE International Review Panel: talented female tenure track positions at NWO, NL.

ICREA MEMOIR 2018



Jose A. Garrido

Institut Català de Nanociència i Nanotecnologia
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. Currently, Jose A. Garrido is vicedirector and head of the Strategy Development Office at ICN2.

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, bioelectronics, and biosensing. 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 (biosensors, neural implants and biomedical technologies, energy storage and conversion).

Selected publications

- Hebert C, Masvidal-Codina E, Suarez-Perez A, Bonaccini Calia A, Piret G, Garcia-Cortadella R, Illa X, Del Corro Garcia E, De la Cruz JM, Viana Casal D, Prats-Alfonso E, Bousquet J, Godignon P, Yvert B, Villa R, Sanchez-Vives MV, Guimera-Brunet A & **Garrido JA** 2018, 'Flexible Graphene Solution-Gated Field-Effect Transistors: Efficient Transducers for Micro-Electrocorticography', *Advanced Functional Materials*, 28, 12, 1703976.
- Blaschke BM, Boehm P, Drieschner S, Nickel B & **Garrido JA** 2018, 'Lipid Monolayer Formation and Lipid Exchange Monitored by a Graphene Field-Effect Transistor', *Langmuir*, 34, 14, 4224 - 4233.
- Drieschner S, von Seckendorff M, del Corro E, Wohlketter J, Blaschke BM, Stutzmann M & **Garrido JA** 2018, 'Uniformly coated highly porous graphene/MnO₂ foams for flexible asymmetric supercapacitors', *Nanotechnology*, 29, 22, 225402.
- Mavredakis N, Garcia Cortadella R, Bonaccini Calia A, **Garrido JA**, Jimenez D & David 2018, 'Understanding the bias dependence of low frequency noise in single layer graphene FETs', *Nanoscale*, 10, 31, 14947 - 14956.
- Csiki R, Drieschner S, Lyuleeva A, Cattani-Scholz A, Stutzmann M & **Garrido JA** 2018, 'Photocurrent generation of biohybrid systems based on bacterial reaction centers and graphene electrodes', *Diamond And Related Materials*, 89, 286 - 292.
- Pampaloni NP, Lottner M, Giugliano M, Matruggio A, D'Amico F, Prato M, **Garrido JA**, Ballerini L & Scaini D 2018, 'Single-layer graphene modulates neuronal communication and augments membrane ion currents', *Nature Nanotechnology*, vol 13, no. 8, pp 755-764

Selected research activities

- Coordinator of the FET-PROACTIVE European Project BrainCom (2016-2021).
- Deputy leader of the Biomedical Technologies workpackage of the EU project Graphene Flagship
- 2 patents and 1 Trade Secret applications

ICREA MEMOIR 2018



Hector Geffner
Universitat Pompeu Fabra
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 member of the European AI Board (EurAI). He taught at the Universidad Simón Bolívar in Caracas, Aachen University of Technology, Linköping 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.

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 in the worst case. The work involves theory based on logic, probabilities, heuristics, and algorithms, and computational experiments. The research is relevant to both artificial intelligence and cognitive science, as it aims to uncover general principles of intelligent behavior that take into account the computational constraints that are present in both natural and artificial systems.

Selected publications

- **Geffner H** 2018, 'Model-free, Model-based, and General Intelligence'. *Proc. Int. Joint Conf. on Artificial Intelligence (IJCAI)*, pp 10-17.
- Bandres W, Bonet B & **Geffner H** 2018, 'Planning with Pixels in (Almost) Real Time'. *Proc. AAAI*, pp. 6102-6109
- Bonet B & **Geffner H** 2018, 'Features, Projections, and Representation Change for Generalized Planning', *Proc. Int. Joint Conf. on Artificial Intelligence (IJCAI)*, pp 4667-4673, 2018
- Geffner T & **Geffner H** 2018, 'Compact Policies for Fully-Observable Non-Deterministic Planning as SAT'. *Proc. Int. Conf. on Planning Systems (ICAPS)*, pp 88-96. AAAI Press.

Selected research activities

- Keynote speaker, 2018 Int. Joint Conference on Artificial Intelligence (IJCAI), Stockholm, 7/2018.
- Invited Professor, La Sapienza, Università di Roma, 9-12/2018

ICREA MEMOIR 2018



Wolfgang Gernjak
 Institut Català de Recerca de l'Aigua
 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 aim to innovate the ways we treat water applied to water reuse, desalination, and drinking water to realize a vision for smart and water sensitive cities and societies. Specifically, I am an expert on numerous novel advanced oxidation processes or membrane filtration such as reverse osmosis but have also broad knowledge on many other processes. The focus of my research is on technology innovation. For example, I research novel membrane processes such as forward osmosis or innovative lighting solutions for UV driven advanced oxidation processes (utilizing vacuum UV or LEDs). A key aspect is that those technologies are then assessed in the context of complete treatment trains or more holistically, as building block of solutions for cities. 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.

Selected publications

- Sauchelli M, Pellegrino G, D'Haese A, Rodríguez-Roda I & **Gernjak W** 2018 'Transport of trace organic compounds through novel forward osmosis membranes: Role of membrane properties and the draw solution', *Water Research*, 141 pp. 65-73.
- Verdaguer M, Molinos-Senante M, Clara N, SantanaM, **Gernjak W** & Poch M 2018, 'Optimal fresh water blending: A methodological approach to improve the resilience of water supply systems', *Science Of The Total Environment*, 624, 1308 - 1315.
- Andrés García E, Agulló-Barceló M, Bond P, Keller J, **Gernjak W** & **Radjenovic J** 2018, 'Hybrid electrochemical-granular activated carbon system for the treatment of greywater', *Chemical Engineering Journal*, 352, pp. 405-411.

Selected research activities

In 2018, the Triceratops project (MINECO funded) was finalized, in which with post-doctoral fellow Inma Velo Gala we investigated novel advanced oxidation processes, such as the UV/HOCl or the UV/peroxodisulfate processes in the context of drinking and recycled water production. Also, novel configuration for the use of vacuum UV to degrade trace organic contaminants are being tested by PhD candidate Nimmy Kovoov George in the scope of my collaboration with Wetsus (Netherlands), Trojan UV (Canada) and PWN Technologies (Netherlands). Marc Sauchelli has shifted the focus in his PhD from researching trace organic contaminant transport to fouling mechanisms in forward osmosis. In the industrial doctorate of Mireia Plà we are developing algorithms for providing water quality measurements based on online UV-Vis spectroscopy in different water sources.

This year we finalized the COST Action NEREUS focused on tackling emerging challenges in water reuse, where I participated and co-authored a review paper (Rizzo et al, 2019). I participate also in the expert panel advising the Catalan Water Agency during their water reclamation trial to be carried out in 2019 in the Llobregat River.

ICREA MEMOIR 2018



Mario Giampietro
 Universitat Autònoma de Barcelona
 Engineering Sciences

Mario Giampietro was born in Italy in 1953. He graduated in Chemical Engineering (1978) and Biological Sciences (1981) at Università La Sapienza, Rome. He has a MS degree in Food System Economics (CEFAS/Università 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.

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 socioeconomic 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), and the nexus between energy, food, and water in relation to sustainable development goals (MAGIC).

Selected publications

- **Giampietro M** 2018, 'Perception and representation of the resource nexus at the interface between society and the natural environment', *Sustainability*, 10(7), 2545.
- Velasco-Fernández R, **Giampietro M** & Bukkens SGF 2018, 'Analyzing the energy performance of manufacturing across levels using the end-use matrix', *Energy*, vol. 161, pp. 559-572.
- González-López R & **Giampietro M** 2018, 'Relational analysis of the oil and gas sector of Mexico: Implications for Mexico's energy reform', *Energy*, vol. 154, pp. 403-414.
- Di Felice LJ, Ripa M & **Giampietro M** 2018, 'Deep Decarbonisation from a Biophysical Perspective: GHG Emissions of a Renewable Electricity Transformation in the EU', *Sustainability*, vol. 10, 3685.
- Parra R, Di Felice LJ, **Giampietro M** & Ramos-Martin J 2018, 'The metabolism of oil extraction: A bottom-up approach applied to the case of Ecuador', *Energy Policy*, vol. 122, pp. 63-74,
- Strand R, Saltelli A, **Giampietro M**, Rommetveit K & Funtowicz S 2018, 'New narratives for innovation', *Journal of Cleaner Production*, vol. 197, pp. 1849-1853.
- Allen TFH, Austin P, **Giampietro M**, Kovacic Z, Ramly E & Tainter J 2018, 'Mapping degrees of complexity, complicatedness, and emergent complexity', *Ecological Complexity*, vol. 35, pp. 39-44.
- **Giampietro M** & Mayumi K 2018, 'Unraveling the Complexity of the Jevons Paradox: The Link Between Innovation, Efficiency, and Sustainability', *Frontiers in Energy Research*, vol. 6, article 26.
- Chifari R, Lo Piano S, Bukkens SGF & **Giampietro M** 2018, 'A holistic framework for the integrated assessment of urban waste management systems', *Ecological Indicators*, vol. 94, pp 24-36.
- **Giampietro M** 2018, 'Food credence attributes, multi-criteria analysis and the ethics of food choice', in: Matsumoto S & Otsuki T (Eds.), *Consumer Perception of Food Attributes*, CRC Press, pp. 157-170.

ICREA MEMOIR 2018



Mark Gieles

Universitat de Barcelona
Experimental Sciences & Mathematics

Mark Gieles obtained his PhD in 2006 from Utrecht University in the Netherlands under the supervision of Prof Henny Lamers and Prof 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) at Cerro Paranal in the Atacama desert. As part of this fellowship he spent 3 months as a visiting scientist at the School of Mathematics of the University of Edinburgh to work with Prof 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 moved the URF to the University of Surrey in 2013, where he started a new astrophysics research group. In 2013 he won a Starting Grant of the European Research Council (ERC) to work on the formation and evolution of the Milky Way, using its globular clusters.

Research interests

In my research I try to understand the formation and dynamical evolution of globular clusters to shed light on the stellar initial mass function (at high redshift), black hole dynamics, gravitational waves and the dark matter distribution in galaxies. Our Milky Way contains around 150 globular clusters, for which we have exquisite observations of the stars within them, including kinematics and chemistry. To understand these data, I use both star-by-star N-body simulations and theory. I recently developed a suite of dynamical models, that can be used to infer invisible mass, such as white dwarfs and black holes, from the motion of the visible stars. With this, I am searching for stellar-mass black holes and intermediate-mass black holes in clusters. The ESA-Gaia satellite is obtaining proper motions for a billion stars in our Galaxy and I am using these data to understand the intricate interplay between the gravity of globular cluster and the dark matter in the Milky Way. Another intriguing problem I am currently interested in, is the multiple population problem of globular clusters. In each cluster, the majority of stars have strange light element abundance. I recently proposed a new model for the formation of globular clusters, in which a supermassive star forms via stellar collisions and pollutes the cluster with the anomalous element abundances in the first few million years.

Selected research activities

Publications prior to the ICREA's appointment:

- **Gieles M** et al. 2018, 'Concurrent formation of supermassive stars and globular clusters: implications for early self-enrichment', *MNRAS*, vol 478, pp 2461--2479
- Balbinot E & **Gieles M** 2018, 'The devil is in the tails: the role of globular cluster mass evolution on stream properties', *Monthly Notices Of The Royal Astronomical Society*, 474, 2, 2479 - 2492.
- Schneider FRN et al. 2018, 'An excess of massive stars in the local 30 Doradus starburst', *Science*, 359, 6371, 69 - 71.
- Forbes DA et al. 2018, 'Extending the globular cluster system-halo mass relation to the lowest galaxy masses', *Monthly Notices Of The Royal Astronomical Society*, 481, 4, 5592 - 5605.
- Forbes DA et al. 2018, 'Globular cluster formation and evolution in the context of cosmological galaxy assembly: open questions', *Proceedings Of The Royal Society A-mathematical Physical And Engineering Sciences*, 474, 2210, 20170616.
- **Gieles M** et al. 2018, 'Mass models of NGC 6624 without an intermediate-mass black hole', *Monthly Notices Of The Royal Astronomical Society*, 473, 4, 4832 - 4839.
- Martinez-Medina LA et al. 2018, 'New insights into the origin and evolution of the old, metal-rich open cluster NGC 6791', *Monthly Notices Of The Royal Astronomical Society*, 474, 1, 32 - 44.
- Contenta F et al. 2018, 'Probing dark matter with star clusters: a dark matter core in the ultra-faint dwarf Eridanus II', *Monthly Notices Of The Royal Astronomical Society*, 476, 3, 3124 - 3136.

ICREA MEMOIR 2018



Roger Gomis

Institut de Recerca Biomèdica de Barcelona
Life & Medical Sciences

Dr. Roger Gomis is an ICREA Research Professor and a member of the Oncology 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. 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 his interest in 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, the team focuses on identifying and functionally validating genes that enable cancer to metastasize clinically relevant sites. In 2012 Roger founded Inbiomotion as an ICREA and IRB Barcelona spin-off company from his laboratory research.

Research interests

Intricate signalling networks control cell division, differentiation, movement, organization and death. Cancer cells disobey these signals during tumour progression and metastasis, which is the final step in 90% of all fatal solid tumours. Metastasis is therefore a grave public health problem and consequently a field of considerable pharmaceutical interest. A major research focus of our group is to identify and understand the genes and functions that allow tumor cells to achieve metastatic colonization of vital organs. As we understand more about the biology of BC cells, we can begin to address how best to treat this form of disease. Key to determining whether dormant solitary cells or micrometastases represent valid targets is knowledge of the underlying biology of dormancy and the probability of cells progressing to active metastatic growth. This progression is poorly understood in preclinical models and even less so clinically and has become of our interest.

Selected publications

- Coleman RE, Collinson M, Gregory W, Marshall H, Bell R, Dodwell D, Keane M, Gil M, Barrett-Lee P, Ritchie D, Bowman A, Liversedge V, De Boer RH, Passos-Coelho JL, O'Reilly S, Bertelli G, Joffe J, Brown JE, Wilson C, Tercero JC, Jean-Mairet J, **Gomis R** & Cameron D 2018, 'Benefits and risks of adjuvant treatment with zoledronic acid in stage II/III breast cancer. 10 years follow-up of the AZURE randomized clinical trial (BIG 01/04)' *Journal of Bone Oncology* Vol.13 pp:123-135.
- Gawrzak S, Rinaldi L, Gregorio S, Arenas EJ, Salvador F, Urosevic J, Figueras-Puig C, Rojo F, del Barco Barrantes I, Miguel Cejalvo J, Palafox M, Guiu M, Berenguer-Llargo A, Symeonidi A, Bellmunt A, Kalafatovic D, Arnal-Estape A, Fernandez E, Mullauer B, Groeneveld R, Slobodnyuk K, Stephan-Otto Attolini C, Saura C, **Arribas J**, Cortes J, Rovira A, Munoz M, Lluch A, Serra V, Albanell J, Prat A, **Nebreda AR**, **Aznar Benitah S** & **Gomis RR** 2018, 'MSK1 regulates luminal cell differentiation and metastatic dormancy in ER+ breast cancer', *Nat Cell Biol*, 20, 211 - 221.
- Salvador F & **Gomis RR** 2018, 'Paraspeckle factor turns TGF- β 1 pro-metastatic'. *Nat Cell Biol*. 20: 367-369.
- Salvador F & **Gomis RR** 2018, 'CLK2 blockade modulates alternative splicing compromising MYC-driven breast tumors', *EMBO Mol Med*. pii: e9213.
- Canovas B, Igea A, Sartori AA, **Gomis RR**, Paull TT, Isoda M, Perez-Montoyo H, Serra V, Gonzalez-Suarez E, Stracker TH & **Nebreda AR** 2018, 'Targeting p38 alpha Increases DNA Damage, Chromosome Instability, and the Anti-tumoral Response to Taxanes in Breast Cancer Cells', *Cancer Cell*, 33, 6, 1094.
- Cortazar AR, Torrano V, Martín-Martín N, Caro-Maldonado A, Camacho L, Hermanova I, Guruceaga E, Lorenzo-Martín LF, Caloto R, **Gomis RR**, Apaolaza I, Quesada V, Trka J, Gomez-Muñoz A, Vicent S, Bustelo XR, Planes FJ, Aransay AM, Carracedo A. 2018, 'CANCERTOOL: a visualization and representation interface to exploit cancer datasets', *Cancer Res.*, 78, 21, 6320 - 6328.1669.

ICREA MEMOIR 2018



Alejandro R. Goñi

Institut de Ciència de Materials de Barcelona
Engineering Sciences

I was born in Córdoba, Argentina, and graduated in physics in 1985 from Balseiro Institute, Bariloche, Argentina. In 1986 I moved to Germany for my PhD at the Max-Planck Institute FKF in Stuttgart with Prof. M. Cardona, which I finished in 1989. It followed a two-years postdoc at AT&T Bell Labs in Murray Hill, USA, and back to the MPI Stuttgart for three years. In 1996 I switched to the Technical University of Berlin for an appointment as Research & Teaching Associate. In 1999 I was awarded the Karl-Scheel Prize of the Physical Society of Berlin for my contributions to the field of high-pressure semiconductor physics. I joined the Optoelectronic Properties of Nanostructured Materials group at ICMA-B-CSIC in November 2003 as ICREA. I created a facility for optical spectroscopy with micro and nanometer-scale resolution and set up a laboratory for high-pressure physics. I am leading group activities on high pressure and hybrid perovskites.

Research interests

I am an experimental physicist with broad interests and expertise in solid-state physics, optical spectroscopy (Raman scattering, photoluminescence, etc.), nano-science and technology, thermoelectricity, the 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 organic and/or inorganic molecular and nano-materials, searching for new behaviors or phenomena that emerge as a direct consequence of the reduced dimensionality and/or size of the material system under study. Although I am pursuing basic research, almost all my lines of investigation have a clear application in mind, such as to improve the performance of optoelectronic devices based on nano-materials, enhance thermoelectric and/or photovoltaic properties, boost piezo-resistive coefficients, develop ultra-sensitive spectroscopic techniques, etc.

Selected publications

- Espinha A, Dore C, Matricardi C, Alonso MI, **Goñi AR**, Mihi A 2018, 'Hydroxypropyl Cellulose Photonic Architectures by Soft Nanoimprinting Lithography', *Nature Photon.* **12**, 343-348.
- Francisco-López A, Charles B, Weber OJ, Alonso MI, Garriga M, Campoy-Quiles M, Weller MT & **Goñi AR** 2018, 'Pressure-Induced Locking of Methylammonium Cations Versus Amorphization in Hybrid Lead Iodide Perovskites', *J. Phys. Chem. C.* **122**, 22073-22082.
- Reparaz JS, Pereira da Silva K, Romero AH, Serrano J, Wagner MR, Callsen G, Choi S, Speck JS & **Goñi AR** 2018, 'Comparative Study of the Pressure Dependence of Optical-Phonon Transverse-Effective Charges and Linewidths in Wurtzite InN', *Phys. Rev. B.* **98**, 165204/1-7.
- Bi Z, Rodríguez-Martínez X, Aranda C, Pascual San José E, **Goñi AR**, Bisquert J, Xu X, Campoy-Quiles M & Guerrero A 2018, 'Defect Tolerant Perovskite Solar Cells from Blade Coated Non-Toxic Solvents', *J. Mater. Chem. A.* **6**, 19085-19093.
- **Vaccaro PO**, Alonso MI, Garriga M, Gutiérrez J, Peró D, Wagner MR, Reparaz JS, **Sotomayor-Torres CM**, Vidal X, Carter EA, Lay PA, Yoshimoto M & **Goñi AR** 2018, 'Localized Thinning for Strain Concentration in Suspended Germanium Membranes and Optical Method for Precise Thickness Measurement', *AIP Adv.* **8**, 115131/1-11.
- Moreno Fernández H, Zangrando M, Sauthier G, **Goñi AR**, Carlino V & Pellegrin E 2018, 'Towards Chemically Neutral Carbon Cleaning Processes: Plasma Cleaning of Ni, Rh, and Al Reflective Optical Coatings and Thin Al Filters for Free Electron Lasers and Synchrotron Beamline Applications', *J. Synchrotron Rad.* **25**, 1642-1649.

Selected research activities

- Chairman & organizer of Joint 18th Int. Conf. on *High Pressure Semiconductor Physics* (HPSP18) and 2nd Workshop on *High-pressure Study of Superconductors* (WHS2), CosmoCaixa Museum, Barcelona, Spain, July 23 - 27, 2018.
- Coordinator & organizer of *Severo Ochoa Summer School on Materials for Energy* (MATENER2018), ICMA-B-CSIC, Bellaterra, Spain, September 17 - 20, 2018.

ICREA MEMOIR 2018



Miguel A. González Ballester
 Universitat Pompeu Fabra
 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 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 lead the Barcelona Centre for New Medical Technologies (BCN Medtech) and hold the QUAES Foundation Chair. I have approx. 300 publications in peer-reviewed scientific journals and conferences, and have supervised 20 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, 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 (notably my work on statistical biomechanical models), all my projects have a marked translational character, focusing on concrete clinical and industrial applications.

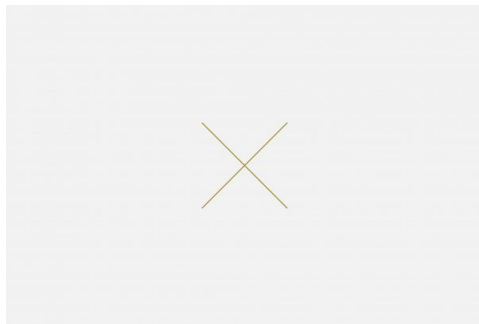
Selected publications

- López-Linares K, Aranjuelo N, Kabongo L, Maclair G, Lete N, Ceresa M, García-Familiar A, Macía I & **González Ballester MA** 2018, 'Fully automatic detection and segmentation of abdominal aortic thrombus in post-operative CTA images using deep convolutional neural networks', *Medical Image Analysis*, vol. 46, pp 202-2014.
- Ceresa M, Olivares AL, Noailly J & **González Ballester MA** 2018, 'Coupled immunological and biomechanical model of emphysema progression', *Frontiers in Physiology*, vol. 9, no. 388, pp 1-16.
- Ruiz G, Ramón E, García J, Sukno FM & **González Ballester MA** 2018, 'Weighted regularized statistical shape space projection for breast 3D model reconstruction', *Medical Image Analysis*, vol. 47, pp 164-179.
- Mangado N, Pons-Prats J, Kjer HM, Mistrik P, Piella G, Ceresa M & **González Ballester MA** 2018, 'Computational evaluation of cochlear implant surgery outcomes accounting for uncertainty and parameter variability', *Frontiers in Physiology*, vol. 9, no. 498, pp. 1-14.
- López Picazo M, Magallón Baro A, del Río Barquero LM, di Gregorio S, Martelli Y, Romera J, Steghofer M, **González Ballester MA** & Humbert L 2018, '3-D subject-specific shape and density estimation of the lumbar spine from a single anteroposterior DXA image including assessment of cortical and trabecular bone', *IEEE Transactions On Medical Imaging*, vol. 37, no. 12, pp 2651-2662.
- Sanroma G, Benkarim OM, Piella G, Lekadir K, Hahner N, Eixarch E & **González Ballester MA** 2018, 'Learning to combine complementary segmentation methods for fetal and 6-month infant brain MRI segmentation', *Computerized Medical Imaging and Graphics*, vol. 69, pp 52-59.
- Sanroma G, Benkarim OM, Piella G, Camara O, Wu G, Shen D, Gispert JD, Molinuevo JL & **González Ballester MA** 2018, 'Learning non-linear patch embeddings with neural networks for label fusion', *Medical Image Analysis*, vol. 44, pp 143-155.

Selected research activities

(Selected publications. Total: 18 journal papers and 33 conference publications in 2018)

ICREA MEMOIR 2018



María Concepción González-García

Universitat de Barcelona

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

- Song N, **Gonzalez-Garcia MC**, Villante FL, Vinyoles N & Serenelli A 2018, 'Helioseismic and neutrino data-driven reconstruction of solar properties', *Monthly Notices Of The Royal Astronomical Society*, 477, 1, 1397 - 1413.
- **Gonzalez-Garcia MC**, Maltoni M, Perez-Gonzalez YF & Funchal RZ 2018, 'Neutrino discovery limit of Dark Matter direct detection experiments in the presence of non-standard interactions', *Journal Of High Energy Physics*, 7, 019.
- Song N, **Gonzalez-Garcia MC** & Salvado J 2018, 'Cosmological constraints with self-interacting sterile neutrinos', *Journal Of Cosmology And Astroparticle Physics*, 10, 055.
- Esteban I, **Gonzalez-Garcia MC**, Maltoni M, Martinez-Soler I & Salvado J 2018, "Updated Constraints on Non-Standard Interactions from Global Analysis of Oscillation Data", *Journal of High Energy Physics* Vol1808, pp180.
- Alves A, Rosa-Agostinho N, Éboli OJP & **Gonzalez--Garcia MC** 2018, "Effect of Fermionic Operators on the Gauge Legacy of the LHC Run I", *Physical Review D* Vol98, 013006.

Selected research activities

Selected Service Activities:

- Member of the Editorial Board of *Journal of High Energy Physics*
- Member of the Scientific Advisory Committee of the Galileo Galilei Institute

Selected Conference Talks

- "3nu Masses and Mixing: The Global Picture", Plenary Talk at Neutrino Town-Meeting, CERN, Switzerland.
- "Neutrino Masses and Mixing: A Little History for a lot of Fun", Plenary Talk at Conference on "History of Neutrinos", Paris, France.

ICREA MEMOIR 2018



Cayetano González

Institut de Recerca Biomèdica de 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 at Imperial College and later as a CRC Joint Principal Investigator at 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 model cancer in flies to understand the cellular and molecular changes that drive malignant growth. We focus on the mechanisms of malignant transformation in larval brains where we have found abnormal self-renewing asymmetric division often results in malignant growth. Some of our experimental tumor models are driven by the ectopic expression of germline proteins. We are interested in the mechanisms that bring about genome instability in these tumors and try establishing the actual extent to which such lesions contribute to tumor progression. We develop and make extensive use of microscopy techniques. We demonstrated that the microtubule cytoskeleton of *Drosophila* neuroblasts is governed by the distinct behaviour displayed by centrosomes in these cells. We maintain an active line of research to identify new centrosomal proteins and found some with human orthologs that are linked to human pathologies.

Selected publications

- Rossi F, Attolini CS, Mosquera JL & **Gonzalez C** 2018, 'Drosophila larval brain neoplasms present tumour-type dependent genome instability', *G3(Bethesda)*. Mar 28;8(4):1205-1214.
- Reina J, Gottardo M, Riparbelli MG, Llamazares S, Callaini G & **Gonzalez C** 2018, "Centrobin is essential for C-tubule assembly and flagellum development in *Drosophila melanogaster* spermatogenesis", *J Cell Biol*, 217, 7, 2365 - 2372.

Selected research activities

Selected Invited Conferences and Meetings

- June 2018: Barcelona BioMed Conference: *Centrosomes, cilia and cell cycle in development and disease*. Barcelona. Spain.
- June 2018: Annual Meeting 2018: Portuguese Society of Genetics. i3S. Porto. Portugal.
- September 2018: London Molecular Cancer Talk Series. London. UK.
- September 2018: EMBO-Basel Life 2018: *Molecules in Biology and Medicine* (Session Chair). Basel. Switzerland.
- October 2018: Workshop on Developmental Cell Biology of *Drosophila*. Ringberg Castle. Germany.

Selected Invited Seminars

- March 2018: Invited Special Seminar, The Gurdon Institute. Cambridge. UK.
- April 2018: IDIBELL. Barcelona. Spain.

Professional Services

- HFSP fellowship review committee meeting 2018. Strasbourg. France.
- Conference organization: 4th Spanish Conference on The Molecular, Cellular and Developmental Biology of *Drosophila*. Begur. Spain.
- 2018-2021: Member of European Science Foundation (ESF) College of Expert Reviewers

ICREA MEMOIR 2018



Pau Gorostiza

Institut de Bioenginyeria de Catalunya
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, where he develops photoswitchable ligands of neuronal proteins and studies electron transfer in redox proteins and photosynthetic complexes using EC-STM/AFM. He obtained a Human Frontier Science Program (HFSP) Career Development Award and two European Research Council (ERC) grants. He published more than 100 articles (3200 citations, h-index 29) and holds 7 patents (5 licensed). He has supervised 8 postdoctoral fellows and 9 PhDs.

Research interests

Research in the group is focused on developing nanoscale tools to study biological systems. These tools include instrumentation based on proximity probes, like Electrochemical Tunneling Microscopy and Spectroscopy, that we are applying to study metal oxides and redox proteins. Another set of nanotools that we are developing is based on molecular actuators that can be switched with light, like azobenzene, which can be chemically attached to biomolecules in order to optically control their activity.

Selected publications

- Casanellas I, Lagunas A, Tsintzou I, Vida Y, Collado D, Perez-Inestrosa E, Rodriguez-Pereira C, Magalhaes J, **Gorostiza P**, Andrades JA, Becerra J & Samitier J 2018, 'Dendrimer-based Uneven Nanopatterns to Locally Control Surface Adhesiveness: A Method to Direct Chondrogenic Differentiation', *Jove-journal Of Visualized Experiments*, 131, e56347.
- Matera C, Gomila AMJ, Camarero N, Libergoli M, Soler C & **Gorostiza P** 2018, 'Photoswitchable Antimetabolite for Targeted Photoactivated Chemotherapy', *Journal Of The American Chemical Society*, 140, 46, 15764 - 15773.
- Lagunas A, Guerra-Castellano A, Nin-Hill A, Díaz-Moreno I, De la Rosa MA, Samitier J, Rovira C & **Gorostiza P** 2018, 'Long distance electron transfer through the aqueous solution between redox partner proteins', *Nature Communications* 9(1):5157.
- Bregestovski P, Maleeva G & **Gorostiza P** 2018, 'Light-induced regulation of ligand-gated channel activity'. *Br J Pharmacol.* 175, 11, 1892 - 1902.

Selected research activities

Organization of international symposia:

- Symposium on Electronic and Coupled Transport in Biology. Materials Research Society (MRS) Fall Meeting, Boston, 25-28 Nov 2018
- II International Symposium on Photopharmacology. Vic, Barcelona, 1-2 Nov 2018

ICREA MEMOIR 2018



Sebastian Grinstein
 Institut de Física d'Altes Energies
 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). Afterwards, I worked in Sweden as a member of the Astroparticle Group of the Royal Institute of Technology studying cosmic rays. I did 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. I am currently leading the ATLAS Detector upgrade effort at IFAE. In 2012 I became an ICREA Research Professor.

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 heaviest quark, the top quark. At the LHC accelerator at CERN I conducted searches for new physics in the top sector. I have always been drawn to the challenges related to the development of the next generation of high energy physics detectors, and, in general, to instrumentation R&D. Currently I lead a coordinated project between IMB-CNM and IFAE to develop semiconductor pixel detectors for the ATLAS experiment at the LHC. As a result of this project, 3D pixel silicon sensors designed and produced at Barcelona have been included in the new innermost detector layer of ATLAS and in the tracking system of the ATLAS Forward Proton (AFP) detector. My on going work aims to develop radiation hard and silicon based timing technologies for the high luminosity LHC era. I am also co-leading a project to produce a new generation of real time breast biopsy machines based on CdTe sensors.

Selected publications

- Lange J et al., 'Radiation hardness of small-pitch 3D pixel sensors up to a fluence of $3E16$ neq/cm²', *Journal of Instrumentation*, 13, P09009 (2018).
- Abbott B et al., 'Production and integration of the ATLAS Insertable B-Layer', *Journal of Instrumentation*, 13, T05008 (2018).
- Aaboud M et al., 'Comparison between simulated and observed LHC beam backgrounds in the ATLAS experiment at $E_{beam}=4$ TeV', *Journal of Instrumentation*, 13, P12006 (2018).
- Benoit M et al., 'Test beam measurement of ams H35 HV-CMOS capacitively coupled pixel sensor prototypes with high-resistivity substrate', *Journal of Instrumentation*, 13, P12009 (2018).

Selected research activities

- * Principal investigator of the ATLAS-Upgrade group at IFAE (FPA, MINECO).
- * Principal investigator of the Instrumentation group at IFAE (SGR, AGAUR).
- * Co-principal investigator of the 3D Biopsy on Tomosynthesis project (RIS3CAT, ACCIO).
- * Coordinator of AIDA-2020 activities at IFAE and WP6 co-coordinator (H2020, EU).
- * Two PhD theses completed in 2018 (I. Lopez Paz and E. Cavallaro). Four PhD theses currently underway.
- * Member of the ATLAS ITk Pixel coordinator team.
- * Member of the ATLAS High Granularity Timing Detector management group.

ICREA MEMOIR 2018



Víctor Guallar

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
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, with Professors Josep M. Lluch, Miquel Moreno and William H Miller (November 1999 thesis defense). Afterwards, he moved for a postdoctoral research position (2000-2003) to Columbia University in New York City, under the supervision of Prof. Richard Friesner. In 2003 he got a tenured 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), where he has been developing his research group. In 2016 he co-founded Nostrum Biodiscovery, the first spin-off from the Barcelona Supercomputing Center

Research interests

In the Electronic and Atomic Protein Modeling lab at BSC we are devoted to the development and application of computational algorithms in molecular modeling. Using techniques including Monte Carlo simulations on classical force fields, machine learning and mixed quantum mechanics/molecular mechanics methods, we face different biophysical and biochemical studies:

* Biochemical characterization and engineering of enzymes for industrial and biomedical applications. In this line, in 2018 we have created the first Plurizyme, an enzyme with two active sites (a natural one and an artificial one). In addition, we implemented the first in silico directed evolution code.

* Biophysical software development for studying protein-ligand interactions. Several additions have been implemented in PELE, our protein-ligand sampling code, including: explicit waters, fragment growing, etc. Several drug design applied studies are in place, in collaboration with Nostrum Biodiscovery. Finally, a methodology to predict antibody efficacy has been developed, in collaboration with the IrsiCaixa Institute.

Selected publications

- Iglesias J, Saen-oon S, Soliva R & **Guallar V** 2018, 'Computational structure-based drug design: Predicting target flexibility', *Wiley Interdisciplinary Reviews-computational Molecular Science*, 8, 5, e1367.
- Vazquez P, Hermosilla P, **Guallar V**, Estrada J & Vinacua A 2018, 'Visual Analysis of protein-ligand interactions', *Computer Graphics Forum*, 37, 3, 391 - 402.
- Fernandez-Fueyo E, Davo-Siguero I, Almendral D, Linde D, Baratto MC, Pogni R, Romero A, **Guallar V** & Martinez AT 2018, 'Description of a Non-Canonical Mn(II)-Oxidation Site in Peroxidases', *Acs Catalysis*, 8, 9, 8386 - 8395.
- Liu Q, Kashkooli AB, Manzano D, Pateraki I, Richard L, Kolkman P, Lucas MF, **Guallar V**, de Vos RCH, Franssen MCR, van der Krol A & Bouwmeester H 2018, 'Kauniolide synthase is a P450 with unusual hydroxylation and cyclization-elimination activity', *Nature Communications*, 9, 4657.
- Kotev M, Pascual R, Almansa C, **Guallar V** & Soliva R 2018, 'Pushing the Limits of Computational Structure-Based Drug Design with a Cryo-EM Structure: The Ca²⁺ Channel $\alpha 2\delta$ -1 Subunit as a Test Case', *Journal of chemical information and modeling*, 58, 8, pp 1707-1715
- Martinez-Martinez M et al 2018, 'Determination and prediction of esterase substrate promiscuity patterns', *ACS Chemical Biology*, 13(1):225-234.
- Santiago G, Martinez-Martinez M, Alonso S, Bargiela R, Coscolin C, Golyshin PN, **Guallar V** & Ferrer M 2018, 'Rational Engineering of Multiple Active Sites in an Ester Hydrolase', *Biochemistry*, 57, 15, 2245 - 2255.
- Carro J, Amengual-Rigo P, Sancho F, Medina M, **Guallar V**, Ferreira P & Martinez AT 2018, 'Multiple implications of an active site phenylalanine in the catalysis of aryl-alcohol oxidase', *Scientific Reports*, 8, 8121.

Selected research activities

The lab is involved in numerous activities for general dissemination: such as the Catalan Science day or the BIYSC, both programmes aimed at science dissemination for high school students.

ICREA MEMOIR 2018



Albert Guillén i Fàbregas

Universitat Pompeu Fabra
Engineering Sciences

Albert Guillén i Fàbregas is an ICREA Research Professor at Universitat Pompeu Fabra. He is also an Adjunct Researcher at the University of Cambridge. In 1999 he received both the Telecommunication Engineering Degree and the Electronics Engineering Degree from Universitat Politècnica de Catalunya and the Politecnico di Torino respectively, and the PhD in Communication Systems from École Polytechnique Fédérale de Lausanne in 2004. He has held appointments at the New Jersey Institute of Technology, Telecom Italia, European Space Agency, Institut Eurécom, University of South Australia and the University of Cambridge. He is a recipient of the Consolidator and Starting Grants of the European Research Council. He is a member of the Young Academy of Europe and a Senior Member of the IEEE. He is an Editor of the IEEE Transactions on Information Theory and the Foundations and Trends on Communications and Information Theory.

Research interests

The broad theme of his research is the mathematical foundations of communications, spanning the fields of Information Theory, Coding Theory, Communications Theory and Signal Processing. Its aim is to study the fundamental limits of reliable communication, along with schemes and processing algorithms that allow one to achieve them.

Selected publications

- J. Scarlett, A. Martinez, A. **Guillen i Fabregas**, "Mismatched Multi-Letter Successive Decoding for the Multiple-Access Channel", *IEEE Transactions on Information Theory*, Apr. 2018.
- M. Abroshan, R. Venkataramanan, **A. Guillen i Fabregas**, "Coding for Segmented Edit Channels", *IEEE Transactions on Information Theory*, Apr. 2018.
- G. Vazquez-Vilar, **A. Guillen i Fabregas** and S.Verdu, "The Error Probability of Generalized Perfect Codes", *2018 IEEE International Symposium on Information Theory*, Vail, CO, USA.
- A. Somekh-Baruch, J. Scarlett, **A. Guillen i Fabregas**, "The Error Exponent of Generalized Random-Gilbert Varshamov Codes", *2018 IEEE International Symposium on Information Theory*, Vail, CO, USA.
- M. Abroshan, R. Venkataramanan, **A. Guillen i Fabregas**, "Efficient Systematic Encoding of Non-binary VT Codes", *2018 IEEE International Symposium on Information Theory*, Vail, CO, USA.
- A. Somekh-Baruch, J. Scarlett, **A. Guillen i Fabregas**, "The Error Exponent of Random Gilbert-Varshamov Codes", *52nd Annual Conference On Information Sciences and Systems*, Princeton, NJ, USA, 2018.
- J. Font-Segura, G. Vazquez-Vilar, A. Martinez, **A. Guillen i Fabregas**, A. Lancho, "Saddlepoint Approximations of Lower and Upper Bounds to the Error Probability in Channel Coding", *52nd Annual Conference On Information Sciences and Systems*, Princeton, NJ, USA, 2018.

Selected research activities

- ERC Consolidator Grant (2017-2022)
- Invitations: CISS 2018 at Princeton, University of Bristol, King's College London, ISITA 2018 Singapore, COCO 2018 Workshop at Technion, ICSEE 2018 Eilat
- Technical Program Committee Member: 2018 International Zurich Seminar on Communications
- Associate Editor IEEE Transactions on Information Theory
- Member Young Academy of Europe

ICREA MEMOIR 2018



Roger Guimerà
 Universitat Rovira i Virgili
 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 Erdős-Rényi Prize in Network Science (2012), and the Young Scientist Award for Socio- and Econophysics (2014).

Research interests

Cells, ecosystems and economies are examples of complex systems. In complex systems, individual components interact with each other, usually in nonlinear ways, 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 just analyzing their constituent parts. 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 and, particularly, of the structure of complex networks and the interplay between network structure and dynamics. During his career, he has: (i) made methodological contributions to the study of complex networks, and (ii) used complex network analysis to gain understanding on a number of systems.

Selected publications

- Valles-Catala T, Peixoto TP, Sales-Pardo M & **Guimera R** 2018, 'Consistencies and inconsistencies between model selection and link prediction in networks', *Phys. Rev. E* 97 , 062316.
- Cobo-López S, Godoy-Lorite A, Duch J, Sales-Pardo M & **Guimerà R** 2018, 'Optimal prediction of decisions and model selection in social dilemmas using block models', *EPJ Data Sci.* 7, 48.
- Garcia-Algar M, Fernandez-Carrascal A, Olano-Daza A, Guerrini L, Feliu N, Parak WJ, **Guimera R**, Eduardo Garcia-Rico E & **Alvarez-Puebla RA** 2018, 'Adaptive metabolic pattern biomarker for disease monitoring and staging of lung cancer with liquid biopsy', *NPJ Precision Oncology* 2 , art. no. 16.
- Uroz M, Wistorf S, Serra-Picamal X, Conte V, Sales-Pardo M, Roca-Cusachs P, **Guimera R** & **Trepat X** 2018, 'Regulation of cell cycle progression by cell-cell and cell-matrix forces', *Nat. Cell Biol.* 20 , 646 -654.

Selected research activities

Principal investigator:

- "Mecánica Estadística para el Modelado y la Predicción del Comportamiento Humano", (MINECO), 1 Jan 2017 – 31 Dec 2019

Invited courses and lectures:

- 4th Annual International Conference on Computational Social Science, Evanston, IL, USA
- Centre for Process Systems Engineering, Imperial College London, London, UK

Conference organization:

- Program committee member of NetSci'18 and SIAMNS'18

Editorship:

- PLoS ONE
- Frontiers in Genetics

Synergistic activities:

- Vice president of the Catalan Network for the Study of Complex Systems "complexitat.cat"

ICREA MEMOIR 2018



Karen Hardy
Universitat Autònoma de Barcelona
Humanities

I joined ICREA in 2008. Following a PhD in the Institute of Archaeology, University College London, I worked on projects based in Hungary, Scotland and Papua New Guinea. From 1997-2005 I co-directed the Scotland's First Settlers project which explored the early post glacial environment and human population of North West Scotland. In 2005 I was awarded a Marie Curie OIF to visit the University of Sydney where I set up an international project to recover information of the role of plants in human evolutionary and pre-agrarian diets. My return phase took place at the University of York, UK. I am an Honorary Research Fellow at the University of Edinburgh.

Research interests

My interest lies in early prehistoric periods before the adoption of farming. Specifically, I study pioneer populations, human adaptations, use of land and sea-scapes and exploitation of wild plants as food, medicine and raw materials. The analysis of chemical compounds and microfossils extracted from samples of ancient dental calculus, provides direct access to biographical details and paleoenvironmental information; this is particularly useful for earlier Palaeolithic periods where the evidence is very limited. Much of my research is also focused on the human use of the Atlantic coastline, specifically in West Africa and North west Europe. In the early postglacial periods, until the mid-Holocene around 8000 years ago, Britain was still physically attached to Europe and the coastline of North West Scotland was part of Europe's continental limit.

Selected publications

- **Hardy K** 2018, 'Plants in the Lower and Middle Palaeolithic: Food, medicine, and raw materials', *Quaternary Science Reviews*, 191:393-405
- Copeland L & **Hardy K** 2018, 'Archaeological Starch', *Agronomy*, 8, 1, 4.
- **Hardy K**, Buckley S & Copeland L 2018, 'Pleistocene dental calculus: Recovering information on Paleolithic food items, medicines, paleoenvironment and microbes', *Evolutionary Anthropology*. 27, 5, 234 - 246.

Selected research activities

Invited speaker, Calpe Conference, 'Neanderthal: The Conference'. Gibraltar Museum, September 2018.
<http://www.gibmuseum.gi/events/calpe-18>

ICREA MEMOIR 2018



Stuart Hardy

Universitat de Barcelona

Experimental Sciences & Mathematics

I completed a BSc in Geology (Hons 1st Class) at Glasgow University in 1984 and then a Masters in Computer Science at Bradford University in 1987. Thereafter, I worked on satellite rainfall prediction and hydrological modelling at Reading University for 2 years, before undertaking a PhD at the University of London (1989-1994) in Mathematical Modelling of Tectonics and Sedimentation. Two Postdoc fellowships then followed: A 2-year Royal Society European Science Exchange Fellowship at CSIC (Jaume Almera) in Barcelona, and 1-year post-doc working with John Suppe at Princeton University. I was subsequently a lecturer in the Earth Science Department at the University of Manchester for 5 years. I have been an ICREA Research Professor in the Faculty of Geology at the Universitat de Barcelona since 2003.

Research interests

My research interest lies in the mathematical, numerical, modelling of geological processes (tectonics, sedimentation, volcanology, etc.) on both Earth and other Planetary bodies. To this end, I use a variety of different approaches to try to better understand (through both modelling and validation) the various relationships preserved in the physical geological record on Earth, or recorded by remote sensing techniques on distant Planetary bodies. I am interested in both continuum (e.g. finite difference, finite element) and discontinuum techniques (e.g. discrete element, SPH) both from a theoretical standpoint and in using them in practical applications. I am also very much interested in using high performance computing (HPC) to run high resolution, parallelized numerical models and visualize the results of such models. Recent research has focused on computational determinism in parallelized HPC codes, Martian tectonics, viscous deformation, salt tectonics and discrete element modelling of deltaic sedimentation.

Selected publications

- Bernal A, **Hardy S** & Gawthorpe RL 2018 'Three-Dimensional Growth of Flexural Slip Fault-Bend and Fault-Propagation Folds and Their Geomorphic Expression', *Geosciences*, 8, 110.
- **Hardy S** 2018, 'Coupling a frictional-cohesive cover and a viscous substrate in a discrete element model: First results of application to thick- and thin-skinned extensional tectonics', *Marine and Petroleum Geology*, 97, 32-44.
- **Hardy S** 2018, 'Coupling a frictional-cohesive cover and a viscous substrate in a discrete element model: first results of application to thick- and thin-skinned extensional tectonics', *Proceedings GeoMod 2018 conference*, Barcelona, Spain, 1-4, pp20-21.
- **Hardy S** 2018. 'Novel discrete element modelling of Gilbert-type delta formation in an active tectonic setting - first results', *Proceedings GeoMod 2018 conference*, Barcelona, Spain, 1-4, pp176-177.

Selected research activities

- Invited to contribute to the 2nd edition of 'Regional Geology and Tectonics. Volume 1: Global Concepts, Techniques and Methodology', Elsevier, by writing a chapter on Numerical Modelling of Tectonic Processes.

ICREA MEMOIR 2018



Wolfram Hinzen

Universitat de Barcelona
 Universitat Pompeu Fabra, FIDMAG
 Hermanas Hospitalarias
 Humanities

I obtained a Magister (Freiburg, 1993), an MA (King's College London, 1994), and a PhD (philosophy, Bern, 1996), prior to 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 at the Universitat van Amsterdam (2003-2006), before becoming a full professor in Durham (2006-) and an ICREA Research Professor in Barcelona in April 2013. I also was a guest professor at Hong Kong University (2010) and at Universitat Autònoma de Barcelona (2011).

Research interests

I study the role of language in cognition by studying disorders of language in the context of cognitive disorders. I have inaugurated the 'Un-Cartesian hypothesis', which suggests that the evolution of language is also the evolution of a particular cognitive type. This research program is documented in my monographs 'Mind Design' (2006), 'An Essay on Names and Truth' (2007), and 'The Philosophy of Universal Grammar' (2013, with M. Sheehan), all from Oxford UP. I have directed three international projects (NWO, 2006-2011; AHRC/DFG, 2009-2012; AHRC, 2014-2017), dedicated to the comparative study of language disorder in schizophrenia and aphasia. In Barcelona I have founded the Grammar & Cognition lab (www.grammar.cat), which pursues the project of a typology of linguistic diversity across clinical populations.

Selected publications

- Durrleman S, **Hinzen W** & Franck J 2018. 'False belief and relative clauses in Autism Spectrum Disorders', *Journal of Communication Disorders* 74, 35-44.
- Sevilla G, Rossello J, Salvador R, Sarro S, Lopez-Araquistain L, Pomarol-Clotet E & **Hinzen W** 2018. 'Deficits in nominal reference identify thought disordered speech in a narrative production task', *Plos One*, 13, 8, e0201545.
- Cokal D, Sevilla G, Jones WS, Zimmerer V, Deamer F, Douglas M, Spencer H, Turkington D, Ferrier N, Varley R, Watson S & **Hinzen W** 2018. 'The language profile of formal thought disorder'. *npj schizophrenia* (4), 18.
- **Hinzen W** 2018. 'On the rationality of grammar', In *Language, Syntax and the Natural Sciences*, eds. Á. Gallego and R. Martin, Cambridge University Press, pp. 164-181.
- **Hinzen W**, Rossello J, Morey C, García-Gorro C, Camara E & de Diego-Balaguer R 2018, 'A systematic linguistic profile of spontaneous narrative speech in pre-symptomatic and early stage Huntington's disease'. *Cortex* 100:71-83.
- Zimmerer V, Deamer F, Varley R & **Hinzen W** 2018, 'Comprehension of factive and non-factive embedding in aphasia and its relationship with lexical, syntactic and conceptual capacities', *Journal of Neurolinguistics* 49: 29-44.

Selected research activities

Chair, international conference Semantics and Philosophy in Europe, 10, Universitat Pompeu Fabra, 17-19 December 2018.

Keynote speaker:

-Sinn & Bedeutung 23, Universitat Autònoma de Barcelona

-Transdisciplinary Approaches to Language Variation, Tromsø, Norway

Invited panel: Oasis 1 conference, Paris.

ICREA MEMOIR 2018



Carl Hofer
Universitat de Barcelona
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. Since autumn of 2002 I have been an ICREA and member of the UAB philosophy department. From 2005-2013 I was coordinator of the research group GRECC based at the UAB. Since June 2009, I have been Editor in Chief of a new international journal, the *European Journal for Philosophy of Science*, published by Springer. In July 2013 I began a leave of absence from ICREA to take up the Directorship of the Rotman Institute of Philosophy at Western University in Canada (www.rotman.uwo.ca), and I returned to ICREA in July 2015.

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. At present my research is turning to three traditional big issues in the philosophy of science: scientific realism (i.e., should we take our best scientific theories to be giving us the truth about the world?), the nature of the (physical) laws of nature, and the tension between the manifest notion of time from daily experience and time as portrayed in our best theories of physics.

Selected research activities

I gave invited conference presentations in San Diego (Pacific Division Meetings of the *APA*), at Harvard University (Black Hole Initiative 2nd Annual Conference), in Dubrovnik, at U. Roma Tre, at the University of Barcelona, the University of Lisbon, the LSE, and in San Sebastian. In the first half of 2018 I made final changes to my book manuscript *Chance in the World* (in press at Oxford University Press).

In 2018 I became the first Director of the *Barcelona Institute of Analytic Philosophy* (BIAP), a newly-created inter-university research institution whose goal is to promote collaboration among all the analytic-tradition philosophers in Catalunya (see <http://www.ub.edu/biap/>).

ICREA MEMOIR 2018



Manuel Irimia
Centre de Regulació Genòmica
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 recently been elected EMBO Young Investigator (2018) and obtained an ERC Starting Grant in 2014.

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? To address these questions, his lab combines computational and experimental approaches using *in vitro* and *in vivo* systems (zebrafish, mouse and fruitfly) to investigate the roles of transcriptomic diversification and specialization in embryonic development and evolution.

Selected research activities

Selected publications in 2018 before ICREA's appointment:

- Marletaz, F., Firbas, P., Maeso, I., Tena, J.J., Bogdanovic, O., Perry, M., Wyatt, C.D.R., [+50 authors], Holland, P.W.H., Escrava, H.†, Gomez-Skarmeta, J.L.†, Irimia, M.† (2018). Amphioxus functional genomics and the origins of vertebrate gene regulation. *Nature*, 564:64-70.
- Grau-Bove, X., Ruiz-Trillo, I.†, Irimia, M.† (2018). Origin of exon skipping-rich transcriptomes in animals driven by evolution of gene architecture. *Genome Biol*, 19(1):135.
- Fernandez, J.P., Moreno-Mateos, M.A., Gohr, A., Miao, L., Chan, S.H., Irimia, M.†, Giraldez, A.J.† (2018). RES complex is associated with intron definition and required for zebrafish early embryogenesis. *PLoS Genet*, 14(7):e1007473.

† Corresponding authors

ICREA MEMOIR 2018



Kazushi Iwasawa
 Universitat de Barcelona
 Experimental Sciences & Mathematics

Born and educated in Japan. After obtaining his PhD in astrophysics at Nagoya University, Nagoya, Japan, in 1995, he 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 he joined ICREA, to work as an ICREA Research Professor at the Institut de Ciències del Cosmos (ICCUB). His main research area is X-ray astronomy on active galaxies and cosmic black holes.

Research interests

Kazushi Iwasawa works in the field of observational astronomy, mainly using X-ray observatories in space. His primary interest is in the formation and evolution of supermassive black holes powering active galaxies. These active galaxies are generally strong X-ray emitters, which makes X-ray observations a powerful probe of black hole activity even at great cosmological distances. He is involved in several multi-wavelength survey projects which attempt to establish cosmic evolution of the black hole activity and its relation to the galaxy formation. Currently most active collaborations include Great Observatories All-sky LIRG Survey (GOALS), for investigating properties of star formation and active black holes in luminous infrared galaxies with multi-wavelength datasets, the XMM-Newton deep survey in the Chandra Deep Field South for the evolution of active galactic nuclei using the deep X-ray observations, and the Subaru HyperSuprime Cam (HSC) survey for searching for the most distant quasars.

Selected publications

- **Iwasawa K**, Vivian U, Mazzarella JM, Medling AM, Sanders DB & Evans AS 2018, 'Testing a double AGN hypothesis for Mrk 273', *Astronomy & Astrophysics*, 611, A71.
- Matsuoka Y, **Iwasawa K**, Onoue M, Kashikaw N, Strauss M et al, 2018, 'Subaru High-z Exploration of Low-luminosity Quasars (SHELLQs). IV. Discovery of 41 Quasars and Luminous Galaxies at $5.7 < z < 6.9$ ', *Astrophysical Journal Supplement Series*, 237, 1, 5.
- Matsuoka Y, Strauss MA, Kashikawa N, Onoue M, **Iwasawa K**, Tang J-J, Lee C-H, Imanishi M, Nagao T et al, 2018, 'Subaru High-z Exploration of Low-luminosity Quasars (SHELLQs). V. Quasar Luminosity Function and Contribution to Cosmic Reionization at $z=6$ ', *The Astrophysical Journal*, 869, 150
- Torres-Albà N, **Iwasawa K**, Díaz-Santos T, Charmandaris V, Ricci C, Chu JK, Sanders DB, Armus L, Barcos-Muñoz L, Evans AS, Howell JH, Inami H, Linden ST, Medling AM, Privon GC, Vivian U & Yoon I 2018 'C-GOALS. II. Chandra observations of the lower luminosity sample of nearby luminous infrared galaxies in GOALS', *Astronomy and Astrophysics*, 620, A140

Selected research activities

PhD examination panel for Elias Kammoun at SISSA (Italy)
 Time allocation committees of NuSTAR Cycle 4 (NASA), and XMM-Newton AO-18 (ESA)
 PI of observing programs with Gran Telescopio Canarias (18A and 18B, total 66 hr) for optical spectroscopy of high-z quasars and with XMM-Newton (AO-17) of IRAS F00183-7111 (80 ks). Co-I of the Subaru intensive program 18B-21A for SHELLQs project (30 nights), 18B Subaru Service Time, and ESO VLT time (10 hr) for NuSTAR Cycle 4 (120 ks)

ICREA MEMOIR 2018



Matthias Jamin

Institut de Física d'Altes Energies
Experimental Sciences & Mathematics

After defending my PhD thesis in July 1988 at the University of Heidelberg under the supervision of Prof. H.G. Dosch, I had several positions including scientific associate at TU Munich, a fellowship at CERN (Geneva) and research assistant again at Heidelberg Univ. In February 1996, I completed my Habilitation at the University of Heidelberg. In April 1998, I was awarded a Heisenberg fellowship by the DFG, which I occupied until October 2004. During this period I replaced two professors one at Heidelberg Univ. and the other one at LMU Munich, I spent some time as a visiting researcher at Fermilab (USA), and in July 2003 I was awarded an Apl. professorship by Heidelberg Univ. I am employed with ICREA since April 2005. My scientific work until today includes more than ninety publications which so far received more than 7,400 citations.

Research interests

The “Standard Model” of particle physics until now describes all observed phenomena in its realm to an astonishing precision. Still, theoretical prejudice exists demanding physics which goes beyond it. “Beyond Standard Model” physics might be – so far unsuccessfully – uncovered directly by its observation, or through unveiling mismatches within the present theory. For the latter approach high precision predictions are required which necessitate a sound knowledge of the Standard Model input parameters. My main work concerns precision determinations of those parameters in the strong-interaction sector of the “Standard Model”, most notably the strong coupling and the masses of “quarks”, entities which are the sub-constituents of the protons and neutrons in ordinary atomic nuclei.

Selected publications

– **Matthias J** & Miravitllas R 2018, ‘Absence of even-integer zeta-function values in Euclidean physical quantities in QCD’, *Physics Letters B*, 779, 452 – 455.

Selected research activities

Conference Organisation

– Program coordinator for the Sessions on “Tau properties” and “QCD” at the 15th International Workshop on Tau Lepton Physics, September 2018, Amsterdam.

Stay of Research

– Collaboration with Prof. André Hoang on ‘Higher order behaviour of perturbative QCD series’, University of Vienna, July 2018.

ICREA MEMOIR 2018



Gerardo Jiménez

Institut de Biologia Molecular de Barcelona
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 recently developed 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. In the long term, our studies are designed to characterize basic cell biological mechanisms that are relevant to human disorders.

Selected publications

- Papagianni A, Forés M, Shao W, He S, Koenecke N, Andreu MJ, Samper N, Paroush Z, González-Crespo S, Zeitlinger J & **Jiménez G** 2018, 'Capicua controls Toll/IL-1 signaling targets independently of RTK regulation', *Proceedings of the National Academy of Sciences USA*, 115, 1807-1812.
- Simón-Carrasco L, **Jiménez G**, Barbacid M & Drosten M 2018, 'The Capicua tumor suppressor: a gatekeeper of Ras signaling in development and cancer', *Cell Cycle*, 17, 702 - 711.

Selected research activities

- Principal investigator of research project "Transcriptional interpretation of RTK signaling" funded by MICINN (2018-2020)
- Co-investigator in research project "Chromatin and Gene Expression" funded by AGAUR (2017-2020)
- Invited speaker at 19è Simposi Fundació La Marató de TV3 (Barcelona)
- Invited speaker at 4th Spanish Conference on the Molecular, Cellular and Developmental Biology of *Drosophila* (Begur, Girona)
- Vice-director of Institut de Biologia Molecular de Barcelona (CSIC)

ICREA MEMOIR 2018



Raúl Jiménez

Universitat de Barcelona

Experimental Sciences & Mathematics

Prof. Raúl Jiménez (Madrid, 1967) obtained his PhD at the Niels Bohr Institute in 1995; he then moved to the Royal Observatory in Edinburgh where he held a PPARC Advanced Fellowship. He then went to the US where he joined the faculty, as a professor, of the Physics & Astronomy departments of Rutgers University and, later, the University of Pennsylvania. He joined ICREA in Sept 2007 as Professor at the ICC. He was a Radcliffe fellow at Harvard in 2015-2016. He has made several 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 and a lower bound to the cosmological constant.

Research interests

Prof. Raúl Jiménez is a theoretical physicist interested in a number of problems in astrophysics and cosmology. The main drive of my research is to connect ideas in theoretical physics to observable phenomena and in turn explain new observations. The main objective of my research is to understand the fundamental laws of nature using cosmological and astronomical observations. His fields of research include: the formation and evolution of galaxies, stellar evolution, the cosmic microwave background, dark energy and the origin of the universe.

Selected publications

- **Jimenez R**, Raccanelli A, **Verde L** & Matarrese S 2018, 'Peering beyond the horizon with standard sirens and redshift drift', *Journal Of Cosmology And Astroparticle Physics*, 4, 002.
- Simpson F, **Jimenez R**, Pena-Garay C & **Verde L** 2018, 'Dark energy from the motions of neutrinos', *Physics Of The Dark Universe*, 20, 72 - 77.
- **Jimenez R**, **Verde L** & Kitching TD 2018, 'Implications for the missing low-mass galaxies (satellites) problem from cosmic shear', *Monthly Notices Of The Royal Astronomical Society*, 479, 1, L86 - L90.
- Bartolo N, Bianco DM, **Jimenez R**, Matarrese S & **Verde L** 2018, 'Supergravity, alpha-attractors and primordial non-Gaussianity', *Journal Of Cosmology And Astroparticle Physics*, 10, 017.
- Moresco M, **Jimenez R**, **Verde L**, Pozzetti L, Cimatti A & Citro A 2018. '**Setting the Stage for Cosmic Chronometers. I. Assessing the Impact of Young Stellar Populations on Hubble Parameter Measurements**'. *The Astrophysical Journal*, 868, 84.
- Moreno L & **Jimenez R** 2018 'Democracias robotizadas' Ediciones la Catarata. ISBN: 978-84-9097-473-5. Also available in English (Robotized Democracies) and Italian (Editrice Aracne)

ICREA MEMOIR 2018



Aurelio Juste

Institut de Física d'Altes Energies
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. In particular, unraveling the mechanism of electroweak symmetry breaking and mass generation, as well as searching for new physics phenomena, are the main goals of my research. At the LHC I am carrying out studies on the heaviest known elementary particle, the top quark, as well as on the recently-discovered Higgs boson, seeking connections in the dynamics that govern both particles. I am also searching for beyond the Standard Model (SM) physics, such as supersymmetric partners of SM particles, exotic heavy quarks appearing in composite Higgs models or models with extra spatial dimensions, and additional Higgs bosons revealing an extended Higgs sector. Since 2016, I lead a team of over 20 scientists from IFAE-Barcelona that analyzes the data from the ATLAS experiment.

Selected publications

- S. Gori, C. Grojean, A. Juste, and A. Paul 2018, "Heavy Higgs Searches: Flavour Matters", JHEP, 01, 108.
- E. Alvarez, L. Da Rold, A. Juste, M. Szewc, and T. Vazquez 2018, "A composite pNGB leptoquark at the LHC", JHEP, 12, 027.
- ATLAS Collab. 2018, "Combination of the searches for pair-produced vector-like partners of the 3rd-generation quarks at 13 TeV with the ATLAS detector", Phys. Rev. Lett., 121, 211801.
- ATLAS Collab. 2018, "Search for pair production of higgsinos in final states with ≥ 3 b-jets in 13 TeV pp collisions using the ATLAS detector", Phys. Rev. D, 98, 092002.
- ATLAS Collab. 2018, "Observation of Higgs boson production in association with a top quark pair at the LHC with the ATLAS detector", Phys. Lett. B, 784, 173.
- ATLAS Collab. 2018, "Search for pair production of up-type vector-like quarks and for four-top-quark events in final states with multiple b-jets with the ATLAS detector", JHEP, 07, 089.
- ATLAS Collab. 2018, "Evidence for the associated production of the Higgs boson and a top quark pair with the ATLAS detector", Phys. Rev. D, 97, 072003.
- ATLAS Collab. 2018, "Search for the Higgs boson produced in association with top quarks and decaying into a bb pair in pp collisions at 13 TeV with the ATLAS detector", Phys. Rev. D, 97, 072016.
- ATLAS Collab. 2018, "Search for supersymmetry in final states with missing transverse momentum and multiple b-jets in pp collisions at 13 TeV with the ATLAS detector", JHEP, 06, 107.

Selected research activities

- * Principal investigator of the ATLAS group at IFAE (22 members)
- * Director of one PhD thesis and two Master theses
- * Member of the ATLAS Speakers Committee
- * Referee for the RGC-Hong Kong and the ERC Executive Agency
- * Editor of Advances in High Energy Physics and Journal of Particle Physics
- * Master lectures on SM phenomenology at UAB

Plenary addresses at:

- * LHCP2018, Bologna, Jun 4-9, 2018
- * Higgs Days at Santander, IFCA, Santander, Sep 10-14, 2018
- * Argentine PH Institute II, ICAS, Buenos Aires, Oct 22-26, 2018

ICREA MEMOIR 2018



Giorgos Kallis
Universitat Autònoma de Barcelona
Social & Behavioural Sciences

Giorgos Kallis is an environmental scientist working on ecological economics and political ecology. Before coming to Barcelona, he was a Marie Curie International Fellow at the Energy and Resources Group of the University of California at Berkeley. Giorgos holds a PhD in Environmental Policy and Planning from the University of the Aegean in Greece, a Masters in Economics from Universitat Pompeu Fabra, and a Masters in Environmental Engineering and a Bachelors in Chemistry from Imperial College, London.

Research interests

My research forms part of the inter-disciplinary field of environmental studies, that is, the study of the social and bio-physical causes of environmental degradation. I am motivated by a quest to cross conceptual divides between the social and the natural domains as, for example, in my collaboration with R. Norgaard at Berkeley, where we advanced the concept of socio-ecological coevolution. I am interested on the political-economic roots of environmental degradation and its uneven distribution along lines of power, income and class. My current research is motivated by the double global economic and ecological crisis. I explore the hypothesis of sustainable degrowth: a smooth economic downscaling to a sustainable future where we can live better with less.

Selected publications

- **Kallis G**, Kostakis V, Lange S, Muraca B, Paulson S, Schmelzer M 2018, 'Research On Degrowth', *Annual Review Of Environment And Resources*, Vol 43, 43, 291 - 316.
- **Kallis G** 2018, *Degrowth*, Agenda Publishing, Newcastle-upon-Tyne.

ICREA MEMOIR 2018



Arjan W. Kleij

Institut Català d'Investigació Química
Experimental Sciences & Mathematics

MSc (with honors) and PhD (Cum Laude) from the University of Utrecht (Netherlands). In 2002 he moved to Spain as a NWO TALENT fellow with Javier de Mendoza, followed by another postdoc appointment at the University of Amsterdam (The Netherlands) working with Joost Reek. He also held various scientific positions in the industry working as a project leader (Avantium) and senior research scientist (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 member of the advisory board of Current Organic Chemistry (2014-), ChemSusChem (2016-), Journal of CO₂ Utilization (2017-), and Molecules (2017-). Guest editor for Catal. Sci. & Technol. (2014), ChemSusChem (2016) and ASC (2018); chairman of the Carbon Dioxide Conversion Catalysis conference in Albufeira (Portugal) in 2016 & 2020, chair of the EUGSC-4 conference in 2019. Total citations >8400 and current h-index of around 51.

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. As a key enabling technology, 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 allylic & propargylic compounds featuring quaternary stereocenters.

Selected publications

- Guo W, Kuniyil R, Gomez JE, Maseras F & **Kleij AW** 2018, 'A Domino Process toward Functionally Dense Quaternary Carbons through Pd-Catalyzed Decarboxylative C(sp³)-C(sp³) Bond Formation', *Journal Of The American Chemical Society*, 140, 11, 3981 - 3987.
- Xie J, Xue S, Escudero-Adan EC & **Kleij AW** 2018, 'Domino Synthesis of alpha,beta-Unsaturated gamma-Lactams by Stereoselective Amination of alpha-Tertiary Allylic Alcohols', *Angewandte Chemie-international Edition*, 57, 51, 16727 - 16731.
- Guo W, Gomez JE, Cristofol A, Xie J & **Kleij AW** 2018, 'Catalytic Transformations of Functionalized Cyclic Organic Carbonates', *Angewandte Chemie-international Edition*, 57, 42, 13735 - 13747.
- Sopeña S, Cozzolino M, Maquilón C, Escudero-Adán EC, Martínez Belmonte M & **Kleij AW** 2018, 'Organocatalyzed Domino [3+2] Cycloaddition/Payne-Type Rearrangement using Carbon Dioxide and Epoxy Alcohols', *Angew. Chem. Int. Ed.*, vol. 57, 35, pp. 11203-11207.

Selected research activities

- * Highlight in an Angewandte Chemie Author Profile
- * Main organizer of symposium S49 "Catalytic Valorization of Carbon Dioxide" at the ICC-2018 in Sendai (Japan)
- * Visiting Professor Dalian (China)
- * Invited Guest Editor (Advanced Synthesis & Catalysis)
- * Selected Invited lectures: ICOMC-2018 (Florence), ICC-2018 (Sendai), XXVII RSEQ Bienal Organic (Santiago), 6th Conference on CO₂ as Feedstock for Fuels, Chemicals & Polymers (Cologne), Small Molecule Workshop (University of Venice), Plastics are Future Symposium (Aimplas, Valencia), ACCIÓ "Smart Chemistry Specialization Strategy" (Barcelona)

ICREA MEMOIR 2018



Tess Knighton
Institució Milà i Fontanals
Humanities

Tess Knighton holds MA and PhD degrees from the University of Cambridge and was a Fellow of Clare College, Cambridge, for fifteen years before being appointed an Emeritus Fellow. From May 2011 she has been an ICREA Research Professor at the Institució Milà i Fontanals (CSIC) in Barcelona. In July 2012 she was awarded a Marie Curie Foundation Integration Grant for a research project on the urban musics of early modern Barcelona. Her research interests embrace music and culture in the Iberian world from the 15th to the early 17th centuries, and she has published widely in this field. She was Editor of the OUP journal *Early Music* from 1993 to 2009 and is Series Editor of the *Studies in Medieval and Renaissance Music* series for The Boydell Press, as well as Secretary to the Editorial Committee of *Monumentos de la Música Española*.

Research interests

My research focuses on four interrelated aspects of music in the Iberian world in the long 16th century: music and ceremony; music in the urban context; the impact of music printing on the diffusion of musical repertory; and music historiography. Analysis of music and ceremony focuses on public display through royal entries and exequies 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

- **Knighon T** & Mazuela-Anguita A (eds) 2018, *Hearing the city in early modern Europe*, Brépols, Turnhout
- **Knighon T** 2018, 'Orality and aurality: contexts for the unwritten musics of sixteenth-century Barcelona', in (eds) Tess Knighton & Ascensión Mazuela-Anguita, *Hearing the City in Early Modern Europe*, Brepols, Turnhout

ICREA MEMOIR 2018



Meike Köhler
 Institut Català de Paleontologia
 Life & Medical Sciences

EDUCATION: 1982 - MSc of Sciences (Diplom), University of Hamburg, Germany. 1988 - PhD Vertebrate Paleontology, University of Hamburg, Germany Positions: 2006-current - ICREA Research Professor, Institut Català de Paleontologia, Universitat Autònoma de Barcelona. 2013-current - Associated Professor, Dep. Ecology, Univ. Barcelona. 2006-2014 - Associated Professor, Dep. BABVE, Autonomous Univ. Barcelona. 2000-2006 - Researcher at the Institut de Paleontologia Miquel Crusafont. Publications: In journals such as: Science, Nature, Trends in Ecology and Evolution (TREE), Proceedings of the National Academy of Sciences USA (PNAS), Current Biology, Proceedings Royal Society B, PLOS ONE, Journal of Human Evolution (JHE), American Journal of Physical Anthropology (AJPA), Brain Behavior and Evolution (BBE), etc.

Research interests

Paleobiology, Evolutionary Biology, I am especially interested in: - Life history evolution - Evolution of body size - Trends and rules in evolution - Insularity and evolution in resource-limited environments - Evolution of brain and nervous system - Functional morphology and biomechanics.

Selected publications

- Nacarino-Meneses C & **Köhler M** 2018, 'Limb bone histology records birth in mammals', *Plos One*, 13, 6, e0198511.
- Moncunill-Sole B, Jordana X & **Köhler M** 2018, 'Where did *Mikrotia magna* originate? Drawing ecogeographical inferences from body mass reconstructions', *Geobios*, 51, 4, 359 - 366.
- Fondevilla V, Dalla Vecchia FM, Gaete R, Galobart A, Moncunill-Sole B & **Köhler M** 2018, 'Ontogeny and taxonomy of the hadrosaur (Dinosauria, Ornithopoda) remains from Basturs Poble bonebed (late early Maastrichtian, Tremp Syncline, Spain)', *Plos One*, 13, 10, e0206287.
- Orlandi-Oliveras G, Nacarino-Meneses C, Koufos GD & **Köhler M** 2018, 'Bone histology provides insights into the life history mechanisms underlying dwarfism in hipparionins' *Scientific Reports* 8:17203, pp 1-15

ICREA MEMOIR 2018



Gerasimos Konstantatos

Institut de Ciències Fotòniques
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 infrared light emitting diodes and lasers for on-chip spectrometry, structured illumination and silicon-photonics applications.

Selected publications

- Bi Y, Pradhan S, Gupta S, Akgul MZ, Stavrinadis A & **Konstantatos G** 2018, 'Infrared Solution-Processed Quantum Dot Solar Cells Reaching External Quantum Efficiency of 80% at 1.35 μm and $J(\text{sc})$ in Excess of 34 mA cm^{-2} ', *Advanced Materials*, 30, 7, 1704928.
- Bi Y, Pradhan S, Akgul MZ, Gupta S, Stavrinadis A, Wang J & **Konstantatos G** 2018, 'Colloidal Quantum Dot Tandem Solar Cells Using Chemical Vapor Deposited Graphene as an Atomically Thin Intermediate Recombination Layer', *Acs Energy Letters*, 3, 7, 1753 - 1759.
- Huo N & **Konstantatos G** 2018, 'Recent progress and future prospects of 2D-based photodetectors', *Adv. Mater.*, Vol. 30, 51, 1801164.
- Powell AW, Stavrinadis A, de Miguel I, **Konstantatos G** & **Quidant R** 2018, "White and brightly colored 3D printing based on resonant photothermal sensitizers". *Nano Lett.*, 18 (11), pp 6660-6664
- Di Stasio F, Ramiro I, Bi Y, Christodoulou S, Stavrinadis A & **Konstantatos G** 2018, 'High-Efficiency Light-Emitting Diodes Based on Formamidinium Lead Bromide Nanocrystals and Solution Processed Transport Layers', *Chemistry Of Materials*, 30, 18, 6231 - 6235.
- **Konstantatos G** 2018, 'Current status and technological prospect of photodetectors based on two-dimensional materials', *Nature Commun.* 9, 5266.

ICREA MEMOIR 2018



Frank Koppens
 Institut de Ciències Fotòniques
 Experimental Sciences & Mathematics

Prof. Frank Koppens obtained his PhD in physics at Delft University (Kavli Institute of Nanoscience), The Netherlands. After a postdoctoral fellowship at Harvard University, since 2010, Koppens is group leader at the Institute of Photonic Sciences. Koppens has received five ERC awards: the ERC starting grant, the ERC consolidator grant, and three ERC proof-of-concept grants. Other awards include the Christiaan Huygensprijs, the national award for research in Spain, and the IUPAP young scientist prize in optics. In total, Koppens has published more than 80 refereed papers (H-index above 49), with more than 35 in Science and Nature family journals. Total citations >17.500 (google scholar). Prof. Koppens is workpackage leader and vice-chairman of the executive board of the graphene flagship program, a 1000 MillionEuro project for 10 years.

Koppens is on the Clarivate list of highly cited researchers (ranked in top 1% by citations)

Research interests

The quantum nano-optoelectronics group, led by Prof. Koppens, studies interactions between light and matter at extreme limits. Central in these studies are the rich variety of novel materials that are only one atom thick: graphene and related 2d materials. These materials exhibit fascinating properties and in particular, by building heterostructures of these layered materials, completely new material systems can be created atom-by-atom: atomic lego!

Several unique and novel techniques are exploited to confine light to nano-meter lengths scales and study physical processes at ultra-fast timescales. One of the more recent objectives is to merge the topological properties of 2d-material heterostructures with nano-photonics. In addition to the new science and physics, the group develops new concepts for photo-detection, imaging systems, optical modulation, nano-scale light processing and switching, as well as flexible and wearable health and fitness devices.

Selected publications

- *Probing the ultimate plasmon confinement limits with a van der Waals heterostructure* D. Alcaraz Iranzo, S. Nanot, E. J. C. Dias, I. Epstein, C. Peng, D. K. Efetov, M. B. Lundberg, R. Parret, J. Osmond, J.-Y. Hong, J. Kong, D. R. Englund, N. M. R. Peres & F. H. L. Koppens **Science** **360**, 291-295 (2018)
- *Nano-imaging of intersubband transitions in van der Waals quantum wells.* P. Schmidt, F. Violla, S. Latini, M. Massicotte, K.-J. Tielrooij, S. Mastel, G. Navickaite, M. Danovich, D. A. Ruiz-Tijerina, C. Yelgel, V. Falko, K. S. Thygesen, R. Hillenbrand, F. H. L. Koppens **Nature Nanotechnol.** **13**, 1035-1041 (2018)
- *Out-of-plane heat transfer in van der Waals stacks through electron-hyperbolic phonon coupling* Tielrooij, Klaas-Jan; Hesp, Niels C. H.; Koppens, Frank H. L. **Nature Nanotechnology**, **13**, 1, 41 (2018)
- *Dissociation of two-dimensional excitons in monolayer WSe₂* Massicotte, Mathieu; Violla, Fabien; Schmidt, Peter; Lundberg, Mark B.; Latini, Simone; Haastrup, Sten; Danovich, Mark; Davydovskaya, Diana; Watanabe, Kenji; Taniguchi, Takashi; Fal'ko, Vladimir I.; Thygesen, Kristian S.; Pedersen, Thomas G.; Koppens, Frank H. L. **Nature Communications**, **9**, 1633 (2018)
- *Quantum nonlocal theory of topological Fermi arc plasmons in Weyl semimetals* G. M. Andolina, F. M. D. Pellegrino, F. H. L. Koppens & M. Polini **Phys. Rev. B** **97**, 125431 (2018)
- *Graphene-based integrated photonics for next-generation datacom and telecom* Romagnoli M, Soriano V, Midrio M, Koppens FHL, Huyghebaert C, Neumaier D, Galli P, Templ W, A D'Errico & Ferrari AC **Nat. Rev. Mater.** **3**, 392-414 (2018)

Selected research activities

Vice-chairman of the executive board of the graphene flagship program.

Opto-electronics workpackage leader (involving 25 universities/institutes) of the graphene flagship program.

ICREA MEMOIR 2018



Ben Lehner

Centre de Regulació Genòmica
Life & Medical Sciences

* 2018 - Coordinator of CRG Systems Biology Program * 2017 - EMBO Member * 2014 - Senior Group Leader, CRG * 2014-17 - AXA Chair in risk prediction in age-related diseases, CRG * 2010 - EMBO Young Investigator * 2009 - ICREA Research Professor * 2007 - ICREA Junior Researcher * 2006 - Group Leader, EMBL-CRG Systems Biology Unit, Centre for Genomic Regulation, Barcelona * 2004-06 - Postdoctoral Fellow, Fraser Lab, The Wellcome Trust Sanger Institute * 2004 - PhD University of Cambridge * 2000 - BA Natural Sciences, University of Cambridge

Research interests

Many mutations, for example disease causing mutations in humans, are not harmful in all of the individuals who carry them. When do genetic changes result in phenotypic change? When do they not? How do mutations combine together to alter phenotypes? Why is this and how can this be predicted? How and why do mutation rates vary across the genome? How does the physiology and environment of one generation influence subsequent generations? How do chance events influence the characteristics of individuals? These are the main questions that drive our research, and we use both experimental and computational approaches to address them. Most of our work is hypothesis driven and we choose model systems and approaches to best answer the question at hand, particularly model organisms where we can perform large-scale and highly quantitative genetic analysis. In short, we aim to identify, understand and predict how genetic variation occurs and when it results in phenotypic variation, both at the level of the typical outcome in a population and also in each particular individual.

Selected publications

- Domingo J, Diss G & **Lehner B** 2018, 'Pairwise and higher-order genetic interactions during the evolution of a tRNA', *Nature*, 558, 7708, 117 - +.
- Diss G & **Lehner B** 2018, 'The genetic landscape of a physical interaction', *Elife*, 7, e32472.
- Park S, **Supek F** & **Lehner B** 2018, 'Systematic discovery of germline cancer predisposition genes through the identification of somatic second hits', *Nature Communications*, 9, 2601.
- Bolognesi B & **Lehner B** 2018, 'Reaching the limit', *Elife*, 7, e39804.

ICREA MEMOIR 2018



Maciej Lewenstein
 Institut de Ciències Fotòniques
 Experimental Sciences & Mathematics

Maciej Lewenstein (Warsaw 1955) graduated at Warsaw University in 1978. He joined the Centre for Theoretical Physics of the Polish Academy of Sciences in Warsaw, where he remained for 15 years, becoming a professor in 1993. He finished his PhD in Essen in 1983 and habilitated in 1986 in Warsaw. He has spent several long term visits at Universitaet Essen, at Harvard University with Roy J. Glauber (Nobel 2005), at Commissariat a l'Énergie Atomique in Saclay and at Joint Institute for Laboratory Astrophysics at Boulder. He was on faculty of CEA in Saclay (1995-1998), 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, attosecond science, and statistical physics. His other passion is jazz and avant-garde music - he is an acclaimed jazz writer and critic.

Research interests

Maciej Lewenstein is a theoretical physicist per se. His 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, or applications of theoretical quantum chemistry to quantum many body physics. In his research he uses extensively methods of the contemporary theoretical physics. At ICFO Maciej Lewenstein leads a 25 people team working on the mentioned subjects.

Selected publications

- Dawid A, **Lewenstein M** & Tomza M 2018, 'Two interacting ultracold molecules in a one-dimensional harmonic trap', *Physical Review A*, 97, 6, 063618.
- **Acín A**, Bloch I, Buhrman H, Calarco T, Eichler C, Eisert J, Esteve D, Gisin N, Glaser SJ, Jelezco F, Kuhr S, **Lewenstein M**, Riedel F, Schmidt PO, Thew R, Wallraff A, Walmsley I & Wilhem FK 2018, '*The quantum technologies roadmap: a European community view*', *New Journal of Physics*, vol 20, 080201.
- Guenther N-E, Massignan P, **Lewenstein M** & Bruun GM 2018, 'Bose Polarons at Finite Temperature and Strong Coupling', *Physical Review Letters*, 120, 5, 050405.
- Tura J, Aloy A, Quesada R, **Lewenstein M** & **Sanpera A** 2018, 'Separability of diagonal symmetric states: a *quadratic conic optimization problem*', *Quantum*, vol 2, 45.
- Bermudez A, Tirrito E, Rizzi M, **Lewenstein M** & Hands S 2018, 'Gross-Neveu-Wilson model and correlated symmetry-protected *topological phases*', *Ann Physics*, vol 399, pp 149-180.
- González-Cuadra D, Grzybowski PR, Dauphin A & **Lewenstein M** 2018, 'Strongly correlated bosons on a dynamical lattice', *Physical Review Letters*, vol 121, 090402.

ICREA MEMOIR 2018



Julio Lloret-Fillol
 Institut Català d'Investigació Química
 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 been working as independent research leader at Universitat de Girona (Ramón y Cajal programme). In 2014 he obtained a position as Young Research Group Leader at the Institut de Química Computacional i Catàlisi (UdG). In November 2014 he move to his actual position of group leader at the Institute of Chemical Research of Catalonia (ICIQ).

Research interests

My research is mainly focused on designing new catalysts for a more sustainable chemistry through the use of 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 in order to achieve this objective. Accordingly, my research dream is to address the production of fine chemicals using solely CO₂, water and light as driving force. To this end, we are working in 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 in earth, the water oxidation, identified as one of the bottlenecks for the production of solar fuels. Mechanistic investigations will aid to understand multi-proton multi-electron transformations. These areas of research can open up new avenues for newer and greener synthetic methods.

Selected publications

- Call A, Franco F, Kandoth N, Fernández S, González-Béjar M, Pérez-Prieto J, Luis, JM & **Lloret-Fillol J** 2018, 'Understanding Light-driven H₂ Evolution through the Electronic Tuning of Aminopyridine Cobalt Complexes', *Chem Sci*, 9, 2609 - 2619. (Editors' Choice Collection)
- Franco F, Pinto M, Royo B & **Lloret-Fillol J** 2018, 'A Highly Active N-Heterocyclic Carbene Manganese(I) Complex for Selective Electrocatalytic CO₂ Reduction to CO', *Angew Chem Inter Edit*, 57, 4603-4606
- Call A & **Lloret-Fillol J** 2018, 'Enhancement and control of the selectivity in light-driven ketone versus water reduction using aminopyridine cobalt complexes', *Chem Commun*, 9643-9646
- Pinto M, Friaes S, Franco F, **Lloret-Fillol J** & Royo B 2018, 'Manganese N-Heterocyclic Carbene Complexes for Catalytic Reduction of Ketones with Silanes', *ChemCatChem*, 10, 2734-2740. (Cover Picture)
- Mas-Balleste R, González-del Moral O, Call A, Franco F, Moya A, Nieto JA, Frías M, Fierro JLG, Costas M, Lloret-Fillol J & Alemán J 2018, 'Bioinspired Electro-Organocatalytic Material Efficient for Hydrogen Production', *Chem Eur J*, 24, 3305 - 3313.
- Smirnova ES, Acuna-Pares EF, Escudero-Adan EC, Jelsch C & **Lloret-Fillol J** 2018 'Synthesis and Reactivity of Copper(I) Complexes Based on C₃-Symmetric Tripodal HTIM(PR₂)₃ Ligands', *Eur J Inorg Chem*, 23, 2612-2620. (Cover Picture)

Selected research activities

- Member of the Young Academy of Europe
- Professor at the Master's in Advance Catalysis and Molecular Modelling (UdG)
- Member of CARISMA COST Action
- Co-founder of Gioxcat spin-off. <http://gioxcat.com/>

Conferences & Talks

Selected talks:

- GDR Solar Fuels, Collège de France - Paris (France) **Plenary Lecture**
- Girona Seminar 2018 (Spain) **Key Note**
- ICC2018 - Sendai (Japan) **Invited**
- Meeting ECIRM - Barcelona (Spain) **Invited**
- Workshop On: Solar Fuel Production, Braga, (Portugal), **Key Note**
- **Invited lecture** at Uni. Sevilla, DIPC (Spain) and U. Arizona (USA).

Gordon Research Conference; Renewable Energy: Solar Fuels - Ventura (USA) **2018, Selected for oral presentation**

ICREA MEMOIR 2018



Josep M. Llovet

Institut d'Investigacions Biomèdiques August Pi i Sunyer
Life & Medical Sciences

Josep M. Llovet, MD is ICREA Research Professor, Liver Cancer Translational Oncology Lab, Liver Unit, IDIBAPS, Hospital Clinic, Univ. Barcelona, Prof. of Medicine and Director of the Liver Cancer Program at Icahn Mount Sinai School of Medicine, NY. He has published 278 manuscripts in Liver Cancer, including NEJM, Lancet, Nature, Nat.Genet., Cancer Cell and Gastroenterology (IF:3620;citations:58971;h-index:100). Top 1% most cited researcher globally, Clarivate Analytics (2014-2018), Educational Councilor (2013-15), President of ILCA (2011-13), Senior Editor of CCR, he has lectured in more than 500 international meetings and has been the PI of European grants FP7-HEPTROMIC, HEP-CAR, Accelerator Award, NIH-NIDDK R01-award, I+D grants and competitive private grants. His achievements are: 1. Establish a clinical and molecular classification for HCC. 2. Establish efficacy of chemoembolization and sorafenib for HCC. 3. Identification of novel drivers and oncogenic pathways in HCC and ICC.

Research interests

Prof Josep M. Llovet has been working in clinical and translational research in hepatocellular carcinoma (HCC) and cholangiocarcinoma (ICC) for the last 24 years. He is leading international randomized trials in HCC on novel targeted therapies and developing a molecular classification of the disease, understanding the genetic aberrations and signaling pathways involved and in the identification of new molecular targeted therapies. He has organized the HCC Genomic Consortium and the HEPTROMIC Consortium that includes several international HCC research centers: IDIBAPS-Hospital Clínic, Icahn School of Medicine at Mount Sinai, INSERM, Univ. Tuebingen, Dana-Farber-MIT-Broad Institute and NCI. The main future areas of interest are a) identify biomarkers predicting response to sorafenib and checkpoint inhibitors (nivolumab) or mechanisms of resistance b) translate oncogenic drivers discoveries as targeted therapies in HCC and ICC, c) unraveling the molecular traits of NASH-HCC

Selected publications

- Galle PR, Forner A, **Llovet JM** et al. 2018, 'EASL Clinical Practice Guidelines: Management of hepatocellular carcinoma. European Association for the Study of the Liver'. *J Hepatol.* 69:182-236
- Vogel A, Cervantes A, Chau I et al. 2018, 'Hepatocellular carcinoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up', *Annals of Oncology*, 29,238-255.
- Lim HY, Merle P, Weiss KH, et al. 2018, 'Phase II studies with refametinib or refametinib plus sorafenib in patients with RAS-mutated hepatocellular carcinoma'. *CCR*, 24:4650-4661
- Labgaa I, Villacorta-Martin C, D'Avola D et al. 2018, 'A pilot study of ultra-deep targeted sequencing of plasma DNA identifies driver mutations in hepatocellular carcinoma', *Oncogene*, 37:3740-3752
- Bruix J, Cheng AL, Meinhardt G et al. 2018 'Prognostic factors and predictors of sorafenib benefit in patients with hepatocellular carcinoma: Analysis of two phase III studies', *J Hep*, 69,4,990-991
- **Llovet JM** & Finn RS 2018 'Negative phase 3 study of 90Y microspheres versus sorafenib in HCC'. *Lancet Oncol.* 19:30025-1
- Paré L, Pascual T, Seguí E, et al. 2018 'Association between PD1 mRNA and response to anti-PD1 monotherapy across multiple cancer-types' *Ann Oncol.* 29:2121-2128
- **Llovet JM**, Pavel M, Rimola J et al. 2018. 'Pilot Study of living donor liver ...' . *Liver Transplantation*, 24(3):369-379.
- **Llovet JM** 2018, 'Tumors of the Liver and Biliary Tree', In: Harrison's Principles of Internal Medicine (20th Edition). Ed: Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J. Chapter 78; 144-157.

Selected research activities

- Senior Editor. Clinical Cancer Research
- Director. Master in Translational Medicine. Universitat de Barcelona
- Executive Committee. IDIBAPS
- Director Liver Cancer Program. ICAHN School of Medicine at Mount Sinai
- Fellow Award. American Association for the Study of the Liver Diseases (AASLD)
- Tisch Cancer Institute Award. NCI designated Cancer Center Recognition ISMMS
- President, AASLD-SIG Liver Tumors

ICREA MEMOIR 2018



Jorge Lobo
 Universitat Pompeu Fabra
 Engineering Sciences

Jorge Lobo is an ICREA Research Professor in the Department of Information and Communication Technologies at UPF since October 2012. He is also Visiting Professor in the Department of Computing at Imperial College London. Before joining ICREA he was at IBM T.J. Watson Research Center. Previous to IBM, he was principal architect at Teltier Technologies, a startup company in the wireless telecommunication area, and now part of Cisco Systems. Before Teltier, he was member of the research staff at Bell Labs and associate professor of computer science at the University of Illinois at Chicago. He did pioneer work at Bell Labs in policy-based network management developing the policy language PDL used for the management of the first generation of Lucent Technologies softswitches. He received a PhD in Computer Science from the University of Maryland at College Park, and a MSc and a BE from Simón Bolívar University in Venezuela. He is an ACM Distinguished Scientist.

Research interests

My research centers in the formalization and implementation of policy-based paradigms, which allow systems to manage themselves autonomously, guided by general principles (“policies”) specified by their users. Defining good policy specification methods and languages is partly a knowledge representation and acquisition problem and partly a software engineering problem. My aim is to provide principled frameworks to address distributed system related problems and test them by applying them to describe, analyze and enforce policy and regulations in concrete, realistic systems. Over the years I have collaborated with researchers working in security, networking, distributed computing and human-computer interaction, to tackle many policy issues including authoring, verification, automatic policy generation and conflict resolution, and develop implementations to help manage many kinds of real-world distributed systems, including computer, cellular and mobile ad-hoc networks.

Selected publications

- **Lobo J** 2018, ‘**Relationship-based access control: More than a social network access control model**’, *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*: e1282.
- Calvanese D, Montali M & **Lobo J** 2018, ‘**Verification of Fixed-Topology Declarative Distributed Systems with External Data**’, In *Proceedings of The 12th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW 2018)*.
- Ma J, Rankothge W, Makaya C, Morales M, Le F & **Lobo J** 2018, ‘**An Overview of A Load Balancer Architecture for VNF chains Horizontal Scaling**’, In *14th International Conference on Network and Service Management (CNSM)* (pp. 323-327). IEEE.

Selected research activities

- Appointed to the *editorial boards* of:
- Frontiers in Big Data - Cybersecurity and Privacy
 - The International Journal of Network Management
 - Cybersecurity (founding member)

ICREA MEMOIR 2018



Núria López-Bigas

Institut de Recerca Biomèdica de 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>). In 2015 she was awarded an ERC Consolidator Grant.

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 of IntOGen (<http://www.intogen.org>), a discovery tool for cancer research, 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) and the discovery that nucleosome covered DNA shows a 10 bp periodicity on the rate of somatic and germline mutations (Pich et al., 2018).

Selected publications

- Tamborero D, Rubio-Perez C, Deu-Pons J, Schroeder MP, Vivancos A, Rovira A, Tusquets I, Albanell J, Rodon J, Tabernero J, de Torres C, Dienstmann R, Gonzalez-Perez A & **Lopez-Bigas N 2018**, 'Cancer Genome Interpreter annotates the biological and clinical relevance of tumor alterations', *Genome Medicine*, 10, 25.
- Pich O, Muiños F, Sabarinathan R, Reyes-Salazar I, Gonzalez-Perez A & **Lopez-Bigas N 2018**, 'Somatic and Germline Mutation Periodicity Follow the Orientation of the DNA Minor Groove around Nucleosomes', *Cell*, Vol. 175, no4, 1, pp 1074-1087.e18

Selected research activities

- Invited speaker at The 49th International Symposium of the Princess Takamatsu Cancer Research Fund, Tokyo, Japan
- Invited speaker at EMBO Meeting on Cellular Signalling and Cancer Therapy, Dubrovnik, Croatia
- Keynote speaker at Molecular Analysis for Personalised Therapy (MAP) Congress 2018, Paris, France
- Invited speaker at Cell Symposia: TCGA Legacy: Multi-Omic Studies in Cancer, Washington, USA

ICREA MEMOIR 2018



Dan López de Sa
 Universitat de Barcelona
 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, race, and sexuality.

Selected research activities

- Principal investigator of Spanish Government Research Project "*DM — Derivative Metaphysics: The Existence and Significance of the non-Fundamental*" (FFI2015-66372-P, 2016-18)
- Associate Editor of *Teorema* for "Metaphysics" (www.unioviado.es/teorema)
- Member of the "network of excellence" (Consolider) "*Facts and Thoughts in Perspective: New Issues*" (FFI2016-81858-REDC, 2017-18) and the interuniversity *BIAP-Barcelona Institute of Analytic Philosophy* (UB, UPF, UdG)
- Member of the *Societat Catalana de Filosofia* (IEC), the *Sociedad Española de Filosofía Analítica*, the *European Society of Analytic Philosophy* and the *American Philosophical Association*.
- In 2018, I convened the weekly *SM-Seminar In Metaphysics* and co-convened the weekly reading group *TAT* with JJ Moreso (UPF).
- Organizer of the international workshops: "*DM3 — Metaphysics of Sex and Love*".
- Invited Talks:
 - Groups: 'The Plurality Identity Thesis' (w/ John Horden), *Philosophy and Law Workshop Series*, Glasgow
 - 'On (Not) Explaining Disagreements' *Josh Parsons Memorial Conference*, St Andrews
 - 'Constructing Sexual Orientations: the Case of Kink' *The Nature and Significance of Social Kinds*, Essen
- I supervised or co-supervised three PhD students and one MA thesis.

ICREA MEMOIR 2018



Gábor Lugosi
Universitat Pompeu Fabra
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

- Arias-Castro E, Bubeck S, **Lugosi G** & Verzelen N 2018, 'Detecting Markov random fields hidden in white noise', *Bernoulli* 24, 4B, 3628-3656.
- Devroye L, Györfi L, **Lugosi G** & Walk H. 2018, 'A nearest neighbor estimate of the residual variance.' *Electronic Journal of Statistics*, Vol. 12, No. 1, 1752-1778,
- Barigozzi M, Brownlees C & **Lugosi G** 2018, 'On the consequence, of power-law behavior in partial correlation network models'. *Electronic Journal of Statistics*, Vol. 12, No. 2, 2905-2929, 2018.

Selected research activities

- Co-organizer of a month-long thematic activity on Mathematics of Machine Learning at the Centre de Recherches Mathématiques in Montréal, Canada.
- Invited participant of the Foundations of Data Science Fall program at the Simons Institute, Berkeley, CA.
- TRIAD Distinguished Lecturer at Georgia Tech.

ICREA MEMOIR 2018



María J. Macías

Institut de Recerca Biomèdica de Barcelona
Life & Medical Sciences

Since 2002 at the IRB Barcelona working in the Structural and Computational Biology 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 domains and complexes involved in splicing, transcription and signaling Protein folding and stability Analysis of tumor mutations

Research interests

Our research interest is focused on 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 from the structural point of view. Recently 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 TGF-beta pathway first for activation and then for degradation. Using NMR and X-ray crystallography we are currently characterizing the interactions of Smad proteins 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.

Selected publications

- Guca E, Suñol D, Ruiz L, Konkol A, Cordero J, Torner C, Aragon E, Martin-Malpartida P, Riera A & **Macías MJ** 2018, 'TGIF1 homeodomain interacts with Smad MH1 domain and represses TGF- β signaling', *Nucleic Acids Res*, 46(17): 9220-9235

Selected research activities

- During this year the group defended three Master Thesis, Santiago Cobos (UB) Carles Torner (UB), Natalia de Martin (Pompeu Fabra) and one PhD Thesis, Jordi Medina (UB)
- I have participated in the programme "BCN Inspiracy" (Cosmo Caixa) to motivate young women researchers to continue with their careers
- Member of the mentoring programme Pulsar organized by la fundación Everis

ICREA MEMOIR 2018



Marco Madella
 Universitat Pompeu Fabra
 Humanities

After graduating at the University of Milan (Italy) in Natural Sciences (Botany), I worked as a contract scientist at the Archaeological Museum of Como and left the team in 1993 to start a PhD at the University of Cambridge. After finishing my PhD I took up a position as research fellow at the McDonald Institute for Archaeological Research, also teaching archaeology and human evolution at the Institute for Continuing Education (Madingly Hall) of the University of Cambridge. In 2004 I became affiliated lecturer in the Department of Archaeology and in 2005 director of studies in archaeology and anthropology at St. Edmund's College in the University of Cambridge. Since July 2005 I am ICREA research professor first at the IMF-CSIC and from 2014 at Universitat Pompeu Fabra. I currently coordinate the Culture and Socio-Ecological Dynamics (CaSEs) research group and I teach in the UPF Master in World History.

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 arid and semi-arid environments, from the Mediterranean to the tropics. My interests span from past vegetation histories, 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. Agriculture had an immense impact on humans and non-humans, and the future of our world is linked to making agriculture sustainable by maintaining biodiversity, re-evaluating traditional knowledge and mitigating environmental impact. Archaeology can play a key role in all these lines of investigation. Key areas for my work are South and West Asia, and South America.

Selected publications

- Bell L, Crema E, Bunting MJ & **Madella M** 2018. 'Simulating vegetation in ancient Japan using HUMPOL: A pollen-based multi-scenario modeling approach', *PAGES Magazine*, vol. 26, no. 1, pp 22-23.
- Whitehouse N, **Madella M** & Antolin F 2018, 'European land-use at 6000 BP: from on-site data to the large-scale view', *PAGES Magazine*, vol. 26, no. 2, pp 90.

Selected research activities

I am Land Use Coordinator for *LandCover6k* of PAGES (Past Global Changes), a member of the Global Land Programme working group on *Large-scale Behavioural Models of Land Use Change* and of the Future Earth Cluster *Modeling Sustainable Futures*, and I serve as an advisory member in the *Human and Biosphere Commission* of the INQUA. I have been visiting researcher at the Dpt. of Soil Science, ESALQ-Universidade de São Paulo (Brazil); Dpt. of Archaeology, S.A. Latif University (Pakistan) and ERASMU+ Fellow teaching at J. Nehru University-Delhi (India). I have been elected Honorary Research Fellow at the School of Geography, Archaeology and Environmental Studies, The University of the Witwatersrand, Johannesburg (South Africa).

ICREA MEMOIR 2018



Vivek Malhotra
 Centre de Regulació Genòmica
 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

- Villeneuve J, Bassaganyas L, Lepreux S, Chiritoiu M, Costet P, Ripoche J, **Malhotra V** & Schekman R 2018, 'Unconventional secretion of FABP4 by endosomes and secretory lysosomes'. *J Cell Biol.* 217(2):649-665.
- Ashe S, **Malhotra V** & Raghu P 2018, 'Protein Kinase D regulates metabolism and growth by controlling secretion of insulin like peptide', *Dev Biol.* 434(1):175-185.
- Cruz-Garcia D, **Malhotra V** & Curwin AJ 2018, 'Unconventional protein secretion triggered by nutrient starvation', *Semin Cell Dev Biol.* 83:22-28
- Raote I, Ortega-Bellido M, Santos AJM, Foresti O, Zhang C, **Garcia-Parajo MF**, Campelo F & **Malhotra V** 2018, 'TANGO1 builds a machine for collagen export by recruiting and spatially organizing COPII, tethers and membranes', *Elife.* 7. pii: e32723.
- Cantero-Recasens G, Butnaru CM, Valverde MA, Naranjo JR, Brouwers N & **Malhotra V** 2018, 'KChIP3 coupled to Ca²⁺ oscillations exerts a tonic brake on baseline mucin release in the colon', *Elife.* pii: 7, e39729.

ICREA MEMOIR 2018



Mervi Mantsinen

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
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 2020 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

- Gallart D, **Mantsinen MJ** et al. 2018, 'Modelling of JET hybrid plasmas with emphasis on combined ICRF and NBI', *Nucl. Fusion* 58, 106037
- Hellesen C, **Mantsinen M** et al. 2018, 'Analysis of resonant fast ion distributions during combined ICRF and NBI heating', *Nucl. Fusion*, 58, 056021
- Gutierrez-Milla A, **Mantsinen MJ** et al. 2018, 'New High Performance Computing Software for Multiphysics Simulations of Fusion Reactors', *Nucl. Eng. Design*, 136A, 639
- Mohr S et al. 2018, 'Linear scaling DFT calculations for large Tungsten systems', *Nucl. Mat. Energy*, 15, 64
- Galdon-Quiroga J et al. 2018, 'Velocity space resolved absolute measurement of fast ion losses induced by a tearing mode in the ASDEX Upgrade tokamak', *Nucl. Fusion*, 58, 036005
- McClements KG et al. 2018, 'Observations and modelling of ion cyclotron emission observed in JET plasmas', *Nucl. Fusion*, 58, 9, 096020
- Nabais F et al. 2018, 'TAE stability calculations compared to TAE antenna results in JET', *Nucl. Fusion*, 58, 082007
- Dumont R et al. 2018, 'Scenario development for the observation of alpha-driven instabilities', *Nucl. Fusion*, 58, 082005

Selected research activities

Fusion Group Leader at BSC (fusion.bsc.es)

Scientific Coordinator of EUROfusion experiment 'ICRF scenario support for D and T plasmas' at the JET tokamak, UK, and "W sputtering in ICRF-heated plasmas and development of novel ICRF schemes" at the ASDEX Upgrade tokamak, Germany

Chair of Magnetic Confinement Fusion Plasma Panel of the Program Committee for the 45th EPS Conference on Plasma Physics

Evaluator of "Habilitation à diriger des recherches" of Dr R Dumont, Aix-Marseille Université and CEA, France.

Supervisor of 3 PhD and MSc students (UAB and UPC)

Coordinator of the RIS3CAT Emerging Sector Fusion proposal involving 7 centers and budget of 4 M€

Reviewer for Foundation of Polish Science, Spanish National Agency of Evaluation, EUROfusion, AQU Catalunya, and journals Plasma Physics and Controlled Fusion, Physics of Plasmas, Plasma, Atoms

ICREA MEMOIR 2018



Albert Marcet

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
 Institut d'Anàlisi Econòmica, Fundació Markets, Organizations and Votes in Economics
 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

Research interests

RECURSIVE CONTRACTS In social sci. it is common to find models of dynamic stochastic optimization with forward-looking constraints, e.g., in models of optimal policy or optimal contracts. These models 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 explore those agents that behave rationally and have an empirically plausible model of asset prices. We explain stock and housing price fluctuations. **DEBT MANAGEMENT** The European debt crisis highlights the importance of choosing appropriately the bond portfolio issued by governments (debt management). Fiscal sustainability may depend on what bonds mature and when. We analyze the optimal combination of bond maturities that should be issued over the business cycle

Selected research activities

Honors and Awards

- ERC Advanced Grant, APMPAL-HET
- Fellow of Academia Europaea

Invited talks

“Optimal Policy with General Signal Extraction” presented at

- Conference “Frontiers in International MAcroeconomics”, Université de Rennes
- Workshop “Adaptive Learning”, Universidad del País Vasco

ICREA MEMOIR 2018



Tomàs Marquès-Bonet

Universitat Pompeu Fabra
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 and from 2017 he is an HHMI International young investigator. He has been part of many genome consortia, leading the section of duplications and structural variation in most of them. His group aims to characterize human specific genomics features, including the evolution of epigenetics in humans or the impact of CNVs in phenotypic traits. With a total of more than 100 peer-reviewed publications, he has published as a senior authorship in *Science* (2016), *Nature* (2013), *Genome Research* (2015), *Plos Genetics* (2013,2015) among others.

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

- Zhu Y, Sousa AMM, Gao T, Skarica M, Li M, Santpere G, Esteller-Cucala P, Juan D, Ferrandez-Peral L, Gulden FO, Yang M, Miller DJ, **Marques-Bonet T**, Kawasaki Y, Zhao H & Sestan N 2018, 'Spatiotemporal transcriptomic divergence across human and macaque brain development', *Science*, 362, 6420, 1267 - +, eaat8077.
- Hernandez-Rodriguez J, Arandjelovic M, Lester J, de Filippo C, Weihmann A, Meyer M, Angedakin S, Casals F, **Navarro A**, Vigilant L, Kühl HS, Langergraber K, Boesch C, Hughes D & **Marques-Bonet M** 2018, 'The impact of endogenous content, replicates and pooling on genome capture from fecal samples', *Molecular Ecology Resources*, 18, 2, 319 - 333.
- Solis-Moruno M, de Manuel M, Hernandez-Rodriguez J, Fontserè C, Gomara-Castano A, Valsera-Naranjo C, Crailsheim D, **Navarro A**, Llorente M, Riera L, Feliu-Olleta O & **Marques-Bonet T** 2018, 'Potential damaging mutation in LRP5 from genome sequencing of the first reported chimpanzee with the Chiari malformation (vol 7, 2017)', *Scientific Reports*, 8, 7437.
- de Manuel M, Shiina T, Suzuki S, Dereuddre-Bosquet N, Garchon H-J, Tanaka M, Congy-Jolivet N, Aarnink A, Le Grand R, **Marques-Bonet T** & Blancher A 2018, 'Whole genome sequencing in the search for genes associated with the control of SIV infection in the Mauritian macaque model', *Scientific Reports*, 8, 7131.

ICREA MEMOIR 2018



Genoveva Martí
 Universitat de Barcelona
 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* since 2009. In 2017 I was elected Chair of the Philosophy, Theology and Religious Studies Section of the *Academia Europaea*. In November 2018 I was elected 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 the semantics of singular terms and natural-kind terms 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, and on the impact of experimental data on semantics.

Selected publications

- **Marti G** (editor) 2018, 'Special section on the work of Delia Graff Fara (1969-2017)', with papers by Jeshion R, Stalnaker R & Williamson T, *Theoria*, 33(3).

Selected research activities

Outputs available online: 'Names, Descriptions and Causal Descriptions', *Topoi*; 'Tolerance, flexibility and the application of kind terms' (with L Ramírez-Ludeña) *Synthese*; 'Water has a micro-structural essence after all' (with C Hofer) *European Journal for Philosophy of Science*. 'Experimental semantics, descriptivism and anti-descriptivism. Should we endorse referential pluralism?' A. Bianchi (ed.): *Language and Reality from a Naturalistic Perspective* (Springer Verlag, 2019) is in press and available on request.

Plenary presentations

'Experimental semantics and referential pluralism'. Workshop: *Testing Linguistic Intuitions*. University of Hamburg. March 2018.
 'Scientific realism and reference to unobservables' (with Carl Hofer). Workshop: *Language and Reality*. Barcelona, September 2018.
 'Water has a microstructure' (with Carl Hofer). Workshop: *Language and Linguistics*. InterUniversity Center. Dubrovnik, September 2018.

Honors

Elected Vice-President of the *Academia Europaea*.

Ongoing funded projects

Member of project DIAPHORA. EU Horizon 2020. Marie Skłodowska-Curie. Coordinator: S. Rosenkranz (ICREA/UB). 2016-2019.
 Co-principal Investigator (with José Martínez-Fernández) of project 'Localism and Globalism in Logic and Semantics'. MINECO FFI2015-70707-P. 2016-2019.
 Member of project 'Perspectival Thoughts and Facts: New Questions'. MINECO FFI2016-81858-REDC. Coordinator : M. García-Carpintero. 2017-2019

ICREA MEMOIR 2018



Jaime F. Martínez-García
 Centre de Recerca en Agrigenòmica
 Life & Medical Sciences

After graduating in Biology, I've got my PhD (01/1993, Universitat de València) working on how plants regulate their growth in response to environmental light conditions. Next, I did three postdocs: in Cathie Martin's group (John Innes Center, Norwich, UK) working on plant transcription factors (03/1993-10/1995); in Peter Quail's team (Plant Gene Expression Center, UC-Berkeley, USA) to work on phytochrome signaling in *Arabidopsis thaliana* (01/1996-01/2000); and Salomé Prat laboratory (Instituto de Biología Molecular de Barcelona, CSIC, Barcelona, Spain), working on photoperiod-regulated potato tuberization (01/2000-10/2001). In November 2001, I've got a permanent position as an ICREA Research Professor and established my own research group. Currently, I develop my research in the CRAG (Barcelona), studying how plants see and respond to vegetation proximity.

Research interests

Plants respond to vegetation proximity by eliciting a series of responses known as the shade avoidance syndrome (SAS). In our model system *Arabidopsis thaliana*, the most obvious SAS response is the induction of the hypocotyl elongation in seedlings. To modulate these responses, plants employ a large amount of regulatory components that form a complex transcriptional regulatory networks. Many of these components are transcriptional regulators, as well as specific components of the nuclear pore complex. Recently, we have expanded our research to other plant species closely related to *A. thaliana* that tolerate (instead of avoid) plant shade. This is the case of *Cardamine hirsuta*, a species that is amenable for genetic, cellular and molecular analyses. This new approach is allowing us to perform comparative genetic analyses between both model systems.

Selected research activities

- Supervisor of the PhD thesis of Sandi PAULISIC: "Mechanistic and genetic regulation of plant responses to vegetation proximity: the role of DRACULA2 and HFR1". UAB. 07/2018.
- Invited talk ("To grow or not to grow... or how to deal with too close neighbors") at the Máster y Programa de Doctorado en Biología Celular y Molecular, Universidad de Málaga. Invited by Prof. Francisco R. Cantón (20 April).
- Invited plenary speaker at the International Plant Physiology Congress - 2018. 2-5 December. Lucknow, India.

ICREA MEMOIR 2018



Bienvenido Martínez-Navarro

Institut Català de Paleoecologia Humana i Evolució Social
Humanities

Degree in Geology (1987) and PhD in Paleontology (1991). I work on Plio-Pleistocene large mammals and participate at different projects in Plio-Pleistocene sites around the World, been the co-leader of the Baza and Incarcàl projects (Spain), and the Oued Sarrat (Tunisia) and Engel Ela-Ramud Basin (Eritrea) projects, but I participate too in the research of Buia (Eritrea), Melka Wakena (Ethiopia), Atbara River (Sudan), `Ubeidiya, Gesher Benot Ya'aqov, and Bizat Ruhama (Israel), Dmanisi (Georgia), Argentario and Pirro Nord (Italy), and Vallonnet (France).

Research interests

I am a paleontologist working on Quaternary 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.

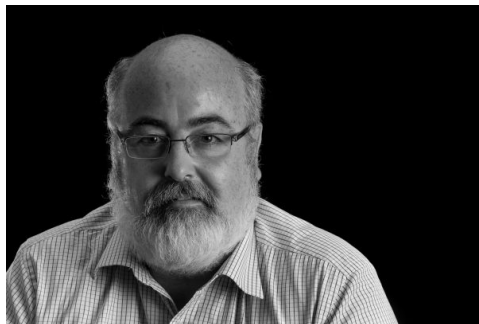
Selected publications

- Ros-Montoya S, Palombo MR, Espigares MP, Palmqvist P & **Martínez-Navarro B** 2018, 'The mammoth from the archaeo-paleontological site of Huescar-1: A tile in the puzzling question of the replacement of *Mammuthus meridionalis* by *Mammuthus trogontherii* in the late Early Pleistocene of Europe', *Quaternary Science Reviews*, 197, 336 - 351.
- Karoui-Yaakoub N, Mtimet M-S, Bejaoui S & **Martínez-Navarro B** 2018, 'Paleoenvironmental reconstruction of the Pleistocene site of Oued Sarrat (Northwestern Tunisia) using mineralogical and geochemical data', *Journal of Geology, Geography and Geoecology*, 27(2), 316-322.
- **Martínez-Navarro B** 2018, 'Oldowan Scavengers Vs. Acheulian Hunters: What Does the Faunal Record Say?', *Global Journal of Archaeology and Anthropology*, 6(1): 555-679.
- **Martínez-Navarro B**, Ros-Montoya S, Espigares M-P, Madurell-Malapeira J & Palmqvist P 2018, 'Los mamíferos del Plioceno y Pleistoceno de la Península Ibérica', *Revista PH*, 94, 206-249.

Selected research activities

During year 2018 I have conducted field research at the Engel Ela-Ramud basin (Eritrea), the Oued Sarrat basin (Tunisia), and at the Spanish sites of Baza 1 (Baza-Guadix basin, Andalusia) and Incarcàl (Banyles-Besalú basin, Catalonia). I have done lab work too at the National Museum of Georgia in Tbilisi, studying the fossil collection from the Early Pleistocene site of Dmanisi, and at the Archaeological Museum of Baza (Granada, Spain), studying the Pliocene fossil collection of Baza 1. Finally, I also have visited, and discussed with the responsables of the research, the paleoanthropological sites of Sangiran in the Java island (Indonesia).

ICREA MEMOIR 2018



Mario Martínez

Institut de Física d'Altes Energies
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 electron-proton 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 proton-antiproton 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, Scientific Manager of the Spanish High Energy Physics, and Scientific Delegate in CERN's Council. Starting in 2018, he initiated a new activity related to Gravitational Waves Physics with the Virgo interferometer.

Research interests

I originally focused on QCD studies and searches for new physics beyond the Standard Model (Higgs boson, supersymmetry, dark matter, extra-dimensions, WIMPs, etc) at particle physics collider experiments in Europe and USA. This translates into hundreds of publications, tens of conference talks, and 13 PhD theses that I supervised to date. Since 2009, I focused on the LHC physics program at CERN. In 2012 the LHC experiments (ATLAS and CMS) discovered the Higgs boson. The LHC resumed operations in 2015 with a center-of-mass energy increased from 7-8 TeV to 13 TeV. In the period 2009-2015, I led a group of almost 30 scientists from IFAE-Barcelona that analyzes the data from the ATLAS experiment. Since 2015 I took responsibilities as Head of IFAE Experimental Division, Scientific Manager of the Spanish High Energy Physics Program, and Scientific Delegate to CERN Council. In 2018 I have started at IFAE a new involvement in Gravitational Wave Physics in the Virgo interferometer.

Selected publications

- ATLAS Collaboration 2018, 'Search for an invisibly decaying Higgs boson or dark matter candidates produced in association with a Z boson in pp collisions at $\sqrt{s}=13$ TeV with the ATLAS detector', *Phys. Lett. B*, 776, 318-337.
- ATLAS Collaboration 2018, 'Search for dark matter and other new phenomena in events with an energetic jet and large missing transverse momentum using the ATLAS detector', *JHEP*, 1801, 126.
- ATLAS Collaboration 2018, 'Observation of $H\rightarrow b\bar{b}$ decays and VH production with the ATLAS detector', *Phys.Lett.*, B786, 59-86.
- ATLAS Collaboration 2018, 'Search for supersymmetry in final states with missing transverse momentum and multiple b-jets in proton-proton collisions at 13 TeV with the ATLAS detector', *JHEP*, 1806, 107.
- ATLAS Collaboration 2018, 'Search for dark matter produced in association with bottom or top quarks in 13 TeV pp collisions with the ATLAS detector', *Eur. Phys. J.*, C78, no. 1, 18.
- ATLAS Collaboration 2018, 'Search for dark matter in events with a hadronically decaying vector boson and missing transverse momentum in pp collisions at 13 TeV with the ATLAS detector', *JHEP*, 1810, 180.

Selected research activities

- Member of the LHCC committee at CERN for the revision of CMS Upgrade Technical Design Reports.
- Member of CMS Phase 2 Upgrade Group at CERN.
- Head of IFAE Experimental Division.
- PI of Gravitational Waves group at IFAE.
- Scientific Manager of the Spanish High Energy Physics Programme and Scientific Delegate in CERN's Council (until July 2018).
- One PhD Thesis concluded in 2018 and 4 additional PhD students under my direct supervision.
- One Master Thesis concluded in 2018.
- Master Lessons on Higgs and Supersymmetry at TAE2018 School (Benasque).
- Chair of 26th International Conference on Supersymmetry and Unification of Fundamental Interactions, Barcelona.
- Reviewer for Physical Review and JHEP Journals.

ICREA MEMOIR 2018



Javier Martínez-Picado

Institut de Recerca de la Sida - IrsiCaixa
Life & Medical Sciences

Javier Martínez-Picado is ICREA Research Professor at the AIDS Research Institute IrsiCaixa in Barcelona, an institution that works to advance clinical research and translate results into patients care. He is also associate professor at the University of Vic (UVic-UCC). He received his PhD from the University of Barcelona where he subsequently became associate professor lecturing on different microbiology-related subjects. In 1996, he joined the Massachusetts General Hospital as postdoctoral fellow of the Harvard Medical School, where he engaged in AIDS research. In 2000, he obtained a position as biomedical researcher of the Spanish Health Department appointed to the Hospital "Germans Trias i Pujol" in Badalona (Barcelona). Dr. Martínez-Picado serves on different government, academic and industry advisory boards and has published extensively on HIV treatment strategies and HIV pathogenesis in international journals.

Research interests

The main subject of our biomedical research is the Human Immunodeficiency Virus (HIV), a retrovirus that can lead to Acquired ImmunoDeficiency Syndrome (AIDS), a condition in humans in which the immune system begins to fail, leading to life-threatening opportunistic infections. Since the beginning of the epidemic, 76 million people have been infected with HIV, of which 35 million have died from AIDS. In 2016, 1 million people died from AIDS-related causes and 1.8 million became newly infected worldwide. Our research programs are focused on understanding how HIV causes disease at the molecular and cellular level, tackling cellular and anatomical viral reservoirs, exploring new strategies to cure HIV/AIDS and collaborating on global HIV/AIDS vaccine development projects.

Selected publications

- Salgado M, Garcia-Minambres A, Dalmau J, Jiménez-Moyano E, Viciano P, Alejos B, Clotet B, Prado JG & **Martinez-Picado J** 2018, '*Control of HIV-1 pathogenesis in viremic nonprogressors is independent of virus-Gag-specific CTL responses*', *J Virol* 92, 12, e00346-18.
- Diaz-Varela M, de Menezes-Neto A, Perez-Zsolt D, Gamez-Valero A, Segui-Barber J, Izquierdo-Useros N, **Martinez-Picado J**, Fernandez-Becerra C & **del Portillo HA** 2018, '*Proteomics study of human cord blood reticulocyte-derived exosomes*', *Sci Rep-UK* 8, 14046.
- Bejarano DA, Puertas MC, Börner K, **Martinez-Picado J**, Müller B & Kräusslich H-G 2018, '*Detailed characterization of early HIV-1 replication dynamics in primary human macrophages*', *Viruses* 10(11) 620.
- Salgado M *et al.* for the IciStem Consortium 2018, '*Mechanisms That Contribute to a Profound Reduction of the HIV-1 Reservoir After Allogeneic Stem Cell Transplant*', *Ann Inter Med*, 169(10):674-683.
- Leal L *et al.*, iHIVARNA consortium 2018. '*Phase I clinical trial of an intranodally administered mRNA based therapeutic vaccine against HIV-1 infection*', *AIDS* 32(17):2533-45.
- Abdel-Mohsen M *et al.* 2018, '*CD32 is expressed on cells with transcriptionally active HIV but does not enrich for HIV DNA in resting T cells*', *Sci Transl Med* 10, 437, eaar6759.
- Puertas MC, Gómez-Mora E, Santos JR, Moltó, J, Urrea, V, Morón-López S, Hernández-Rodríguez, A, Marfil S, Martínez-Bonet M, Mata L, Muñoz-Fernández MA, Clotet B, Blanco J, **Martinez-Picado J** 2018, '*Impact of intensification with raltegravir on HIV-1-infected individuals receiving monotherapy with boosted protease inhibitors*'. *J Antimicro Chemoth* 73, 7, 1940-1948.
- **Martinez-Picado J**, Zurakowski R, Buzón MJ & Stevenson M 2018, '*Episomal HIV-1 DNA and its relationship to other markers of HIV-1 persistence*', *Retrovirology* 15, 15.
- Adland E *et al.* 2018, '*Differential immunodominance hierarchy of CD8+ T-cell responses in HLA-B*27:05 and B*27:02-mediated control of HIV-1 infection*', *J Virol* 92(4).

ICREA MEMOIR 2018



Pedro Martínez
 Universitat de Barcelona
 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

- Ferraió C, Ben Khadra Y, Czarkwiani A, Zakrzewski A, **Martínez P**, Ascagni M, Colombo G, Bonasoro F, Candia Carnevali MD, Oliveri P & Sugni M 2018, 'Fundamental aspects of arm repair phase in different echinoderm models', *Dev. Biol.*, 433 (2) 297-309.
- Ben Khadra Y, Sugni M, Ferraió C, Bonasoro F, Oliveri P, **Martínez P** & Candia Carnevali MD 2018, 'Regeneration in stellate echinoderms: Crinoidea, Asteroidea, and Ophiuroidea', in Kloc M, Kubiak JZ (eds.), *Marine Organisms as Model Systems in Biology and Medicine, Results and Problems in Cell Differentiation*, 65:285-320.
- Perea-Atienza E, Sprecher SG & **Martínez P** 2018, 'CHARACTERIZATION OF THE bHLH FAMILY OF TRANSCRIPTIONAL REGULATORS IN THE ACOEL *S. roscoffensis* AND THEIR PUTATIVE ROLE IN NEUROGENESIS', *EvoDevo*, 9:8.
- Brauchle M, Bilican A, Eyer C, Bailly X, **Martínez P**, Ladurner P, Bruggmann R & Sprecher SG 2018, '**Xenacoelomorpha survey reveals that all 11 animal homeobox classes were present in the first bilaterians**', *Genome Biol. Evol.*, 10(9):2205-2217.
- **Martínez P** 2018, 'The comparative method in Biology and the essentialist trap', *Trap. Front. Ecol. Evol.*, 6:130.
- Arboleda E, Hartenstein V, **Martínez P**, Reichert H, Sen S, Sprecher S & Bailly X 2018, 'An Emerging System to Study Photosymbiosis, Brain Regeneration, Chronobiology, and Behavior: The Marine Acoel Symsagittifera roscoffensis', *Bioessays*, 40, 10, 1800107.

ICREA MEMOIR 2018



Ruben Martin

Institut Català d'Investigació Química
Experimental Sciences & Mathematics

Ruben Martin was born in Barcelona in 1976. He received his PhD in 2003 at the Universitat de Barcelona with Prof. Antoni Riera. In January 2004 he moved to the Max-Planck-Institut für Kohlenforschung as a Humboldt postdoctoral fellow with Prof. Alois 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 Research Professor in October 2013. During his time as group leader he has been awarded with 3 ERC projects by the European Research Council, or the 2015 RSEQ Excellent Research Award, 2017 OMCOS Award, 2017 Liebig Award, 2018 ChemSocRev Pioneering Investigator Award, 2018 Hirata Award, 2018 IOCF Award or the 2018 Premi Banc de Sabadell a les Ciències i Enginyeria, among others.

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 (CO₂) 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

- Sommer H, Julià-Hernández F, **Martín R** & Marek I 2018, 'Walking Metals for Remote Functionalization', *ACS Central Science*, 4, 2, 153 - 165.
- Serrano E & **Martin R** 2018, 'Forging Amide Bonds via Metal-Catalyzed Cross-Coupling Reactions with Isocyanates', *European Journal of Organic Chemistry*, 24, 3051 - 3064.
- Somerville R, Hale L, Gomez-Bengoa E, Burés J & **Martin R** 2018, 'Intermediacy of Ni-Ni species in sp² C-O bond cleavage of aryl esters: relevance in catalytic C-Si Bond Formation', *Journal of the American Chemical Society*, 140, 8771 - 8780.
- Tortajada A, Ninokata R & **Martin R** 2018, 'Ni-Catalyzed Site-Selective Dicarboxylation of 1,3-Dienes with CO₂', *Journal Of The American Chemical Society*, 140, 6, 2050 - 2053.
- Sun S-Z & **Martin R** 2018, 'Nickel-Catalyzed Umpolung Arylation of Ambiphilic -Bromoalkyl Boronic Esters', *Angewandte Chemie-International Edition*, 57, 14, 3622 - 3625.
- Sun S-Z, Borjesson M, Martin-Montero R & **Martin R** 2018, 'Site-Selective Ni-Catalyzed Reductive Coupling of alpha-Haloboranes with Unactivated Olefins', *Journal Of The American Chemical Society*, 140, 40, 12765 - 12769.
- Shen Y, Gu Y & **Martin R** 2018, 'sp(3) C-H Arylation and Alkylation Enabled by the Synergy of Triplet Excited Ketones and Nickel Catalysts', *Journal Of The American Chemical Society*, 140, 38, 12200 - 12209.
- Tortajada A, Julià-Hernández F, Börjesson M, Moragas T & **Martin R** 2018, 'Transition-metal-catalyzed carboxylation reactions with carbon dioxide', *Angewandte Chemie International Edition*, 57, 15948 - 15982.

Selected research activities

Selected conferences & lectures at:

1. University of Toronto
2. Nagoya University
3. Kyoto University
4. Boston College
5. Balticum Organic Syntheticum Symposium
6. 53rd Burgenstock Conference
7. 255th ACS National Meeting
8. University of Wisconsin
9. XI International School on Organometallic Chemistry
10. Barluenga Lectureship Symposium
11. Autumn Meeting French Chemical Society
12. University of Illinois-Chicago

ICREA MEMOIR 2018



Iñaki Martin-Subero

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 mechanisms underlying cancer initiation and evolution is an academically exciting 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 enhancers and transcription factors as major modulators of the transcriptional landscape, 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 research activities

Selected publications in 2018 before being ICREA Research Professor:

- Beekman R, Chapaprieta V, Russiñol N, Vilarrasa-Blasi R, Verdaguer-Dot N, Martens JHA, Duran-Ferrer M, Kulis M, Serra F, Javierre BM, Wingett SW, Clot G, Queirós AC, Castellano G, Blanc J, Gut M, Merkel A, Heath S, Vlasova A, Ullrich S, Palumbo E, Enjuanes A, Martín-García D, Beà S, Pinyol M, Aymerich M, Royo R, Puiggros M, Torrents D, Datta A, Lowy E, Kostadima M, Roller M, Clarke L, Flicek P, Agirre X, Prosper F, Baumann T, Delgado J, López-Guillermo A, Fraser P, Yaspo ML, Guigó R, Siebert R, Martí-Renom MA, Puente XS, López-Otín C, Gut I, Stunnenberg HG, Campo E, Martin-Subero JI. The reference epigenome and regulatory chromatin landscape of chronic lymphocytic leukemia. *Nat Med* 2018; 24: 868-880.
- Martín-Subero JI. Predicting leukemia relapse. *Nat Med* 2018; 24: 385-387.
- Oakes CC, Martin-Subero JI. Insight into origins, mechanisms, and utility of DNA methylation in B-cell malignancies. *Blood* 2018; 132: 999-1006.

ICREA MEMOIR 2018



Marc Martí-Renom
 Centre de Regulació Genòmica
 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-CRG. Our group is broadly interested on how RNA, proteins and genomes organize and regulate cell fate. I have published over 100 articles in international peer-reviewed journals with over 10000 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.

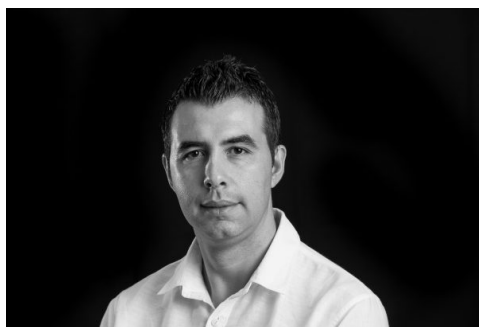
Selected publications

- **Marti-Renom MA**, Almouzni G, Bickmore WA, Bystricky K, Cavalli G, Fraser P, Gasser SM, Giorgetti L, Heard E, Nicodemi M, Nollmann M, Orozco M, Pombo A & Torres-Padilla ME 2018, 'Challenges and guidelines toward 4D nucleome data and model standards', *Nature Genetics*, 50, 10, 1352 - 1358.
- Nir G, Farabella I, Pérez Estrada C, Ebeling CG, Beliveau BJ, Sasaki HM, Lee SH, Nguyen SC, McCole RB, Chatteraj S, Erceg J, Abed JA, Martins NMC, Nguyen HQ, Hannan MA, Russell S, Durand NC, Rao SSP, Kishi JY, Soler-Vila P, Di Pierro M, Onuchic JN, Callahan S, Schreiner J, Stuckey J, Yin P, Lieberman Aiden E, **Marti-Renom MA** & Wu CT 2018, '*Walking along chromosomes with super-resolution imaging, contact maps, and integrative modeling*', *PLOS Genetics*, 14, 12, e1007872.
- Stadhouders R, Vidal E, Serra F, Di Stefano B, Le Dily F, Quilez J, Gomez A, Collombet S, Berenguer C, Cuartero Y, Hecht J, Filion G, Beato M, **Marti-Renom MA** & Graf T 2018, 'Transcription Factors Orchestrate Dynamic Interplay Between Genome Topology And Gene Regulation During Cell Reprogramming', *Nature Genetics*, 50, 2, 238 - +.
- Mas G, Blanco E, Ballaré C, Sansó M, Spill YG, Hu D, Aoi Y, Le Dily F, Shilatifard A, **Marti-Renom MA** & **Di Croce L** 2018, '*Promoter bivalency favors an open architecture of the stem cell genome*', *Nature Genetics*, 50 1452-1462.
- Kojic A, Cuadrado A, De Koninck M, Gimenez-Llorente D, Rodriguez-Corsino M, Gomez-Lopez G, Le Dily F, **Marti-Renom MA**, Losada A 2018, 'Distinct roles of cohesin-SA1 and cohesin-SA2 in 3D chromosome organization', *Nature Structural & Molecular Biology*, 25, 6, 496.

Selected research activities

- Co-Chair of a WP of LifeTime (<https://lifetime-fetflagship.eu>)
- Coordinator of 4DNucleome in Europe (<https://4dnucleome.eu>)
- Vicepresident of the SCB and Associate Editor of PLOS CB.

ICREA MEMOIR 2018



Daniel Maspoch

Institut Català de Nanociència i Nanotecnologia
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 an European Research Council (ERC) Consolidator Grant.

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) 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

- Avci C, Imaz I, Carné-Sánchez A, Pariente JA, Tasios N, Pérez-Carvajal J, Alonso MI, Blanco A, Dijkstra M, Lopez C & **Maspoch D** 2018, 'Self-Assembly of Polyhedral Metal-Organic Framework Particles into Three-Dimensional Ordered Superstructures', *Nature Chemistry*, 10, 1, 78 - 84.
- Guillelm V, Grancha T, Imaz I, Juanhuix J & **Maspoch D** 2018, 'Zigzag Ligands for Transversal Design in Reticular Chemistry: Unveiling New Structural Opportunities for Metal-Organic Frameworks', *Journal of American Chemical Society*, 140, 32, 10153-10157.
- Albalad J, Xu H, Gándara F, Haouas M, Martineau-Corcocs C, Mas-Ballesté R, Barnett, S, Juanhuix J, Imaz I & **Maspoch D** 2018, 'Single-Crystal-to-Single-Crystal Post-Synthetic Modification of a Metal-Organic Framework via Ozonolysis', *Journal of American Chemical Society*, 140, 2028–2031.
- Guillelm V, Xu H, Albalad J, Imaz I & **Maspoch D** 2018, 'Post-Synthetic Selective Ligand Cleavage by Solid-Gas Phase Ozonolysis Fuses Micropores into Mesopores in Metal-Organic Frameworks', *Journal of the American Chemical Society*, 140, 15022-15030.
- Troyano J, Carne-Sanchez A, Perez-Carvajal J, Leon-Reina L, Imaz I, Cabeza A & **Maspoch D** 2018, 'A Self-Folding Polymer Film Based on Swelling Metal-Organic Frameworks', *Angewandte Chemie-international Edition*, 57, 47, 15420-15424.
- Fuertes-Espinosa C, Gómez-Torres A, Morales-Martínez R, Rodríguez-Fortea A, García-Simón C, Gándara F, Imaz I, Juanhuix J, **Maspoch D**, Poblet JM, Echegoyen L & Ribas X 2018, 'Purification of Uranium-based Endohedral Metallofullerenes (EMFs) by Selective Supramolecular Encapsulation and Release', *Angewandte Chemie International Edition*, 57, 11294-11299.
- Troyano J, Castillo O, Martinez JI, Fernandez-Moreira V, Ballesteros Y, **Maspoch D**, Zamora F & Delgado S 2018, 'Reversible Thermochromic Polymeric Thin Films Made of Ultrathin 2D Crystals of Coordination Polymers Based on Copper(I)-Thiophenolates', *Advanced Functional Materials*, 28, 5, 1704040.

ICREA MEMOIR 2018



David Mateos

Universitat de Barcelona

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 & **Mateos D** 2018, 'Heating up exotic RG flows with holography', *Journal Of High Energy Physics*, 8, 034.
- Attems M, Bea Y, Casalderrey-Solana J, **Mateos D**, Triana M & Zilhao M 2018, 'Holographic Collisions across a Phase Transition', *Phys. Rev. Lett.*, 121, no. 26, 261601.
- Attems M, Casalderrey-Solana J, **Mateos D**, Santos-Olivan D, Sopena DF, Triana M & Zilhao M 2018, 'Paths to equilibrium in non-conformal collisions', *EPJ Web Conf.*, **175**, 07030.

Selected research activities

Invited Talks:

"Extreme Holography" given at:

- HoloQuark2018, University of Santiago de Compostela, Spain.
- 13th International Conference on Strong and Electroweak Matter (SEWM 2018), Barcelona, Spain.
- Numerical approaches to holography, quantum gravity and cosmology, University of Edinburgh, Scotland.
- Fire and ice: Hot QCD meets cold and dense matter, Saariselka, Finland.
- University of Porto.
- University of Barcelona.

Supervised Master Theses

- Utpal Sarkar, Sep 2018, University of Barcelona.
- Mikel Sanchez Garitaonandia, June 2018, University of Barcelona.

PhD Theses Evaluation

- Roberto Carcasses Quevedo, Jul 2018, University of Porto.

Teaching

- Frontiers of Theoretical Physics, Master Course at University of Barcelona.

Managerial

- Member of the advisory board of the Institute for Cosmos Sciences, University of Barcelona.
- Guarantor of the Maria de Maeztu project of the Institute for Cosmos Sciences, University of Barcelona.

ICREA MEMOIR 2018



Paolo Melchiorre

Institut Català d'Investigació Química
Experimental Sciences & Mathematics

Paolo Melchiorre is an ICREA Research Professor at the Institute of Chemical Research of Catalonia (ICIQ) in Tarragona. Paolo studied Chemistry at the University of Bologna (Italy) where he graduated in 1999. He began his doctoral studies in Chemistry working in the area of enantioselective catalysis. Before obtaining his PhD in 2003, he spent a research period in Denmark working with Prof. Karl Anker Jørgensen, Århus University, where his studies centered on asymmetric organocatalysis. Afterwards, he worked as a postdoctoral associate at the Industrial Chemistry Faculty of the Bologna University. There, he began his independent studies on the development of novel organocatalytic asymmetric transformations. In October 2007, he took a permanent position as an Assistant Professor at Bologna University. In September 2009, Paolo moved to Catalonia as ICREA Research Professor and ICIQ Senior Group Leader.

Paolo is on a period of leave since 30/09/2018.

Research interests

My main interest is on the discovery and mechanistic elucidation of new enantioselective organocatalytic and photochemical processes that address unsolved problems in synthetic methodology. My research on light-driven stereocontrolled processes aims at increasing process efficiency using a mechanistically-guided approach, controlling reaction selectivity, and reducing the environmental impact of chemical synthesis. My approach is based on the combination of two powerful fields of molecule activation, visible light photocatalysis and metal-free organocatalysis, to develop fundamentally new and ground-breaking strategies to asymmetric catalysis via the intermediacy of light-mediated open-shell redox processes and excited-state reactivity patterns. The motivation is that the use of light excitation to bring a molecule from its ground state to an electronically excited state can unlock previously inaccessible reaction pathways, thereby creating new synthetic opportunities.

Selected publications

- Silvi M & **Melchiorre P** 2018, 'Expanding the potential of enantioselective organocatalysis with light', *Nature*, 554, 7690, 40 - 48.
- Cao Z-Y, Ghosh T & **Melchiorre P** 2018, 'Enantioselective radical conjugate additions driven by a photoactive intramolecular iminium-ion-based EDA complex', *Nature Communications*, 9, 3274.
- Mazzarella D, Crisenza GEM & **Melchiorre P** 2018, 'Asymmetric photocatalytic C-H functionalization of toluene and derivatives', *J. Am. Chem. Soc.*, 140, 8439-8443.
- Wozniak L, Magagnano G & **Melchiorre P** 2018, 'Enantioselective photochemical organocascade catalysis', *Angewandte Chemie-International Edition*, 57, 4, 1068-1072.
- Bonilla P, Rey YP, Holden CM & **Melchiorre P** 2018, 'Photo-organocatalytic enantioselective radical cascade reactions of unactivated olefins', *Angewandte Chemie-International Edition*, 57, 39, 12819-12823.
- Verrier C, Alandini N, Pezzetta C, Moliterno M, Buzzetti L, Hepburn HB, Vega-Penaloza A, Silvi M & **Melchiorre P** 2018, 'Direct stereoselective installation of alkyl fragments at the beta-carbon of enals via excited iminium ion catalysis', *Acs Catalysis*, 8, 2, 1062-1066.

Selected research activities

- * One of his students has been awarded the PhD degree.
- * Supervisor of three Marie Curie Individual Fellows
- * PM has delivered lectures at 8 International congresses and symposia (e.g. 17th BMOS Brazilian Meeting in Organic Chemistry - Salvador, Brazil; Conference on Photochemistry - Munich, Germany; 8th International Forum on Homogeneous Catalysis - Shanghai, China) and 10 at international Universities or companies (e.g. University of Princeton; University of Nagoya; Merck Rahway).
- * Member of the International Advisory Boards of ChemCatChem (Wiley), *Advanced Synthesis and Catalysis* (Wiley) and *ChemPhotoChem* (Wiley)

ICREA MEMOIR 2018



Maurizio Mencuccini

Centre de Recerca Ecològica i Aplicacions Forestals
Experimental Sciences & Mathematics

BSc degree in 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).

Ranked as a Highly Cited Researcher (top 1% by citations) in 2018 in the field of Plant & Animal Science by Clarivate Analytics.

Research interests

I work at the frontier between biological and environmental sciences, interfacing with global change. My major contributions to current debates have been in the study of forest dynamics, particularly carbon and water cycles. I worked in Boreal, temperate, tropical and Mediterranean forests in Europe, N and S America, Australia and Africa. I authored >180 peer-reviewed papers. I am very involved in international debates concerning how longer and more intense droughts, as a consequence of climate change, can accelerate tree mortality. I also work closely with the forestry sector on a range of themes including growth and carbon sequestration by forests using modelling, data assimilation and remote sensing. I supervised >40 scientists, of whom >20 are still active in science (in senior academic positions or universities). I advised the Kenyan government on ecosystem payment schemes. I spoke at several high-profile conferences.

Selected publications

- Eller CB, Rowland L, Oliveira RS, Bittencourt PRL, Barros FV, da Costa ACL, Meir P, Friend AD, **Mencuccini M**, Sitch S & Cox P 2018, 'Modelling tropical forest responses to drought and El Nino with a stomatal optimization model based on xylem hydraulics', *Philosophical Transactions Of The Royal Society B-biological Sciences*, 373, 1760, 20170315.
- Nate McDowell et al. 2018, 'Drivers and mechanisms of tree mortality in moist tropical forests', *New Phytologist*, Volume 219, Issue 3, Pages 851-869.
- Da Costa ACL, Rowland L, Oliveira RS, Oliveira AAR, Binks O, Salmon Y, Vasconcelos SS, Junior JAS, Ferreira LV, **Mencuccini M** & Meir P 2018, 'Stand dynamics modulates water cycling and mortality risk in droughted tropical forest', *Global Change Biology*, 24, 1, 249-258.
- Helge Bruelheide et al. 2018, 'Global trait-environment relationships of plant communities', *Nature Ecology & Evolution*, volume 2, pages 1906-1917.

Selected research activities

- Continued involvement in five funded grants (UK NERC, Australian ARC, Spanish Ministerio)
- Led proposal writing for two grant proposals (ERC and H2020)
- Chief Editor, Editor or sub-Editor of seven international peer-reviewed journals
- President or member of selection committees in Italy and UK
- Examiner of two PhD thesis (Cordoba, Spain and Leeds, UK)
- 14 peer-reviewed papers published in 2018
- Fieldwork in the Australian tropics

ICREA MEMOIR 2018



Raúl Méndez

Institut de Recerca Biomèdica de 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

- Parras A, Anta H, Santos-Galindo M, Swarup V, Elorza A, Nieto-González JL, Picó S Hernández IH, Díaz-Hernández JI, Belloc E, Rodolosse A, Parikshak NN, Peñagarikano O, Fernández-Chacón R, **Irimia M**, Navarro P, Geschwind DH, **Méndez R*** & Lucas JJ* 2018 (*co-corresponding authors), "Autism-like phenotype and risk gene mRNA deadenylation by CPEB4 mis-splicing", *Nature*, 560(7719):441-446.

Selected research activities

- CNIO Distinguished Seminars Series "The CPEB family of RNA-binding proteins: Post-transcriptional (re)programming gene expression in homeostasis and disease". February the 2nd 2018.
- Cologne Spring Meeting 2018 "The CPEB-family of RNA-binding proteins, mechanisms of action and new functions in cell cycle and cancer". 7-9 March 2018.
- Hubrecht Institute UMC Utrecht "The CPEB-family of RNA-binding proteins, mechanisms of action and new functions in cell cycle and cancer". October 18th.
- Mini symposium "The epidemic of fatty liver diseases: risk factors, treatment and extrahepatic consequences". keynote speaker. "Circadian- and UPR-dependent control of CPEB4 mediates a translational response to counteract hepatic steatosis under ER stress". Jerusalem on November 21st, 2018.
- Karolinska Institutet (KI) "The CPEB-family of RNA-binding proteins, mechanisms of action and new functions in cell cycle and cancer". 13 Dec 2018.

ICREA MEMOIR 2018



Pablo Menéndez

Institut de Recerca contra la Leucèmia Josep Carreras
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 Investigator. In June 2013 I was appointed ICREA Research Professor and Research Director of The Josep Carreras Leukemia Research Institute-Campus Clínic, Barcelona, Spain.

Research interests

- 1.-Understanding the pathogenesis and cellular origin of MLL-rearranged and MLL-germline Acute Lymphoblastic Leukemia in children.
- 2.-Leukemic cell-niche environment interactions and targeted therapies in Acute Myeloid Leukemia. A role for BM-stroma in therapy resistance
- 3.-Deciphering the intrinsic determinants and signaling pathways underlying hematopoietic from human pluripotent stem cells.
- 4.- Adoptive T-cell-based CAR immunotherapy for B-cell, T-cell ALL and AML.

Selected publications

- Lopez-Millan B et al. 2018, *Oncoimmunology*, **7**:e1477460.
- Prieto C et al. 2018, *Leukemia*, **32**, **3**, 633 – 644.
- Diaz de la Guardia R et al. 2018, *British Journal Of Haematology*, **181**, 133-137.
- García-Peydro M et al. 2018, *J Clin Invest*, **128**(7):2802-2818
- Otterbasch et al. 2018, *HemaSphere*, **(2)**4.
- Garcia-Alegría E et al. 2018, *Stem Cell Reports*, **11**(5): 1061-1074.
- Martinez-Lage M et al. 2018, *Biomedicines*; **6**:4-14.
- Fernandez AF et al. 2018, *Hum Mol Gen*, **27**(17):3046-3059.
- Tejedor JR et al. 2018, *Epigenomics*, **10**, **7**, 903 – 923.
- Meyer C et al. 2018, *Leukemia*, **32**:273-84.
- Castella M et al. 2018, *Mol Ther Methods Clin Dev.*, **12**:134-144.

ICREA MEMOIR 2018



Arben Merkoçi

Institut Català de Nanociència i Nanotecnologia
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 260 articles and supervised 27 PhD thesis. He is co-founder of two spin-off companies, PaperDrop dedicated to nanodiagnostics and GraphenicaLab to electronic printing.

Research interests

1. Nanoparticles study and application in innovative sensing technologies. 2. Development of novel nanostructured, nanochannel flexible platforms based on nanoimprinting and ink-jet printing technologies. 3. Study of graphene related materials and their integration into biosensing platforms. 4. Development of novel paper-based platforms with improved architecture, microfluidics and enhanced detection capabilities. 5. Design and application of lab-on-a-chip devices for biosensing, drug screening and other applications.

Selected publications

- Liu J, Morales-Narvaez E, Orozco J, Vicent T, Zhong G & **Merkoci A** 2018, 'Bioluminescent nanopaper for rapid screening of toxic substances', *Nano Research*, 11, 1, 114 - 125.
- Zamora-Galvez A, Morales-Narvaez E, Romero J & **Merkoci A** 2018, 'Photoluminescent lateral flow based on non-radiative energy transfer for protein detection in human serum', *Biosensors & Bioelectronics*, 100, 208 - 213.
- Baptista-Pires L, Orozco J, Guardia P & **Merkoci A** 2018, '**Architecting Graphene Oxide Rolled-Up Micromotors: A Simple Paper-Based Manufacturing Technology**', *Small*, 14, 3, UNSP 1702746.
- Capoferri D, Alvarez-Diduk R, Del Carlo M, Compagnone D & **Merkoci A** 2018, 'Electrochromic Molecular Imprinting Sensor for Visual and Smartphone-Based Detections', *Analytical Chemistry*, 90, 9, 5850 - 5856.
- de la Escosura-Muniz A, Espinoz-Castaneda M, Chamorro-Garcia A, Rodriguez-Hernandez CJ, de Torres C & **Merkoci A** 2018, 'In situ monitoring of PTHLH secretion in neuroblastoma cells cultured onto nanoporous membranes', *Biosensors & Bioelectronics*, 107, 62 - 68.
- Yakoh A, Alvarez-Diduk R, Chailapakul O & **Merkoci A** 2018, 'Screen-Printed Electroluminescent Lamp Modified with Graphene Oxide as a Sensing Device', *Acs Applied Materials & Interfaces*, 10, 24, 20775 - 20782.
- Russo L, **Puntes V** & Merkoçi A 2018, 'Tunable electrochemistry of gold-silver alloy nanoshells', *Nano Research*, 11, pp 6336-6345.
- Quesada-Gonzalez D, Jairo GA, Blake RC II, Blake DA & **Merkoci A** 2018, 'Uranium (VI) detection in groundwater using a gold nanoparticle/paper-based lateral flow device', *Scientific Reports*, 8, 16157.
- Quesada-Gonzalez D & **Merkoci A** 2018, 'Nanomaterial-based devices for point-of-care diagnostic applications', *Chemical Society Reviews*, 47, 13, 4697 - 4709.

ICREA MEMOIR 2018



Andreas Meyerhans
 Universitat Pompeu Fabra
 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, and (iii) to generate quantitative descriptions of the virus/immune system dynamics by mathematical modeling.

Selected publications

- Gonzalez-Cao M, Karachaliou N, Santarpia M, Viteri S, **Meyerhans A** & Rosell R 2018, 'Activation of viral defense signaling in cancer', *Therapeutic Advances In Medical Oncology*, 10.
- Sadiq SK, Mirambeau G & **Meyerhans A** 2018, 'Equilibrium Model of Drug-Modulated GagPol-Embedded HIV-1 Reverse Transcriptase Dimerization to Enhance Premature Protease Activation', *Aids Research And Human Retroviruses*, 34, 9, 804 - 807.
- Bocharov G, **Meyerhans A**, Bessonov N, Trofimchuk S & Volpert V 2018, 'Interplay between reaction and diffusion processes in governing the dynamics of virus infections', *Journal Of Theoretical Biology*, 457, 221 - 236.
- Bocharov G, Volpert V, Ludewig B & **Meyerhans A** 2018, *Mathematical Immunology of Virus Infections*, Springer International Publishing AG, part of Springer Nature.
- Kobayashi-Ishihara M, Terahara K, Martinez JP, Yamagishi M, Iwabuchi R, Brander C, Ato M, Watanabe T, **Meyerhans A** & Tsunetsugu-Yokota Y 2018, 'Antisense RNA by Itself Has Regulatory Function and May Curtail Virus Reactivation From Latency', *Front Microbiol.* 9:1066.
- Olvera A, Martinez JP, Casadella M, LlanoA, Rosas M, Mothe B, Ruiz-Riol M, Arsequell G, Noguera-Julian M, Paredes R, **Meyerhans A** & **Brander C** 2018, 'Benzyl-2-Acetamido-2-Deoxy-alpha-D-Galactopyranoside Increases Human Immunodeficiency Virus Replication and Viral Outgrowth Efficacy In Vitro', *Frontiers In Immunology*, 8, 2010.
- Argilaguet J, Pedragosa M, Esteve-Codina A, Riera G, Vidal E, Peligero-Cruz C, Andreu D, Kaisho T, Bocharov G, Ludewig B, Heath S & **Meyerhans A** 2018, 'Time-resolved systems analysis of virus infection fate regulation: the XCL1-XCR1 communication axis links T cell exhaustion with effector maintenance', *European Journal Of Immunology*, 48, 21 - 21.

Selected research activities

Co-editor for Frontiers in Immunology on a special issue on "Mathematical Modeling of the Immune System in Homeostasis, Infection and Disease"

ICREA MEMOIR 2018



Marco Milán

Institut de Recerca Biomèdica de Barcelona
Life & Medical Sciences

I graduated in Biology at the Universidad Complutense (Madrid, 1991) and obtained my PhD in the laboratory of Antonio García-Bellido at the Centro de Biología Molecular-Severo Ochoa (Madrid, 1995). A couple of years later, I joined the laboratory of Stephen M. Cohen at the EMBL in Heidelberg, where I got a position as Staff Scientist until 2003. In 2003, I got my present position as ICREA Research Professor at the Institute for Research in Biomedicine (IRB Barcelona) leading the Development and Growth Control Laboratory. Since 2007, I am also the Head of the Cell and Developmental Biology Programme at the IRB. In 2018, I was appointed Head of the Mechanisms of Disease Programme at the IRB. In 2007, I was elected EMBO Young Investigator. I was Visiting Professor at the National University of Singapore in 2010. I am currently a member of the editorial boards of EMBO Journal, and Disease, Models and Mechanisms.

Research interests

Research in my lab is centered around the two following topics:

1. **Cell and tissue biology of Chromosomal Instability (CIN)**: CIN, defined as an increased rate of changes in chromosome structure and number, is a feature of most, if not all, solid tumors. Our lab has recently developed an epithelial model of CIN in *Drosophila* where the relevant cell populations and pertinent cell interactions involved in the response of an epithelial tissue to CIN have been identified. We are currently characterizing at the genetic and molecular level CIN-induced cellular behaviours such as epithelial to mesenchymal (EMT)-like cell fate transition, tissue invasiveness and senescence.
2. **Regulation of tissue size**: We use the epithelial primordium of the *Drosophila* wing to address how the size and fate of a developing organ is regulated by the activity of morphogens and their gradients.

Selected publications

- Muzzopappa M & Milan M 2018, 'Epithelial tumors: Growing from within', *Fly*, 12, 2, 127 - 132.
- Benhra N, Barrio L, Muzzopappa M & Milán M 2018, 'Chromosomal instability induces cellular invasion in epithelial tissues', *Developmental Cell*, 47, 2, 161.

Selected research activities

- Co-organizer of the "5th *Drosophila* Growth and Regeneration Meeting" Girona (Spain), 2018.

ICREA MEMOIR 2018



Ramon Miquel

Institut de Física d'Altes Energies
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 since 2015. Working mostly on the "Dark Energy Survey" (DES), "Dark Energy Spectroscopic Instrument" (DESI), and IFAE-led "Physics of the Accelerating Universe" (PAU) projects. All of them try 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

- Prat J, Sanchez C, **Miquel R** et al. (DES Collaboration) 2018, 'Galaxy bias from galaxy-galaxy lensing in the DES science verification data', *Mon. Not. R. Astron. Soc.*, 473, 1667.
- Sako M et al. (SDSS Collaboration, including **Miquel R**) 2018, 'The data release of the Sloan Digital Sky Survey-II supernova survey', *Publ. Astron. Soc. Pac.*, 130, 064002.
- Abbott TMC et al. (DES Collaboration, including **Miquel R**) 2018, 'Dark Energy Survey year 1 results: Cosmological constraints from galaxy clustering and weak lensing', *Phys. Rev. D*, 98, 043526.
- Prat J et al. (DES Collaboration, including **Miquel R**) 2018, 'Dark Energy Survey year 1 results: Galaxy-galaxy lensing', *Phys. Rev. D*, 98, 042005.
- Hoyle B et al. (DES Collaboration, including **Miquel R**) 2018, 'Dark Energy Survey year 1 results: Redshift distributions of the weak-lensing source galaxies', *Mon. Not. R. Astron. Soc.*, 478, 592.
- Gatti M et al. (DES Collaboration, including **Miquel R**) 2018, 'Dark Energy Survey year 1 results: Cross-correlation redshifts - methods and systematics characterization', *Mon. Not. R. Astron. Soc.*, 478, 2006.
- Abbott TMC et al. (DES Collaboration, including **Miquel R**) 2018, 'Dark Energy Survey year 1 results: A precise H_0 estimate from DES Y1, BAO, and D/H data', *Mon. Not. R. Astron. Soc.*, 480, 3879.

Selected research activities

- Adviser of the PhD thesis "Cross-correlations in the Dark Energy Survey: from redshift distribution inference to probes of gravity with the Cosmic Microwave Background," by Pauline Vielzeuf (UAB, 26/10/2018). Grade: Excellent cum laude.
- Member of the Scientific Advisory Committee of APPEC, the Astroparticle Physics European Consortium of funding agencies.
- Spanish representative in the Management Committee of the "Dark Energy Survey" (DES) Collaboration.
- Member of the DES Publication Board, the DES Builders' Committee, and the Advisory Board to the DES Director.
- Member of the Speakers Board of the "Dark Energy Spectroscopic Instrument" (DESI) Collaboration.

ICREA MEMOIR 2018



Jordi Miralda-Escudé
 Universitat de Barcelona
 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 have been back to Catalonia with an ICREA position since 2005, and I am at present doing research on astrophysics and cosmology at the Institut de Ciències del Cosmos at the University of Barcelona.

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 in space, dark matter and dark energy in the Universe, the intergalactic medium, the formation of massive black holes and the dynamics of nuclear regions of galaxies, and gravitational lensing as a probe to the nature of dark matter. Over the last few years I have focused on the large-scale distribution of intergalactic gas probed by spectroscopic surveys of quasars in which hydrogen and heavy elements are observed in absorption. This is revealing crucial clues on both the initial conditions of the Universe and the formation of galaxies. At present I am also 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.

Selected publications

- Pérez-Ràfols I, Font-Ribera A, **Miralda-Escudé J** et al. 2018, 'The SDSS-DR12 large-scale cross-correlation of damped Lyman alpha systems with the Lyman alpha forest', *Monthly Notices of the Royal Astronomical Society*, vol. 473, no. 3, pp 3019-3038.
- Draine BT & **Miralda-Escudé J** 2018, 'Absorption by Spinning Dust: A Contaminant for High-Redshift 21-cm Observations', *The Astrophysical Journal Letters*, vol. 858, no. 2, pp L10-14.
- Mas-Ribas L, Riemer-Sorensen S, Hennawi JF, **Miralda-Escudé J**, O'Meara JM, Perez-Rafols I, Murphy MT & Webb JK 2018, 'Origin of Metals around Galaxies. I. Catalogs of Metal-line Absorption Doublets from High-resolution Quasar Spectra', *Astrophysical Journal*, 862, 1, 50.
- Gontcho A Gontcho S, **Miralda-Escudé J**, Font-Ribera A, Blomqvist M, Busca NG & Rich J 2018, 'Quasar-CIV Forest Cross-correlation with SDSS DR12', *Monthly Notices of the Royal Astronomical Society*, vol. 480, no. 1, pp 610-622.
- Dai L, Venumadhav T, Kurov AA & **Miralda-Escudé J** 2018, 'Probing Dark Matter Subhalos in Galaxy Clusters Using Highly Magnified Stars', *Astrophysical Journal*, 867, 1, 24.
- Pérez-Ràfols I, **Miralda-Escudé J**, Arinyo-i-Prats A, Font-Ribera A, Mas-Ribas L 2018, 'The Cosmological Bias Factor of Damped Lyman Alpha Systems: Dependence on the Metal Line Strength', *Monthly Notices of the Royal Astronomical Society*, vol. 480, no. 4, pp 4702-4709.
- Croft RAC, **Miralda-Escudé J**, Zheng Z, Blomqvist M & Pieri M 2018, 'Intensity Mapping with SDSS/BOSS Lyman-alpha emission, quasars, and their Lyman-alpha Forest', *Monthly Notices of the Royal Astronomical Society*, vol. 481, no. 1, pp 1320-1336.
- Arinyo-i-Prats A, Mas-Ribas L, **Miralda-Escudé J**, Pérez-Ràfols I & Noterdaeme P 2018, 'A Metal-Line Strength Indicator for Damped Lyman Alpha Systems at Low Signal-to-Noise', *Monthly Notices of the Royal Astronomical Society*, vol. 481, no. 3, pp 3921-3934.

ICREA MEMOIR 2018



Morgan W. Mitchell
Institut de Ciències Fotòniques
Experimental Sciences & Mathematics

Born in 1968 in Palo Alto, California, USA, Morgan Mitchell earned his PhD 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 and Jean-Michel Raimond in Paris he worked on experimental cavity quantum electrodynamics with cold atoms. At Reed College he developed ultra-low power entangled photon sources, and in the group of Aephraim Steingberg in Toronto he demonstrated the first multi-photon NooN states and quantum process tomography. In 2004 he joined ICFO as a Junior Group Leader. His group "atomic quantum optics" uses hot, cold, and ultra-cold atoms to study light-matter interactions at the most fundamental, quantum mechanical level. He was awarded an ERC Starting Grant in 2011, an ERC Proof-of-Concept Grant in 2016, and has been recognized with a Vanguardia de la Ciencia award in 2012, Ehrenfest Prize and Kavli Publication Prize in 2016.

Research interests

Morgan Mitchell leads the atomic quantum optics group at ICFO, devoted to quantum optics and atomic physics for quantum technology and quantum foundations. The group has experimental programmes in individual quantum systems (single neutral atoms), ultracold atoms (spinor Bose-Einstein condensates), high-density warm atomic ensembles, squeezed light, and entangled photons. We develop quantum aspects of light-matter interactions, e.g. quantum non-demolition measurement, for application in sensing, entanglement generation, and foundations of physics. The quantum optics of optical magnetometers, currently the best sensors for low-frequency magnetic fields, is of particular interest. Spin-offs from this research include extremely fast, high-quality quantum random number generators.

Selected publications

- Jimenez-Martinez R, Kolodynski J, Troullinou C, Lucivero VG, Kong J, **Mitchell MW** 2018, 'Signal Tracking Beyond the Time Resolution of an Atomic Sensor by Kalman Filtering', *Physical Review Letters*, 120, 4, 040503.
- Zielinska JA & **Mitchell MW** 2018, 'Atom-resonant squeezed light from a tunable monolithic ppRKTP parametric amplifier', *Optics Letters*, 43, 4, 643 - 646.
- The BIG Bell Test Collaboration 2018, 'Challenging local realism with human choices', *Nature*, 557, 212-216.

ICREA MEMOIR 2018



Sandra Montón-Subías

Universitat Pompeu Fabra
Humanities

1988: BSc Geography and History (Universitat de Barcelona, Spain). 1993: PhD History (Universitat Autònoma de Barcelona). I began my research at Universitat Autònoma de Barcelona, studying processes of emerging complexity in Mediterranean Bronze Age societies. Since then, I have worked at the University of Athens, at the McDonald Institute for Archaeological Research, at the University of Cambridge, at the Universitat Autònoma de Barcelona, at Universitat Pompeu Fabra, at the University of California Santa Cruz, at the Northwestern University, at the National Taiwan University, at the University of Guam, at German Archaeological Institute/Roman-Germanic Commission in Frankfurt and at the University of Oslo. I was co-chair of the EAA working party AGE <http://www.upf.edu/materials/fhuma/age/> for the period 2009-2015.

Research interests

I am an archaeologist with broad interests in social and theoretical archaeology. My current fields of research are the Archaeology of Modern Iberian Colonialism and Gender Archaeology. Most specifically, I am analysing the consequences that Spanish colonialism and Jesuit missionization had on the native Chamorro populations of Guam and the Mariana Islands (western Pacific), with a specific focus on the effects that such domination had on power relationships, gender systems and maintenance activities. As a historical archaeologist, I converge historical written documents and material culture in my research. Although I focus on the study of modern colonial processes, I investigate much broader cultural sequences that include previous developments of local oral populations, thus bridging the long-debated prehistory/history divide.

Selected publications

- **Montón-subías S** & Hernando A 2018, 'Modern Colonialism, Eurocentrism and Historical Archaeology: Some Engendered Thoughts', *European Journal of Archaeology*, 21(3): 455-471.
- **Montón-Subías S** & Meyer W 2018, 'Engendered Archaeologies', in: Smith C. (eds) *Encyclopedia of Global Archaeology*, Springer, Cham.
- **Montón Subías S**, Bayman J & Moragas N 2018, 'Arqueología del Colonialismo español en la Micronesia: Guam y las poblaciones Chamorras', in Marín Aguilera B (ed) *Repensar el Colonialismo. Iberia, de colonia a potencia colonial*, JAS Arqueología. Pp. 303-336.
- **Montón-Subías S** & Moral E 2018, 'Gender, Feminist, and Queer Archaeologies: A Spanish Perspective' in: Smith C (eds) *Encyclopedia of Global Archaeology*, Springer, Cham.

Selected research activities

Grants and Research Groups:

- Principal Coordinator in *Cultura Material, Colonialismo y Género. Una perspectiva arqueológica*, HAR2016-77564-C2-1-P, Ministerio de Economía y Competitividad (2017-2019).
- Principal Investigator in *ABERIGUA. Arqueología del Colonialismo Ibérico en Guam, Pacífico occidental*, Fundación Palarq (2018-2019), MECD (2018-2019).
- Coordinator of the UPF Research Group "Colonialism, Gender and Materialities" (CGyM).

Invited talks, conferences and workshops:

- SAA-Amerind Workshop "Identity, Cultural Persistence and Transformation among Spanish Colonialisms". Dragoon, USA.
- Iberian Cultural Contact and Colonialism in the Island of Guam: the ABERIGUA Project. EAA, Barcelona.
- Food and Cuisine in Spanish Colonial Guam (17th and 18th Centuries). EAA, Barcelona.
- Gender and Maintenance Activities in the First Globalization. The example of Colonial Guam 1668-1700. EAA, Barcelona.
- Chamorros, Jesuitas y Corporalidad durante la Colonización Temprana de las Islas Marianas. TAAS, Ibarra, Ecuador.

Other:

- Co-director of the 2018 San Dionisio's Church and Cemetery and Palasyo excavations, Umatac, Guam.
- Section Editor of *Encyclopedia of Global Archaeology*.
- Master Thesis "Guahan: inafa'maolek", Carmen A. Granell (September 12).

ICREA MEMOIR 2018



Massimo Motta
 Universitat Pompeu Fabra
 Social & Behavioural Sciences

Massimo Motta (BSc Bocconi, Milan, 1987; PhD Louvain, 1991) is Research Professor at ICREA, Universitat Pompeu Fabra (UPF) and Barcelona GSE. He was Chief Economist at the European Commission in 2013-2016, where he coordinated the EC's economic analysis and advised the Competition Commissioner on antitrust, merger and state aid. He was previously professor at Univ. Bologna (2007-2010), European University Institute, Florence (1998-2008) and UPF (1992-1998). He is Research Fellow of CEPR, of CESifo, and a Fellow of the European Economic Association. His research is on industrial organization and has been published in the top international journals. Massimo's book on *Competition Policy: Theory and Practice* (Cambridge, 2004) is the standard reference on antitrust. His new (co-authored) book on *Exclusionary Practices* (Cambridge) was published in January 2018.

Research interests

Together with C. Fumagalli (Univ. Bocconi, Milan) I have been working on practices - such as predation, rebates, exclusive contracts, tying, refusal to deal - that dominant firms may adopt to exclude rivals from the market. Currently, we are studying how firms which have vertically-related or complementary products may use conduct such as refusal to supply or tying to exclude rivals. Another stream of work (with E Tarantino, at Mannheim Univ.) deals with the effects of mergers on investment and innovation, and on potential competition. Both sets of issues are particularly important in today's digital economies.

Selected publications

- Fumagalli C, **Motta M** & Calcagno C 2018, 'Exclusionary Practices. The Economics of Monopolisation and Abuse of Dominance', *Cambridge University Press*, Cambridge.
- Fabra N & **Motta M** 2018, 'Assessing Coordinated Effects in Merger Cases', in *Handbook of Game Theory and Industrial Organization*, vol. II, (L. Corchon and M. Marini eds.), Edward Elgar, pp.91-122.

Selected research activities

Keynote and invited talks:

- MEF Annual Lecture, Università di Napoli Federico II;
- Mannheim Centre for Competition and Innovation, Annual Conference;
- Lisbon Conference on Competition Law and Economics;

International Competition Network, Working Group on Unilateral Conduct, University of Stellenbosch, South Africa;

Association of Competition Economics, University of Bologna

Organisation of intensive courses (Barcelona Graduate School of Economics)

- "Quantitative methods for competition analysis",
- "Competitive effects of mergers",
- "Abuse of dominance".

ICREA MEMOIR 2018



Salvador Moyà-Solà
 Institut Català de Paleontologia
 Life & Medical Sciences

PhD in Geological Sciences by the Universitat Autònoma de Barcelona in 1983. Researcher of the Institute of Paleontology M. Crusafont from 1985 to 2005. ICREA Research Professor in the Unit of Biological Anthropology of the Faculty of Biosciences of the Universitat Autònoma of Barcelona in 2006. ICREA Research Professor and Director of the Catalan Institute of Palaeontology (Bellaterra-Sabadell) since 2006. He participates in several national and international projects, among them the RHOI Project (Revealing Hominid Origin Initiative, directed by Dr. T.D. White from the University of California at Berkeley (USA)). He has published more than 300 papers in journals like *Science*, *Nature*, *PNAS*, *Trends in Ecology and Evolution*, *Brain Behaviour and Evolution*, *Biological Journal of the Linnean Society*, *American Journal of Anthropology*, and many others.

Research interests

My main research interest is Hominoid (Primates) evolution in the context of the Neogene climatic change, considering faunistic and paleoecological context. The main objective is to reconstruct their evolutionary history, in particular the origin and first radiation of this group. This discussion currently tackles the question of the role of the Mediterranean area as the cradle of Hominidae (great ape and human clade) and of the two main clades that form this group, the Asian (Pongo) and the African one (Pan, Gorilla and Homo). The Vallès-Penedès Neogene basin yields an outstanding record between 15 and 8 Ma that permits to reconstruct the 7 million years of evolution of this group on the European continent. Currently the interest is centred on the section of Els Hostalets de Pierola (Anoia, Barcelona). The final objective is to determine if Hominoids, as currently defined, is a monophyletic group or they're originated independently from more primitive non-orthograde forms.

Selected publications

- Alba DM, **Moya-Sola S**, Demiguel D, Casanovas-Vilar I, Garces M, Robles JM, Madurell-Malapeira J & Almecija S 2018, 'Ape quest in the Valles-Penedes Basin (2014-2017): Fieldwork results and prospects for the future', *American Journal Of Physical Anthropology*, 165, 7 - 7.
- Urciuoli A, Pina M, **Moya-Sola S** & Alba DM 2018, 'The inner ear of Epipliopithecus vindobonensis: preliminary results', *American Journal Of Physical Anthropology*, 165, 281 - 281.
- Alba DM, Casanovas-Vilar I, Furio M, Garcia-Paredes I, Angelone C, Jovells-Vaque S, Lujan AH, Almecija S & **Moya-Sola S** 2018, 'Can Pallars i Llobateres: A new hominoid-bearing locality from the late Miocene of the Valles-Penedes Basin (NE Iberian Peninsula)', *Journal Of Human Evolution*, 121, 193 - 203.
- Urciuoli A, Zanolli C, Fortuny J, Almecija S, Schillinger B, **Moya-Sola S** & Alba DM 2018, 'Neutron-based computed microtomography: Pliobates cataloniae and Barberapithecus huerzeleri as a test-case study', *American Journal Of Physical Anthropology*, 166, 4, 987 - 993.
- Minwer-Barakat R, Marigo J & **Moya-Sola S** 2018, 'The primate remains from Roc de Santa (Late Eocene, NE Spain) revisited: New taxonomic allocation', *Journal Of Human Evolution*, 121, 254 - 259.

ICREA MEMOIR 2018



Aitor Mugarza

Institut Català de Nanociència i Nanotecnologia
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 in USA, and at the Materials Science Institute of Barcelona (ICMAB). In 2007 he joined what used to be the Catalan Institute of Nanotechnology (now the ICN2) with a Ramon y Cajal Fellowship, becoming group leader of the ICN2 Atomic Manipulation and Spectroscopy Group in 2013. He is author of 60+ articles, and of 45+ 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

- Moreno C, Vilas-Varela M, Kretz B, Garcia-Lekue A, Costache MV, Paradinas M, Panighel M, Ceballos G, **Valenzuela SO**, Peña D & **Mugarza A** 2018, 'Bottom-up synthesis of multifunctional nanoporous graphene', *Science*, vol. 360, Issue 6385 pp 199-203.
- Moreno C, Paradinas M, Vilas-Varela M, Panighel M, Ceballos G, Peña D & **Mugarza A** 2018, 'On-surface synthesis of superlattice arrays of ultra-long graphene nanoribbons', *Chemical Communications*, vol. 54, pp 9402-9405.
- Rübmann P, Mahatha SK, Sessi P, Valbuena MA, Bathon T, Fauth K, Godey S, **Mugarza A**, AKokh K, Tereshchenko O, Gargiani P, Valvidares M, Jiménez E, Brookes N, Bode M, Bihlmayer G, Blügel S, Mavropoulos P, Carbone C & Barla A 2018, 'Towards microscopic control of the magnetic exchange coupling at the surface of a topological insulator', *J. Phys. Mater.* vol.1, pp 015002.
- Ortega JE, Vasseur G, Piquero-Zulaica I, Matencio S, Valbuena MA, Rault JE, Schiller F, Corso M, **Mugarza A** & Lobo-Checa J 2018, 'Structure and electronic states of vicinal Ag(111) surfaces with densely kinked steps', *New Journal of Physics*, vol. 20, pp 073010.

Selected research activities

Invited talks (selected):

- 'Engineering nanoporous graphene with atomic precision', A. Mugarza, in *Recent Progress in Graphene & 2D Materials Research*, Guilin, China, October 22-25 2018.
- 'Tuning charge and spin interactions at hybrid organic/metal and organic/topological insulator interfaces', A. Mugarza, in *10th International School and Conference on Physics and Applications of Spin Phenomena in Solids*, Linz, Austria, August 5-9 2018.
- 'Bottom-up synthesis of graphene nanostructures: from 0D dots, to 1D ribbons, to 2D porous graphene', A. Mugarza, in *7th International Conference NANOSEA NANO-Structures and Nanomaterials Self-Assembly*, Carqueiranne, France, July 2-6 2018.

Patents: "A nanoporous graphene structure and method for preparation thereof". Nº: EP18382088.5. Country: European Union.

ICREA MEMOIR 2018



Kilian Muñiz

Institut Català d'Investigació Química
Experimental Sciences & Mathematics

Kilian Muñiz is an ICREA Research Professor at the Institute of Chemical Research of Catalonia (ICIQ), in Tarragona. He was born in 1970 in Hildesheim, Germany. From 1990 to 1996 he studied Chemistry at the Universities of Hannover (Germany), Oviedo (Spain) and Imperial College London (UK), and in 1996 he graduated with a Diploma in Chemistry from Hannover University. From 1996 to 1998 he worked in the group of Prof. Carsten Bolm at the RWTH Aachen (Germany) to obtain his PhD in Organic Chemistry. In 1999/2000 he carried out research as a postdoctoral associate with Prof. Ryoji Noyori at Nagoya University (Japan). He started his independent research in 2001 at Bonn University (Germany) as a Liebig fellow and defended his Habilitation Thesis in 2005. The same year he moved to the University of Strasbourg as an Associate Professor. He was promoted to Full Professor in 2006. In November 2009 he moved to Spain and joined ICIQ as Group Leader. He has been with ICREA since 2010.

Research interests

Our research deals with the discovery of novel chemical transformations to provide direct access to nitrogenated molecules, which are key players in a variety of compounds of biological, medicinal and pharmaceutical interest. The group continues devising entirely new oxidative amination reactions based on transformations that do not require any metal promoters. To this end, defined monomeric iodine reagents and catalysts in the oxidation states of +I and +III have been developed. These serve as versatile tools in a variety of novel enantioselective amination reactions. This chemistry is continuously expanded to iodine catalyses and related bromine catalyses for aliphatic C-H amination in order to pioneer effective conceptual tools for advanced oxidation at different stages of chemical synthesis, including building block generation and late-stage diversification. Recently, this amination catalysis has been applied to the synthesis of complex biologically relevant natural products.

Selected publications

- Bergès J, García B & **Muñiz K** 2018, 'An Electrophilic Bromine Redox Catalysis for the Synthesis of Indole Alkaloid Building Blocks by Selective Aliphatic C-H Amination', *Angewandte Chemie-International Edition*, 57, 15891-15895.
- Del Castillo E, Martínez MD, Bosnidou A, Duhamel T, O'Broin C, Zhang H, Escudero-Adán E, Martínez-Belmonte M & **Muñiz K** 2018, 'Multiple Halogenation of Aliphatic C-H Bonds within the Hofmann-Löffler Manifold', *Chemistry A European Journal*, 24, 17225-17229.
- Becker P, Duhamel T, Martínez C & **Muñiz K** 2018, 'Designing Homogeneous Bromine Redox Catalysis for Selective Aliphatic C-H Bond Functionalization', *Angewandte Chemie-International Edition*, 57, 5166 - 5170.
- Duhamel T, Stein C, Martínez C, Reiher M & **Muñiz K** 2018, 'Engineering Molecular Iodine Catalysis for Alkyl-Nitrogen Bond Formation', *ACS Catalysis*, 8, 3918 - 3925.
- **Muñiz K** 2018, 'Promoting Intermolecular C-N Bond Formation under the Auspices of Iodine(III)', *Accounts of Chemical Research*, 51, 1507 - 1519.
- Herold S, Bafaluy D & **Muñiz K** 2018, 'Anodic benzylic C(sp³)-H amination: unified access to pyrrolidines and piperidines', *Green Chemistry*, 20, 3191 - 3196.

Selected research activities

- Vice-President of the Organic Section of the RSEQ (Royal Spanish Chemical Society)
- Advisory Board Member of Advanced Synthesis & Catalysis, The Journal of Organic Chemistry and The Chemical Record
- Organizer of International Scientific Events (Japanese-Spanish Symposium, Barluenga Lectureship, ICIQ-Intecat Winter-School)
- Thesis Evaluation Member for international and national PhD Theses
- Expert evaluator (Fachgutachter) for the Alexander-von-Humboldt Foundation
- Member of national and international evaluation panels
- Teacher of Master courses at the University Rovira Virgili of Tarragona

ICREA MEMOIR 2018



Pura Muñoz-Cánoves
 Universitat Pompeu Fabra
 Life & Medical Sciences

Pura Muñoz-Cánoves studied Pharmacology in the University of Valencia. She obtained her PhD in 1990 in the Autonomous University of Madrid for work carried out at The Scripps Research Institute (La Jolla, USA). She did postdoctoral work at the University of California-San Diego and The Scripps Research Institute, and in 1994 she joined the Cancer Research Institute in Barcelona as a postdoc, becoming an independent group leader in 1997. In 2002 her group moved to the Center for Genomic Regulation (CRG) in Barcelona, and she became a senior scientist in 2007 in that Institution. Late 2008 she moved to the Pompeu Fabra University (UPF) after becoming an ICREA Research Professor. Through the UPF, she holds a collaborative agreement with the Spanish National Center on Cardiovascular Research. Her research focuses on deciphering the mechanisms regulating skeletal muscle regeneration and growth, in physiology and disease.

Research interests

Our main objective is to understand the mechanisms regulating stem cell homeostasis and regenerative functions: how stem cells maintain quiescence, are activated, transit to proliferative expansion and differentiation, and finally self-renew, and how they interact with the external inflammatory environment. Research is specially focused on stem cells of skeletal muscle. Recent studies from the laboratory have shed light on 1) age-associated muscle decline and wasting (sarcopenia) and loss of stem-cell regenerative functions with aging; and 2) the physiopathology of muscular dystrophies, with a specific interest in the contribution of inflammation and fibrosis to dystrophy progression. These findings are relevant for regenerative medicine.

Selected publications

- **Muñoz-Cánoves P** & Huch M 2018, 'Definitions for adult stem cells debated', *Nature*. 563(7731):328-329.
- Sousa-Victor P, García-Prat L & **Muñoz-Cánoves P** 2018, 'New mechanisms driving muscle stem cell regenerative decline with aging'. *Int J Dev Biol.*; 62:583-590.
- Baar MP, Perdiguero E, **Muñoz-Cánoves P** & de Keizer PL 2018, 'Musculoskeletal senescence: a moving target ready to be eliminate', *Current Opinion In Pharmacology*, 40, 147 - 155.
- Chang NC, Sincennes MC, Chevalier FP, Brun CE, Lacaria M, Segalés J, **Muñoz-Cánoves P**, Ming H & Rudnicki MA 2018, 'The Dystrophin Glycoprotein Complex Regulates the Epigenetic Activation of Muscle Stem Cell Commitment', *Cell Stem Cell*, 22, 5, 755

Selected research activities

Conferences, Invited Speaker:

- International Congress on Cell Biology (ICBB 2018), India.
- Muscle Biology in Health and Disease Conference, Singapore.
- Muscle Development, Regeneration and Disease Meeting, Berlin.
- 2nd International Conference on Tissue Repair and Regeneration and Fibrosis, Greece.
- 2018 AGE Meeting in Philadelphia, USA.
- FASEB: Skeletal Muscle Satellite Cells and Regeneration, USA.
- Jena Aging Meeting (JAM), Germany.
- EMBO Workshop Cellular signalling and cancer therapy, Croatia.
- Conference on Molecular mechanisms of muscle wasting during aging and disease, Switzerland.
- 9th Annual Robert and Arlene Kogod Center on Aging Conference, USA.
- Stem Cell Seminar series of Columbia Stem Cell Initiative (CSCI), USA.
- The 11th Guangzhou International Conference on Stem Cell and Regenerative Medicine "Stem cell encounters by the Pearl River", China.

ICREA MEMOIR 2018



Silvia Muro

Institut de Bioenginyeria de Catalunya
Life & Medical Sciences

Dr. Muro obtained her PhD in Sciences from Universidad Autónoma de Madrid and then moved to University of Pennsylvania as a Postdoctoral Associate and Research Assistant Professor in Pharmacology. In 2008 she joined the Bioengineering Department and the Institute for Bioscience and Biotechnology Research at the University of Maryland, where she was a tenured Associate Professor since 2012. Since November 2017, she is an ICREA Professor in the Institute for Bioengineering of Catalonia. Dr. Muro has published 80+ articles and chapters in drug delivery and has received awards from the Controlled Release Society, the American Society for Nanomedicine, the UMD Outstanding Life Sciences Invention in 2011, the Junior Faculty Outstanding Engineering Research award, and is a member of the NIH Nanomedicine Study Section.

Research interests

Dr. Muro's research sits at the interface between molecular-cellular biology and nanotechnology-drug delivery. Her lab studies the biological mechanisms ruling how our cells and tissues transport cargoes to precise destinations within our bodies, and then applies this knowledge toward the design of "biologically-controlled" nanodevices for improved delivery of therapeutic agents 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 non-invasive, efficient, and specific access within the body and its cells, to enable effective treatment of these life-threatening disorders and other maladies characterized by similar pathological traits.

Selected publications

- **Muro S** 2018, 'Alterations in Cellular Processes Involving Vesicular Trafficking and Implications in Drug Delivery', *Biomimetics*, 3, 3, 19.

Selected research activities

Talks:

Parameters ruling receptor-mediated transport of nanotherapeutics. (Feb 2018) U.S. National Institutes of Standards and Technology, Gaithersburg, MD, USA.

Receptor-targeted drug delivery: biological mechanistic and translational applications (Jun. 2018) Summer seminar series of the Johns Hopkins Institute for Nanobiotechnology (INBT), Baltimore, MD, USA.

Optimizing transport of nanomedicines across the blood-brain barrier (Jul. 2018) 2nd meeting on Innovations and State of the Art in Dementia Research (ISADR), Valencia, Spain. *Keynote speaker*

Drug carrier transport across the blood-brain barrier. (Oct. 2018) Symposium of the Italian Chapter of the Controlled Release Society, Padua, Italy.

Nanoscale therapeutics and novel targets for drug delivery (Nov. 2018) Genetic, Rare and Immune Disorders Symposium (GRIDS), Fairfax, VA, USA.

Grants:

-EXPLORA-MINECO BBB2GATE (PI) 09/18 - 08/20. Controlling the differential transport of therapeutic cargoes into versus across the BBB.

-UM Ventures Seed Grant (PI) 06//18 - 05/19. Peptides for transport of therapeutics and their carriers in mouse models and humans.

Panels:

-USA NIH Nanomedicine; -France ANR; -Netherlands NWO; -ERC starting grant

Patents:

Muro S, Chen J, Solomon M, Gray K. ICAM-1 targeted fusion enzymes. US provisional.

ICREA MEMOIR 2018



Toni Naco del Hoyo
 Universitat de Girona
 Humanities

Prof. Toni Naco del Hoyo (PhD 1996, UAB) is a Roman Historian. A former Fulbrighter (UC Berkeley, 2004), before joining ICREA in 2009 he held Catalan and Spanish funded postdoctoral positions at Oxford University for 3 years in 1998-2002. In 2004-9 he held a Ramón y Cajal Fellowship at UAB. Research awards as PI: H.F. Guggenheim Foundation (2007), RICIP (2010; 2012-3), Spanish R+D Grants (2011-3; 2015-8), Acción Complementaria (2011), ARCS (2012), Icrea Conference Award (2012), Margo Tytus Visiting Fellowship at Cincinnati (2014); 4-year grant of archaeological research (2018-21). Since 2011 he has been yearly Visiting Scholar at Classics (Oxford). He has sponsored 3 postdocs (2012-4; 2018-20). In 2015 he moved to Universitat de Girona, where he is the PI of a funded SGR Consolidated Group (2017-20) leading 22 researchers from Girona and Museu d'Arqueologia de Catalunya. He has successfully supervised 4 PhD dissertations and he is currently supervising 5 further theses.

Research interests

Prof. Naco del Hoyo's research and interests lie predominantly with the history and archaeology of the Roman Republic. Thanks to Spanish funding (2015-8) he has led a team on the Roman intervention in the West. Also, he has conducted research on Republican taxation (recently revisited), collateral damage, garrisoning strategies, asymmetrical warfare, military intelligence and logistics, crisis management, international relations and peacebuilding studies in the Classical World. Recently, he has co-edited a book on Rome's military intervention in pre-Sertorian Hispania (Barcelona 2017). Likewise, late in 2017 he co-edited a volume on *War, Warlords and Interstate relations in the Ancient Mediterranean* (Leiden-Boston 2018), with a high profile line-up of multidisciplinary contributors. There have been positive reviews submitted to *Classical Review* (by H. Cornwell, Birmingham) and to *Bryn Mawr Classical Review* (by B. Turner, Portland State).

Selected publications

- **Naco del Hoyo T** & López-Sánchez F (eds.) 2018, '*War, Warlords and Interstate Relations in the Ancient Mediterranean*', Brill Editions, Impact of Empire Series n.28, Leiden-Boston.
- **Naco del Hoyo A** & López-Sánchez F 2018, 'Introduction. 'Multipolarity' and 'warlords' prior to the Roman Empire', in **Naco del Hoyo A**, López-Sánchez F (eds.), *War, Warlords and Interstate Relations...* (Leiden-Boston) 1-14.
- **Naco del Hoyo T** & Principal J 2018, 'Q. Sertorius, a 'warlord' in Hispania?', in **Naco del Hoyo T** & López-Sánchez F (eds.), *War, Warlords and Interstate Relations...* (Leiden-Boston), 380-414.
- Duran M, López F, Mestres I, **Naco del Hoyo T** & Principal J 2018, 'Evidencias numismáticas en un espacio logístico tardorrepublicano: el Camp de les Lloses (Tona, Barcelona, Cataluña)', (a cura di) Pardini G, Parise N, Marani F, *Numismatica e Archeologia. Monete, stratigrafie e contesti. Dati a confronto. Workshop Internazionale di Numismatica (Roma, 28-30 settembre 2011)*, Roma, Edizioni Quasar, 475-486.
- **Naco del Hoyo T** & Arrayás Morales I, Busquets Artigas S et al. 2018, 'Roma o Mitrídates. Las póleis griegas en su última encrucijada (89-63 a.C.): cuatro casos de estudio', *Faventia*, 37, 2015, 35-55.

Selected research activities

- **PI** of 2017SGR-1688, a funded *Consolidated Research Group in Prehistory, Archaeological Heritage and Antiquity* (2018-20).
- **PI** of 437-K117, a funded *Project in Archaeological and Paleontological Research* (2018-21).
- **Responsible** for a '*Beatriu de Pinós*' Postdoc Researcher in Ancient History (Dr D. Gómez-Castro), Dec 2018 to Nov 2020.
- **Lectures** presented in Bochum, Girona and Oxford.
- **3 research stays** as a *Visiting Scholar (Classics, Oxford)*.
- **Workshop organiser**: *Espacios de integración en el NE de la Hispania Citerior*, Girona, Sep. 28, 2018; and (along J. Principal & M. Fernández-Götz): *From battlefields to memory sites. Conflict archaeology through the ages*, Barcelona, 30 Nov-Dec 1, 2018.
- **Evaluation reports** for research agencies, scholarly journals, academic publishers.

ICREA MEMOIR 2018



Rosemarie Nagel
 Universitat Pompeu Fabra
 Social & Behavioural Sciences

Rosemarie Nagel received her PhD in economics in 1994 from the University of Bonn with Reinhard Selten as her advisor. In 1994-1995 she was post doc with Al Roth, University Pittsburgh. Since 1995 she has been working in the Department of Economics and Business in Universitat Pompeu Fabra; in 2006 she was promoted to full professor and in 2007 she joined ICREA as a research professor. Her main research is in experimental and behavioral economics, especially in macro economic experiments and in neuro economics. She has published in the American Economic Review, Econometrica, Review of Economic Studies, Strategic Management Journal,, Proceedings of the National Academy of Sciences (PNAS), Nature Human Behavior, Financial Times, Spektrum der Wissenschaft, etc.

Research interests

I work in experimental economics focusing on simplified economic situations of risk, coordination and competition. I develop descriptive models departing from game theory and decision theory, introducing knowledge from psychology and neurosciences related to theory of mind. I link behavioural data created in experiments with brain activity gained through functional magnetic resonance imaging (fMRI) or eye-tracking data co-working with cognitive scientists, neuro-scientists, biologists, and psychologists. Furthermore, with other experimental economists and macro theorists I promote the interaction between the two groups with summer schools, workshops, and research using experimental tools to tackle macro questions. Finally, with colleagues from UPF we integrate economic experiments as teaching tools in undergraduate courses to better understand the mathematical models and show the relationship between students' own behavior in economic experiments and theoretical outcomes.

Selected publications

- Mauersberger F & **Nagel R** 2018, "*Levels of Reasoning in Beauty Contest Games: A Unifying Framework for Economic Heterogeneity*" In Handbook of Computational Economics. Vol. 4, eds. Cars Hommes and Blake LeBaron, Chapter 10, pp 541 - 634. Elsevier.
- **Nagel R**, Brovelli A, Heinemann F & Coricelli G 2018, '*Neural mechanisms mediating degrees of strategic uncertainty*', *Social Cognitive And Affective Neuroscience*, vol.13, no.1, pp 52 - 62.
- Reutskaia E, Lindner A, **Nagel R**, Andersen RA & Camerer CF 2018 "*Choice overload reduces neural signatures of choice set value in dorsal striatum and anterior cingulate cortex*", *Nature Human Behaviour*, vol. 2, no.12, pp 925 - 935.
- Levine SS, Bernard M & **Nagel R** 2018, '*Strategic intelligence: The cognitive capability to anticipate competitor behaviour (vol 12, pg 2390, 2017)*', *Strategic Management Journal*, vol. 39, no. 2, pp 527 - 527.
- Chierchia G, **Nagel R** & Coricelli G 2018, '*Betting "on nature" or "betting on others": anti-coordination induces uniquely high levels of entropy.*' *Scientific Reports* vol. 23, no. 8(1):3514.

Selected research activities

- Keynote speaker in 24th International Conference Computing in Economics and Finance (ICEF) 2018 Università Cattolica del Sacro Cuore-
- Coorganization of 11th BesLab Experimental Economics Summer School in Macroeconomics and 9th international workshop on Theoretical and Experimental Macroeconomics together with Gabriele Camera (Chapman University), John Duffy, University of Pittsburgh, Frank Heinemann, TU-Berlin, and Shyam Sunder (Yale University).
- Teaching outside of economics departments: Neuro economics lectures in undergraduate program of Human Biology (UPF), in master of Neuro marketing (Universitat Autònoma Barcelona), in master course of Social Cognitive Neuroscience (Master of Brain of Cognition, UPF); experimental economics to highschool students (for ESCOLAB and Bojos per la ciencia).

ICREA MEMOIR 2018



Arcadi Navarro
 Universitat Pompeu Fabra
 Life & Medical Sciences

Arcadi got a PhD in Biology at the UAB. After quitting the academic world for a few years, he went back to basic research as a postdoctoral fellow at the University of Edinburgh. He entered the Universitat Pompeu Fabra (UPF) in 2002 and was appointed ICREA Research Professor in 2006. Between 2008-13 he was vice-director of the Institute for Evolutionary Biology (IBE), an institute jointly formed by the UPF and the CSIC. Currently he is Professor of Genetics at the UPF, where he leads a research group in Evolutionary Genomics within the Department of Experimental and Health Sciences. He directed that Department between 2013 and 2016, a time during which he also engaged in a collaboration with the CRG to deploy the European Genome-Phenome Archive in Barcelona, with the participation of the EMBL/EBI and the BSC. Right after that, he left ICREA for a while to become Secretary for Universities and Research at the Generalitat de Catalunya. He is happy to be back.

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 a signature in our genomes in the form of differences between species, or between individuals of the same species. By interrogating 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 persons to certain diseases. All this knowledge empowers us to control our future but, above all, it is fun to obtain.

Selected publications

- Muntane G, Farre X, Rodriguez JA, Pegueroles C, Hughes DA, de Magalhaes JP, **Gabaldon T & Navarro A** 2018, 'Biological Processes Modulating Longevity across Primates: A Phylogenetic Genome-Phenome Analysis', *Molecular Biology And Evolution*, 35, 8, 1990 - 2004.
- Marigorta UK, Rodriguez JA, Gibson G & **Navarro A** 2018, 'Replicability and Prediction: Lessons and Challenges from GWAS', *Trends In Genetics*, 34, 7, 504 - 517.
- Santpere G, Garcia-Esparcia P, Andres-Benito P, Lorente-Galdos B, **Navarro A** & Ferrer I 2018, 'Transcriptional network analysis in frontal cortex in Lewy body diseases with focus on dementia with Lewy bodies', *Brain Pathology*, 28, 3, 315 - 333.
- Telford M, **Navarro A** & Santpere G 2018, 'Whole genome diversity of inherited chromosomally integrated HHV-6 derived from healthy individuals of diverse geographic origin', *Scientific Reports*, 8, 3472.
- Solis-Moruno M, de Manuel M, Hernandez-Rodriguez J, Fonsere C, Gomara-Castano A, Valsera-Naranjo C, Crailsheim D, **Navarro A**, Llorente M, Riera L, Feliu-Olleta O & **Marques-Bonet T** 2018, 'Potential damaging mutation in LRP5 from genome sequencing of the first reported chimpanzee with the Chiari malformation (vol 7, 2017)', *Scientific Reports*, 8, 7437.
- Hernandez-Rodriguez J, Arandjelovic M, Lester J, de Filippo C, Weihmann A, Meyer M, Angedakin S, Casals F, **Navarro A**, Vigilant L, Kuehl HS, Langergraber K, Boesch C, Hughes D & **Marques-Bonet T** 2018, 'The impact of endogenous content, replicates and pooling on genome capture from faecal samples', *Molecular Ecology Resources*, 18, 2, 319 - 333.

ICREA MEMOIR 2018



László Neumann
Universitat de Girona
Engineering Sciences

I was born in 1955 in Budapest, Hungary. MSc. in Engineering and Mathematics, 1978 TU Budapest, Mechanical Engineering: computer tomography. PhD 1982, Applied Mathematics: economical modeling. Publications: conference proceedings 53, journals 32, 3 books, chapters in books 20, others 55. As a head of industrial departments and projects, I led research and software development in architectural CAD, cartography, medical imaging, 3D face modeling, color harmony design, and numerical methods. Between 1995-2007: visiting lecturer at TU Vienna. Since 2002 ICREA Research Professor. My strengths are the interdisciplinary approach, mathematical modeling and motivating people. I am member of over a dozen IPC and other committees.

Research interests

My research has an interdisciplinary character in the common focus of computer imagery and applied mathematics. This wide field covers image processing, color science, computer graphics, computational photography and numerical methods. My profile in VICOROB at Universitat de Girona encompasses underwater and medical color image enhancement and visualization, efficient gradient domain solvers, illumination fusion, de-hazing and HDRI techniques. My most important results have been achieved here in the field of high quality large-area undersea image mosaicing. In this challenging field we computed the largest ever seamless deep-water gigamosaic images. After twelf years of thorough research, I am going to accomplish development of the Coloroid Renotation system and their applications, based on a huge amount of observations. On the other hand, in color research I am currently focusing on high-precision color calibration techniques of digital cameras with noise analysis.

Selected publications

- Quintana J, Garcia R, Campos R, **Neumann L**, Weiss T, Köser K, Mohrmann J & Greinert J 2018, 'Towards automatic recognition of mining targets using an autonomous robot', *MTS/IEEE OCEANS*, Charleston, USA.
- **Neumann L**, Garcia R, Jánosik J & Gracias N 2018, 'Fast Underwater Color Correction using Integral Images', Marine Technology Workshop, 10-11th December. Porto, Portugal.

ICREA MEMOIR 2018



Konstantin M. Neyman
 Universitat de Barcelona
 Experimental Sciences & Mathematics

Konstantin Neyman is ICREA Professor at the Department de Ciència dels Materials i Química Física and the Institut de Química Teòrica i Computacional, Universitat de Barcelona, leading the group Reactivity of Nanostructures. He obtained his PhD in Chemistry from the Inst. of Inorganic Chemistry in Novosibirsk and completed his Habilitation (Venia Legendi) in Theoretical Chemistry at the Technische Universität München. He published a book, 10 reviews, over 180 articles in referred journals and made 330 presentations at conferences and in universities, 125 of which as keynote and invited lectures. His publications were cited over 7300 times, h-index = 48 since 1991. Before joining ICREA, Dr. Neyman held positions as a senior research associate in Germany: at the TU München, Ludwig-Maximilian Universität München and Fritz-Haber-Institut (Berlin) of the Max-Planck Society. He has contributed to the attraction of funds for more than 40 research projects.

Research interests

My research group deals with 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 creation of materials with desired improved properties.

Selected publications

- Suchorski Y, Kozlov SM, Bespalov I, Datler M, Vogel D, Budinska Z, **Neyman KM** & Rupprechter G 2018, 'The role of metal/oxide interfaces for long-range metal particle activation during CO oxidation', *Nature Materials*, vol. 17, pp 519-522.
- Aleksandrov HA, Koleva IZ, **Neyman KM**, Tabakova T & Vayssilov GN 2018, 'Structure and reducibility of doped by yttrium cerium dioxide nanoparticles and (111) surface', *RSC Advances*, vol. 8, pp 33728-33741.
- Lykhach Y, Brummel O, Bruix A, Fabris S, Matolínová I, Matolín V, **Neyman KM** & Libuda J 2018, 'Pt-CeO₂ catalysts for fuel cell applications: From surface science to electrochemistry', In *Encyclopedia of Interfacial Chemistry - Surface Science and Electrochemistry*, K. Wandelt (Ed.), 1st edn, Elsevier, pp 189-201.

Selected research activities

- 9 invited talks at International Conferences and Universities including: CECAM Workshop "Modeling metal-based nanoparticles: Environment and dynamical effects" (Grenoble, FR); Seminar at the Catalysis Research Center, TU München (Garching, DE); International Workshop "Advanced Materials" (Duni, BG); International IUVSTA-ASEVA Workshop WS-86-ASEVA-28 "Physics and chemistry of nanoscale oxide systems" (Ávila, ES); 2nd International Symposium on Single-Atom Catalysis (Beijing, CN); 3 seminars at the Borekov Institute of Catalysis & the Institute of Inorganic Chemistry, Russian Academy of Sciences (Novosibirsk, RU).
- Sabbatical research stay (5.5 month) with a "Salvador de Madariaga" grant at the Borekov Institute of Catalysis, Russian Academy of Sciences (Novosibirsk).
- Scientific Committee member:
 - 5th International School-Conference "Catalyst Design: From Molecular to Industrial Level" (Moscow, RU);
 - 3rd International Conference "Fundamentals and applications of cerium dioxide in catalysis" (Barcelona, ES).
- Symposium co-organizer - "Nano-alloys: Theory, Synthesis & Characterization", XXVII International Materials Research Congress (Cancún, MX).

ICREA MEMOIR 2018



Josep Nogués Sanmiquel
 Institut Català de Nanociència i Nanotecnologia
 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 Nanociència i Nanotecnologia. His research interests are on the magnetic properties of thin films, lithographed nanostructures and nanoparticles and the exchange coupling between dissimilar magnetic materials and magnetoplasmonic materials for biomedical applications.

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. We also investigate magnetoplasmonic nanostructures for biomedical applications (e.g., hyperthermia).

Selected publications

- Perumbilavil S *et al.* 2018, 'Enhanced ultrafast nonlinear optical response in ferrite core/shell nanostructures with excellent optical limiting performance' *Small*, 14, 1701001
- Quintana A *et al.* 2018, 'Tunable Magnetism in Nanoporous CuNi Alloys by Reversible Voltage-Driven Element-Selective Redox Processes', *Small*, 14, 1704396
- Roca AG *et al.* 2018, 'Unravelling the Elusive Antiferromagnetic Order in Wurtzite and Zinc Blende CoO Polymorph Nanoparticles', *Small*, 14, 1703963
- Dislaki E *et al.* 2018, 'Coercivity Modulation in Fe-Cu Pseudo-Ordered Porous Thin Films Controlled by an Applied Voltage: A Sustainable, Energy-Efficient Approach to Magnetoelectrically Driven Materials', *Adv. Sci.*, 5, 1800499
- Torruella P *et al.* 2018, 'Atomic-Scale Determination of Cation Inversion in Spinel-Based Oxide Nanoparticles', *Nano Lett.*, 18, 5854
- Li Z *et al.* 2018, 'Simultaneous local heating/thermometry based on plasmonic magnetochromic nanoheaters' *Small*, 14, 1800868
- Ichikawa RU *et al.* 2018, 'Combining X-ray whole powder pattern modeling, Rietveld and pair distribution function analyses as a novel bulk approach to study interfaces in heteronanostructures: Oxidation front in FeO/Fe₃O₄ core/shell nanoparticles as a case study', *Small*, 14, 1800804
- Li Z *et al.* 2018, 'Magnetically amplified photothermal therapies and multimodal imaging with magneto-plasmonic nanodomains', *Appl. Mater. Today*, 12, 430
- Quintana A *et al.* 2018, 'Voltage-controlled ON-OFF Ferromagnetism at room temperature in a single metal oxide film' *ACS Nano*, 12, 10291

Selected research activities

Selected Talks

Keynote

Magnetoplasmonic Nanodomains as a Novel Structure for Biomedical Applications
 Int. Union of Materials Research Societies; S. Korea

Invited

Simultaneous local heating/thermometry based on plasmonic magnetochromic nanodomains
 Int. Symp. on Metastable, Amorphous Nanostructured Materials; Italy
 Simultaneous local nanoheating/thermometry based on plasmonic magnetochromic nanodomains
 Collaborative Conf. on Materials Research; S. Korea

ICREA MEMOIR 2018



Sergei Odintsov

Institut de Ciències de l'Espai
Experimental Sciences & Mathematics

ICREA Research Professor at ICE (CSIC-IEEC) since 2003. He wrote about 500 journal articles, with more than 37000 citations. Three ms written while in ICREA and two books were cited more than 1000 times, 9 articles-more than 500 times. Foreign Member of the Royal Norwegian Academy, member of European Phys. Soc. and Italian Grav. Soc. Awarded by Amaldi Gold Medal: European Prize for Gravitational Physics 2014. Editorial Board Member of six journals and referee of about 20 journals (with excellence certificates from PLB, EPL, PRD,PRL and EPJC). Hirsh index $h=96$ (Google Scholar) and $h=89$ (inspirehep). Supervisor of 12 PhDs. Speaker/lecturer of about 120 conf. and Org. Comm.member/organizer of about 40 int. workshops. Top Cited Thomson-Reuters/Clarivate Analytics Researcher in 2014, 2015,2016,2017,2018. Web.of Science 2017 Award. Silver Medal of TSPU, Tomsk, 2017.

Research interests

I develop the theory which should describe our universe history. My main purpose is to formulate the consistent alternative to Einstein gravity in order to resolve the fundamental puzzle of modern cosmology: why and how the universe accelerates? In fact, I proposed the first modified gravity which may describe the unification of the early-time inflation (including singular one) and late-time acceleration, i.e.consistent universe history evolution. We also proposed a bouncing universe in modified gravity as scenario that is alternative to the inflation. The alternative gravity we develop should describe the whole sequence of the universe eras: inflation, radiation-matter dominance and dark energy era with consistent transitions from one era to other era. The study of current universe should clarify its future: if it will expand eternally or if its evolution will be finished in the future singularity (actually much before via the disintegration of bound objects).

Selected publications

- **Odintsov SD** & Oikonomou VK 2018, 'Viable inflation in scalar-Gauss-Bonnet gravity and reconstruction from observational indices', *Phys Rev D* 98 044039
- Cruz M, Lepe S & **Odintsov SD** 2018, 'Thermodynamically allowed phantom cosmology with viscous fluid', *Phys Rev D* 98, 083515.
- Odintsov SD & Oikonomou VK 2018, 'Reconstruction of slow-roll F(R) gravity inflation from observational indices', *Ann Phys NY*, 388, 267-275
- Nojiri A & **Odintsov SD** 2018, 'Cosmological bound from the neutron star merger GW170817 in scalar-tensor and F(R) gravity theories', *Phys Lett B* 779, 425-429
- Contreras F, Cruz N, Elizalde E, Gonzalez E & **Odintsov SD** 2018, 'Linking little rip cosmologies with regular early universe', *Phys Rev D* 98,123520.
- **Odintsov SD** & Oikonomou VK 2018, 'Attractor cosmology from non-minimally coupled gravity', *Phys Rev D* 97, p.064005
- Capozziello S, Nojiri S & **Odintsov SD** 2018, 'The role of energy conditions in F(R) cosmology', *Phys Lett B* 781, p.99-106
- de Haro J, **Odintsov SD** & Oikonomou VK 2018, 'Viable inflationary evolution from loop quantum cosmology scalar-tensor theory', *Phys Rev D* 97,p.084052
- Bamba K, Nojiri S & Odintsov SD 2018, 'On the propagation of gravitational waves in strong magnetic fields', *Phys Rev D* 98, 024002 (1-10)
- Nojiri S, **Odintsov SD** & Faraoni V 2018, 'Effects of modified gravity on turnaround radius in cosmology', *Phys Rev D* 98. 024005(1-8)
- **Odintsov SD** & Oikonomou VK 2018, 'The reconstruction of f(phi)R and mimetic gravity fromviable slow-roll inflation', *Nucl Phys B*, 929, 79 - 112.

Selected research activities

Inv.speaker/lecturer at Casimir effect, Trondheim (June); ECIT, Murcia (July); QFT&Gravity, Tomsk (August); Siberian Cosmology Days, Tomsk (August); Cosmology&Quantum Vacuum, Benasque (Sept.); SIGRAV2018, Cagliari(Sept.); 5th conf.Polish Soc.Relativity, Wojanov(Sept.); Petrov Winter School, Kazan (Nov.); Travel through Pedro's universe, Madrid (Dec.). Adviser of DS thesis which is superior of PHD (November 2018, Tomsk).

ICREA MEMOIR 2018



Serena Olsaretti
 Universitat Pompeu Fabra
 Humanities

I have been an ICREA Research Professor at UPF since 2010. Prior to that, I was Senior Lecturer at the Faculty of Philosophy, University of Cambridge, and Fellow of St. John's College, which I joined in 2001. I had first arrived at Cambridge in 1999, as a Research Fellow at Emmanuel College, after studying at the University of Oxford, where I obtained a B.A., an M.Phil. and a DPhil. degree.

Research interests

My work is in moral and political philosophy. I have worked on the ethics of markets, egalitarianism, and theories of well-being. Since September 2015, I have been the PI of an ERC Consolidator project on "Justice and the Family. An Analysis of the Normative Significance of Procreation and Parenthood in a Just Society". The project examines what liberal egalitarian theorists of justice should think about how the costs and benefits of children should be distributed, both among contemporaries and across generations. I hold we need to address these relatively neglected questions to develop a complete and defensible theory of justice.

Selected publications

- Olsaretti S 2018 (ed), *The Oxford Handbook of Distributive Justice*, Oxford University Press.
- Olsaretti S 2018, 'Introduction: The Idea of Distributive Justice', in Olsaretti S (ed.), *The Oxford Handbook of Distributive Justice*, Oxford University Press.
- Olsaretti S 2018, 'The Costs of Children', in *The Routledge Handbook of the Philosophy of Childhood and Children*, edited by Calder G, Gheaus A & van Wispelaere J, Routledge.

Selected research activities

- Associate Editor of *Ethics. An International Journal of Social, Political and Legal Philosophy* (since July 2018)
- PI of ERC Consolidator Grant on *Justice and the Family: An Analysis of the Normative Significance of Procreation and Parenthood in a Just Society*
- Organiser (with E Magnusson and I Trifan) of international conference on *Intergenerational Justice and the Rights and Duties of Procreators* (June 2018)
- Reviewer for Oxford University Press, and for *Moral Philosophy & Politics* and *Utilitas*
- *Society for Applied Philosophy* Executive Committee Member (Re-elected in July 2018)

ICREA MEMOIR 2018



Ciara O'Sullivan
 Universitat Rovira i Virgili
 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.

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

- Chahin N, Uribe LA, Debela AM, Thorimbert S, Hasenknopf B, Ortiz M, Katakis I & **O'Sullivan CK** 2018, 'Electrochemical primer extension based on polyoxometalate electroactive labels for multiplexed detection of single nucleotide polymorphisms', *Biosensors & Bioelectronics*, 117, 201 - 206.
- Ortiz M, Debela AM, Methivier C, Thorimbert S, Hasenknopf B & **O'Sullivan CK** 2018, 'Stable Carboxylate-Terminated Gold Surfaces Produced by Spontaneous Grafting of an Alkyltin Compound', *Chemistry-a European Journal*, 24, 43, 11177 - 11184.
- Jauset-Rubio M, Tomasso H, Bashammakh AS, El-Shahawi MS, Alyoubi AO & **O'Sullivan CK** 2018, 'Duplex Lateral Flow Assay for the Simultaneous Detection of *Yersinia pestis* and *Francisella tularensis*', *Analytical Chemistry*, 90(21), pp. 12745-12751

Selected research activities

- Executive Editor of Analytical Biochemistry
- Visiting Professor at University of Western Cape (South Africa) and Newcastle University (UK)
- 3 co-directed PhD students graduated
- "Controlling cellular biochemistry with electronic signals - a step towards bioelectronic hybrids", Human Frontiers Science Prize, 300,000 USD
- Dispositivos bioanalíticos para la detección rápida y rentable de Gambierdiscus y ciguatoxinas, Ministerio de Economía y Competitividad, BIO2017-87946-C2-1-R, 242.000€, Participating as Researcher
- Cost-Effective Tools for Mycotoxin Testing, 2017-2020, King Abdulaziz University, 550.000€, PI
- PoC in-office device for identifying individuals at high risk of Osteoporosis and osteoporotic fracture, 2017-2021, European Commission, Contract nº767325, 2017-2021, 601.291,25€, PI
- Ultrasensitive, extremely rapid lateral flow assays exploiting nanoparticles for the detection of biogenic amines, detection of adulteration of food with meat products and identification of contaminating meat and viruses, 2016-2019, King Abdulaziz University, 500.000€.

ICREA MEMOIR 2018



Sílvia Osuna

Universitat de Girona

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 65 research publications, and been awarded the Young Researcher award by the Royal Spanish Society of Chemistry (RSEQ 20116), the Research award by the Fundación Princesa de Girona (FPdGi 2016- Science category), and the 2017 Young Investigator Award of EuCheMS Organic Division. Her group is funded by the European Research Council project - Starting Grant (ERC-2015- STG-679001, NetMoDEzyme) and the Catalan government project for emergent research teams (2017-SGR-1701).

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

- Maria-Solano MA, Serrano-Hervas E, Romero-Rivera A, Iglesias-Fernandez J & **Osuna S** 2018, 'Role of conformational dynamics in the evolution of novel enzyme function', *Chemical Communications*, 54, 50, 6622 - 6634.
- Serrano-Hervas E, Casadevall G, Garcia-Borras M, Feixas F & **Osuna S** 2018, 'Epoxide Hydrolase Conformational Heterogeneity for the Resolution of Bulky Pharmacologically Relevant Epoxide Substrates', *Chemistry-a European Journal*, 24, 47, 12254 - 12258.
- Romero-Rivera A, Iglesias-Fernandez J & **Osuna S** 2018, 'Exploring the Conversion of a d-Sialic Acid Aldolase into a l-KDO Aldolase', *European Journal Of Organic Chemistry*, , 20-21, 2603 - 2608.

Selected research activities

Most relevant invited conference participations:

1. Osuna, S. Role of conformational dynamics in the evolution of novel enzyme function, **Invited lecture** at Rideal Conference, Oxford, UK March 2018.
2. Osuna, S. The role of conformational dynamics for novel enzyme function, **Invited lecture** at CECAM workshop: Proteins in realistic environments: Simulation meets experiments, Stuttgart, Germany, May 2018.
3. Osuna, S. Computational tools for enzyme design, **Invited lecture** at **Protein Engineering Canada 2018**, Vancouver, Canada, June 2018.
4. Osuna, S. The role of Conformational Dynamics on the evolution of novel enzymatic activities, **Invited lecture** at **254thACS meeting**, Boston, USA August 2018.
5. Osuna, S. The role of Conformational Dynamics on the evolution of novel enzymatic activities, **Invited lecture** at the European Young Chemist Network symposium at **7thEuChemS**, Liverpool, UK August 2018.
6. Osuna, S. The role of Conformational Dynamics on the evolution of novel enzymatic activities, **Invited lecture** at **The Future of Enzyme Modeling**, Stockholm, Sweden September 2018.
7. Osuna, S. Conformational heterogeneity in enzyme design, **Invited lecture** at the **Trenca meeting**, Benicassim, ESP November 2018.

ICREA MEMOIR 2018



Paolo Padoan

Universitat de Barcelona

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

- Kong S et al. 2018, 'The CARMA-NRO Orion Survey', *Astrophysical Journal Supplement Series*, 236, 2, 25.
- Haugbolle T, **Padoan P** & Nordlund A 2018, 'The Stellar IMF from Isothermal MHD Turbulence', *Astrophysical Journal*, 854, 1, 35.
- Pan L, **Padoan P** & Nordlund A 2018, 'Detailed Balance and Exact Results for Density Fluctuations in Supersonic Turbulence', *Astrophysical Journal Letters*, 866, 2, L17.
- **Padoan P** 2018, 'The magnetic field of molecular clouds', *Contributions of the Astronomical Observatory Skalnaté Pleso*, vol. 48, no. 1, p. 32-39

Selected research activities

Supercomputing grants: RES (RES - Red Española de Supercomputación), 2018-2019, The Origin of the Stellar Initial Mass Function, 4 Million Core Hours (PI: Paolo Padoan) *Reviewer for*: The Astrophysical Journal, Nature, Astronomy and Astrophysics *Student supervision*: One PhD student (Zujia Lu) *Conferences and Workshops*: Four invited talks

ICREA MEMOIR 2018



Emilio Palomares
 Institut Català d'Investigació Química
 Experimental Sciences & Mathematics

Emilio Palomares (València, 1974). He studied Biology at the Universitat de València (1997). After graduating he joined Prof. Hermenegildo García's group at the Universitat Politècnica de València where he got his PhD (2001). In 2001 he was awarded a "Marie Curie" Fellowship at Imperial College of 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-UVEG. In April 2006 he took a position at ICIQ, where he currently leads a research group which is focussed on energy conversion devices. 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.

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

- Rodriguez-Seco C, Cabau L, **Vidal-Ferran A & Palomares E** 2018, 'Advances in the Synthesis of Small Molecules as Hole Transport Materials for Lead Halide Perovskite Solar Cells', *Accounts Of Chemical Research*, 51, 4, 869 - 880.
- Xu L, Aumaitre C, Kervella Y, Lapertot G, Rodriguez-Seco C, **Palomares E**, Demadrille R & Reiss P 2018, 'Increasing the Efficiency of Organic Dye-Sensitized Solar Cells over 10.3% Using Locally Ordered Inverse Opal Nanostructures in the Photoelectrode', *Advanced Functional Materials*, 28, 15, 1706291.
- Montcada NF, Mendez M, Cho KT, Nazeeruddin MK & **Palomares E** 2018, 'Photo-induced dynamic processes in perovskite solar cells: the influence of perovskite composition in the charge extraction and the carrier recombination', *Nanoscale*, 10, 13, 6155 - 6158.
- Rodriguez-Seco C, Biswas S, Sharma GD, **Vidal-Ferran A & Palomares E** 2018, 'Benzothiadiazole Substituted Semiconductor Molecules for Organic Solar Cells: The Effect of the Solvent Annealing Over the Thin Film Hole Mobility Values', *Journal Of Physical Chemistry C*, 122, 25, 13782-13789.
- Nolasco JC, Ryan JW, Rodriguez M, Castro-Carranza A, Maldonado JL, Ramos-Ortiz G, Barbosa-Garcia O, Gutowski J, **Palomares E** & Parisi J 2018, 'Organoboron donor-pi-acceptor chromophores for small-molecule organic solar cells', *Journal Of Materials Science-materials In Electronics*, 29, 19, 16410 - 16415.
- Privado M, Rodriguez Seco C, Singhal R, de la Cruz P, Langa F, Sharma GD & **Palomares E** 2018, 'Reduced Energy Offsets and Low Energy Losses Lead to Efficient (similar to 10% at 1 sun) Ternary Organic Solar Cells', *Acs Energy Letters*, 3, 10, 2418 - 2424.
- Rodríguez Seco C, **Vidal-Ferran A**, Misa R, Sharma GD & **Palomares E** 2018, 'Efficient Non-polymeric Heterojunctions in Ternary Organic Solar Cells', *ACS Appl. Energy Mater.*, 1 (8), pp 4203-4210.

ICREA MEMOIR 2018



Omiros Papaspiliopoulos

Universitat Pompeu Fabra
Social & Behavioural Sciences

Previously to becoming ICREA Research Professor I had been Research Associate at Lancaster and Oxford University, Assistant Professor at Warwick University, and Professor at UPF. I am currently the director of the Masters in Data Science and the Data Science Center at Barcelona GSE. I have extensively published in the top journals in Statistics, have served as Associate Editor for several journals and as of January 2018 as Deputy Editor for *Biometrika*. I have delivered more than 100 invited talks & seminars, and given courses at ENSAE in Paris, the Berlin Mathematical School, the Department of Mathematics at University of Copenhagen, the Engineering Department at Osaka University, CEMFI. In 2010 I was awarded the Royal Statistical Society's Guy Medal in Bronze, which is arguably the highest distinction in Statistics in Europe.

Research interests

I am involved with the whole spectrum of Data Science, from real practical problems to serious mathematics for developing and analyzing methods. My current research evolves along the following three non-orthogonal axes: Axis 1: Methodological work in the intersection of Statistics, Machine Learning and Applied Mathematics; Axis 2: Data Science within Social Sciences; Axis 3: Applied Machine Learning projects. Major subtheme in Axis 1 is scalable Bayesian computation. Bayesian models provide an excellent framework for synthesizing heterogeneous data, learning and predicting with big but sparse data, and principled regularization in high-dimensional models. Scalable Bayesian computation refers to computational methods for solving large scale Bayesian learning problems whose complexity scales favourably with the amount of data and parameters, ideally as a linear function of these two quantities. This is enormously important in practice: it makes an approach realistic for large scale applications. Within Axis 2 I have been involved in a range of application that despite their apparent diversity they have important common components and strong links with Axis 1: predicting electoral outcomes in elections with emerging political parties, long-term forecasting of real estate prices at zip-code level; understanding channels of central bank communication; surveillance and prediction of social unrest. As founder and director of the Barcelona Graduate School of Economics Data Science Center (DSC), I have been involved in all the projects the DSC undertakes and fall within Axis 3. Recent collaborations include the Reuters Institute for the Study of Journalism in Oxford, Accenture Health Analytics, Banco de España, ZDF (German public-service television broadcaster).

Selected publications

- Titsias MK & **Papaspiliopoulos O** 2018, 'Auxiliary gradient-based sampling algorithms', *Journal Of The Royal Statistical Society Series B-statistical Methodology*, 80, 4, 749 - 767.

Selected research activities

Editorial activity:

- co-Editor for *Biometrika*
- Associate Editor for *SIAM Journal of Uncertainty Quantification*

Funding bodies:

- member of a six-people international panel that decides on the whole funding program of the Finnish Academy of Sciences for the scientific fields of Statistics and Applied Mathematics.

Conference organisation:

- I organised a major three-day conference on Bayesian Computation in Barcelona, attended by 200 people, <https://www.maths.nottingham.ac.uk/plp/pmztk/bayescomp/>
- Co-organised a BGSE Summer Forum on the intersection of Data Science and Economic
- Scientific Committee for the European Meeting of Statisticians 2019

Leadership:

- Director of the Master in Data Science, Barcelona Graduate School of Economics
- Director of the Data Science Center at Barcelona Graduate School of Economics
- Director of Data Science Summer School at Barcelona Graduate School of Economics

Seminars/Conferences:

- Department of Economics Haifa, ICMS Uncertainty Quantification Edinburgh, Stochastic Methods in Finance and Physics, Crete Crete Summer Schools:

ICREA MEMOIR 2018



Soraya Pelaz

Centre de Recerca en Agrigenòmica
Life & Medical Sciences

Born in Bilbao, 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 Ministry of Education and Science and from the Human Frontiers Science Program Organization. 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.

Research interests

Floral induction is probably the most important process in plant development since it takes to the formation of flowers and fruits. Flowering must happen in a favorable time of the year to allow successful seed formation and reproduction. Our goal is to elucidate how plants know when to flower in response to a variety of external and endogenous signals and what genes, networks and mechanisms are responsible for the control of this process. The correct timing of flowering, which is crucial to ensure reproductive success, is therefore of economic and adaptive value. Because plants are sessile organisms we lately focused on how plants maximize their chances to survive adversities by reprogramming their development and flowering time for adaptation to environmental changes. In order to unravel new insights into environment adaptation, we also started an evolutionary developmental, evo-devo, approach which may help to deal with the undesired effects of global warming.

Selected research activities

Funded Projects

- * SGR (Grups de Recerca Reconeguts i Finançats). AGAUR. *Arabidopsis* Developmental Genomics. (2017 SGR 718).
- * Proyectos de I+D. Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia. Subprograma Estatal de Generación de Conocimiento. Evolution and Function of TEMPRANILLO in Plant Development and Adaptive Responses. MINECO (BFU2015-64409-P).
- * Garante Researcher of Centro de Excelencia Severo Ochoa (SEV-2015-0533) awarded to CRAG.
- * Torres Quevedo. MINECO. Use of trichomes as "natural factories" for the pharmaceutical agriculture. A CRAG-Sequentia Collaboration. (PTQ-13-06459).

Editorial Board

- * Associated Editor of *Physiologia Plantarum*.
- * Academic Editor of *Peer J*.
- * Review Editor of *Frontiers in Plant Genetics and Genomics*.

Invited Talk

- *Silencing reveals novel roles for RAV genes in flowering and carpel development in rice. *Plant Adapt 2018*, Banyuls sur mer, France.

Outreach and Dissemination Activities

- * Participation in TV program DEUWATTS sobre *Flors i Ciència*. <http://beteve.cat/programa/deuwatts/>
- * "Mutant Plants" workshop for school children in collaboration with CRECIM.
https://www.youtube.com/watch?time_continue=1&v=WcH7EqQV2d8
- * 23^a Dia de la ciència a las escoles. ¿Ojos, pelos...? ¿Hablamos de plantas? Institut Maremar. El Masnou, Barcelona.

ICREA MEMOIR 2018



Carles Pelejero

Institut de Ciències del Mar
Experimental Sciences & Mathematics

Born in Barcelona in 1968, Carles Pelejero graduated in Chemistry at the Autonomous University of Barcelona in 1991, with a speciality 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 research activities

- Supervisor of the M.Sc. Thesis 'Paleoclimatic reconstruction of the last 420 kyr in the Strait of Sicily' by Sara Cobacho, Oceanography and Marine Environmental Management, University of Barcelona.
- Supervisor of the Marie Skłodowska-Curie Individual Fellowship, European Commission Horizon 2020 to Lydia Kapsenberg for the project EVOMA: The influence of Environmental Variability On Mussel Aquaculture and adaptation in the context of global ocean change (H2020-MSCA-IF-2016, C.N. 747637).
- PI of the MINECO Project SCORE: Sediments and cold water Corals to address key questions of the Oceans in the past: two case-study Regions and one Experiment (CGL2015-68194-R).
- Coordinator of the Research Group on Marine Biogeochemistry and Global Change. Generalitat de Catalunya (2017SGR1011).
- Participant of the European Commission Horizon 2020 Project CERES: Climate change and European aquatic RESources (H2020-B-2015-2, C.N. 678193)
- Conference: "Ground-truthing paleo-proxy calibrations in *Desmophyllum dianthus* deep-sea corals using long-term aquaria cultures", AGU Fall Meeting, Washington D.C., US.
- Reviewer of the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, to be published in 2019.
- Lecturer of ocean acidification impacts for students of the Degree in Marine Sciences (fourth year) of the University of Barcelona.
- Participation in the 'Science Day at Schools' with a talk on 'Our (ir)responsibilities with Water Planet' at Les Cases dels Mestres, with students from IES Manolo Hugué and Pic del Vent (High School, 15-16 years old), Caldes de Montbui, Barcelona.

ICREA MEMOIR 2018



Antonio Penta
 Universitat Pompeu Fabra
 Social & Behavioural Sciences

Antonio Penta is an economic theorist who joined ICREA in October 2018. He is also Professor of Economics at UPF and at the Barcelona GSE. 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. in 2004, and in 2010 he obtained a M.A. and PhD from the University of Pennsylvania. He is currently an Associate Editor of the Journal of Economic Theory and Associate Faculty at the Toulouse School of Economics. In 2017, he was awarded an ERC-Starting Grant.

Research interests

My research spans a range of areas within game theory, mechanism design and behavioral economics, combining a variety techniques and methodologies.

In game theory and mechanism design, most of my research has focused on problems of robustness with respect to various forms of model misspecification.

Within behavioral economics, my research has mostly focused on understanding and modeling individuals' reasoning processes. This line of research involves both experimental methodology and theoretical work, and it is aimed at developing theoretical models of reasoning which take into account the interaction between individuals' incentives and their cognitive abilities.

Most recently, I have also engaged into more applied research, to understand the impact of Digital Marketing Agencies on the auction formats used to sell online advertisement space. I focus both on the agencies' new opportunities to generate surplus for their clients and on the impact on the sellers' revenues.

Selected research activities

In 2018, prior to joining ICREA in October:

Conferences and workshops:

- UBC-HKU Summer Workshop in Economic Theory (Vancouver, CAN),
- Warwick Economic Theory Workshop, (Univ. of Warwick, UK),
- Sixth Southampton-Bristol Workshop in Economic Theory, (Southampton, UK),
- LOFT XIII Conference on Logic and the Foundations of Game and Decision Theory, Bocconi Univ. (Milan, Italy).

Invited talks and seminars:

- Univ. of Bonn (Germany),
- CERGE-EI, Prague (Czech Republic),
- Roy Econ-Theory seminar at the Paris School of Economics (France)
- Univ of Groningen (Netherlands)
- Toulouse School of Economics (France)

Short research visits include the Toulouse School of Economics and the Univ. of Primorska (Koper, SLO).

Member of the scientific committee of the 2018 Econometric Society European Meeting at the Univ. of Cologne, the LOFT XIII Conference on Logic and the Foundations of Game and Decision Theory (Bocconi Univ., Milan) and the 2018 North American Summer Meetings of the Econometric Society at UC-Davis.

Co-organizer and committee member for the workshop on *Bounded Rationality, Cognition and Strategic Uncertainty* at the Barcelona GSE Summer Forum.

ICREA MEMOIR 2018



Miguel Pérez-Enciso
 Universitat Autònoma de Barcelona
 Life & Medical Sciences

I am a Biologist and obtained my PhD in 1990 in Genetics (Universidad Complutense, Madrid). After that I moved to the USA and France during three years to carry out post doctoral studies, specializing in Bayesian Statistics applied to Animal Breeding and Quantitative Genetics. I worked at the Institut de Recerca i Tecnologia Agroalimentaria (IRTA) from 1993 - 1999 and at INRA (Toulouse, France) from 1999 til 2003, when I became an ICREA Research Professor. I am also part-time professor in Universitat Autònoma of Barcelona, and I am currently based at Centre for Research in Agricultural Genomics (CRAG) on UAB campus.

Research interests

Most of the genes that are of socioeconomic importance, e.g., genes affecting disease susceptibility or that makes Iberian pig meat taste good, are very difficult to find because they are influenced by many genes of small effect. My main area of research is to develop statistical and computational tools that help us to identify these genes. A topic of particular interest is combining different sources of molecular information, including complete genome sequence, to predict genetic merit. I am also concerned with studying how man has shaped the pattern of genetic variation in livestock species, mainly in the pig, through domestication and artificial selection. I participated in the consortium leading to the publication of the pig genome sequence (Nature, 2012) and I am responsible for the first genome sequence of an ancient pig, a sow that lived in the 16th century in Montsoriu Castle (Girona) and of the first Iberian pig genome.

My current interests include the application of machine learning technologies to genomics in livestock, humans and plants, the use of sequence data for genomic selection and to study adaptation processes, and software development.

Selected publications

- Naval-Sanchez M, Quan N, McWilliam S, Porto-Neto LR, Tellam R, Vuocolo T, Reverter A, **Perez-Enciso M**, Brauning R, Clarke S, McCulloch A, Zamani W, Naderi S, Rezaei HR, Pompanon F, Taberlet P, Worley KC, Gibbs RA, Muzny DM, Jhangiani SN, Cockett N, Daetwyler H & Kijas J 2018, 'Sheep genome functional annotation reveals proximal regulatory elements contributed to the evolution of modern breeds', *Nature Communications*, 9, 859.
- Bellot P, de los Campos G & **Perez-Enciso M** 2018, 'Can Deep Learning Improve Genomic Prediction of Complex Human Traits?', *Genetics*, 210, 3, 809 - 819.
- Hudson NJ, Naval-Sánchez M, Porto-Neto L, **Pérez-Enciso M** & Reverter A 2018, "**A haplotype information theory method reveals genes of evolutionary interest in European vs. Asian pigs**". *Journal of Animal Science*. 96: 3064-3069.

Selected research activities

Editor of *Journal of Animal Breeding and Genetics* and of *BMC Bioinformatics*. Teaching at MSc of Bioinformatics (UAB), at MSc in Animal Genetics and Reproduction (Instituto Agronómico Mediterráneo de Zaragoza), graduate course at Universidade Federal da Bahia (Salvador, Brazil).

Orcid: <https://orcid.org/0000-0003-3524-995X>

Google scholar: https://scholar.google.es/citations?user=Lpl_-dcAAA&hl=es

Publons: <https://publons.com/researcher/1438761/miguel-perez-enciso/>

ICREA MEMOIR 2018



Maria Petrova

Universitat Pompeu Fabra
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 2018, 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 the determinants and implications of individual political donations.

Selected publications

- **Enikolopov R, Petrova M** & Sonin K 2018, 'Social Media and Corruption', *American Economic Journals: Applied Economics*, 10, 1, 150 - 174.

Selected research activities

In 2018, Maria has become a recipient of ERC Starting Grant EXTREME ("The Rise and Fall of Populism and Extremism"). She was also elected to the Council of European Economic Association.

Maria continued to serve as a Co-Editor of the *Journal of Public Economics* and as a Member of the Editorial Board of the *Review of Economic Studies*.

She organized an invited session at the EEA Annual Meeting in August 2018 and co-organized Economic Analysis of Electoral Politics workshop at the Barcelona GSE Summer Forum in June 2018.

She also gave a talk at the Aix-Marseille School of Economics in January 2018.

ICREA MEMOIR 2018



Mira Petrovic

Institut Català de Recerca de l'Aigua
Experimental Sciences & Mathematics

ICREA Research Professor since December 2005. PhD in Chemistry (1995), Faculty of Chemical Engineering and Technology, University of Zagreb, Croatia. From 1999-2011 research scientist at the Department of Environmental Chemistry, Institute for Environmental Assessment and Water Studies (IDAEA-CSIC), Barcelona. Since July 2011 senior researcher at the Catalan Institute for Water Research (ICRA), Girona, Spain. At ICRA she is the head of Water Quality Area and responsible for the research line Contaminants in water treatment processes. She has participated in over 20 EU projects since 1999; published 210 papers in SCI journals (Hirsch Index 61); edited 8 books and published 36 book chapters. She is Highly Cited Researcher 2018 (ranked in the top 1% by citations) in the field of Environment/Ecology according to Clarivate Analytics.

Research interests

My main expertise is in the field of analytical environmental chemistry, specifically analysis of trace organic contaminants, such as pharmaceuticals, endocrine disrupting compounds and surfactants by advanced mass spectrometric techniques (liquid chromatography-tandem and hybrid MS) and the study of their fate and behaviour in the aquatic environment and during wastewater and drinking water treatment. Specific research lines are: (i) non-target analysis and fingerprinting of organic substances in wastewater and receiving environment, (ii) the study of biotic and abiotic transformation of emerging contaminants, identification of transformation products, elucidation of transformation pathways; (iii) the study of occurrence and distribution of emerging contaminants in aquatic environment and environmental risk assessment and (iv) sustainable wastewater management; application of innovative wastewater treatment technologies; innovative practices for reuse of reclaimed waters.

Selected publications

- Verkh Y, Rozman M & **Petrovic M** 2018, 'A non-targeted high-resolution mass spectrometry data analysis of dissolved organic matter in wastewater treatment', *Chemosphere*, 200, 397-404.
- Mandaric L, Mor JR, Sabater S & **Petrovic M** 2018, 'Impact of urban chemical pollution on water quality in small, rural and effluent-dominated Mediterranean streams and rivers', *Science of the Total Environment*, 613, 763 - 772.
- Rozman M, Acuna V & **Petrovic M** 2018, 'Effects of chronic pollution and water flow intermittency on stream biofilms biodegradation capacity', *Environmental Pollution*, 233, 1131 - 1137.
- Gusmaroli L, Insa S & **Petrovic M** 2018, 'Development of an online SPE-UHPLC-MS/MS method for the multiresidue analysis of the 17 compounds from the EU "Watch list"', *Analytical And Bioanalytical Chemistry*, 410, 4165 - 4176.
- de Sousa DNR, Insa S, Mozeto AA, **Petrovic M**, Chaves TF, Fadini PS 2018, '**Equilibrium and kinetic studies of the adsorption of antibiotics from aqueous solutions onto powdered zeolites**', *Chemosphere*, 205, 137-146.
- Valcarcel Y, Valdehita A, Becerra E, Lopez de Alda M, Gil A, Gorga M, **Petrovic M**, Barcelo D & Navas JM 2018, 'Determining the presence of chemicals with suspected endocrine activity in drinking water from the Madrid region (Spain) and assessment of their estrogenic, androgenic and thyroidal activities', *Chemosphere*, 201, 388 - 398.
- Verkh Y, Rozman M & **Petrovic M** 2018, '**Extraction and cleansing of data for a non-targeted analysis of high-resolution mass spectrometry data of wastewater**', *MethodsX*, 5, 395-402.
- Ćizmić M, Ljubas D, Škorić I, Rožman M, Ašperger D, Ćurković L, **Petrović M** & Babić S 2018, 'Photolytic and photocatalytic degradation of febantel in aqueous media', *Desalination and Water Treatment*, 104, 294-303.

Selected research activities

Editor in chief TrEAC - Trends in Environmental Analytical Chemistry (Elsevier, Impact factor 4,46, ranked 9/80, category Chemistry, Analytical).

ICREA MEMOIR 2018



José Luis Peydró
 Universitat Pompeu Fabra
 Social & Behavioural Sciences

Peydró is ICREA Research Professor at UPF, Professor of Economics at UPF, Barcelona GSE Research Professor, CREI Research Associate, CEPR Research Fellow, advisory scientific committee member of the European Systemic Risk Board, research advisor of the Bank of Spain, Research Professor at the Bundesbank, and consultant in several central banks and international organizations, including European Central Bank's Directorate General Economics since 2017. He has been a visiting scholar at Banque de France, Becker Friedman Institute at Chicago University, MIT-Sloan, Bank of Spain, IMF, De Nederlandsche Bank and the World Bank. He is the Principal Investigator of research grants from the ERC (Consolidator), MINECO (2016-18 and 2013-2015) and Fundació BBVA (2018-20) and research fellowships from the Bank of England (2016-17) and ECB's Wim Duisenberg (2019).

Research interests

Peydró specializes in Finance and Macroeconomics, mainly on systemic risk, financial crises, endogenous risk, central bank policies, monetary and prudential policy, financial globalization, financial contagion, financial innovation, macroeconomics and credit markets, capital and liquidity. He is also working on the effects of financial distress on households' welfare. He has recently written the book *Systemic Risk, Crises and Macroprudential Regulation* at MIT Press.

Selected publications

- **Peydró JL**, Polo A & Sette E 2018, 'Securities Trading and Lending in Banks' in Mayer C, Micossi S, Onado M, Pagano M & Polo A (eds.), *Finance and Investment: The European Case*, Oxford, UK: Oxford University Press.
- Altavilla C, Boucinha M & **Peydró JL** 2018, 'Monetary Policy and Bank Profitability in a Low Interest Rate Environment', *Economic Policy*, vol. 33 (96) pp.531-586.

Selected research activities

Seminars at MIT, U. Bonn, Nova School of Business and Economics, TSE; and BIS.

Co-organizer Barcelona GSE-EuroFIT Workshop 'Financial Intermediation and Risk' (Barcelona); SAFE-Goethe Universität-IBF Conference 'The Real Effects of Financial Crises: Past, Present, Future' (Frankfurt), and organizer of UPF's Departmental Seminar.

Keynote lectures NBB Fifth Research Workshop of the MPC Task Force on Banking Analysis for Monetary Policy (Brussels); 14th CSEF-IGIER Symposium on Eco. and Institutions (Anacapri); and IWH-Halle Workshop 'Challenges to Financial Stability' (Halle).

Conference presentations/discussions ECB Research Workshop on Monetary Policy, Macroprudential Policy and Financial Stability (Frankfurt); Macroprudential Policy Conf. While the Sun is Shining, Prepare for a Rainy Day (Copenhagen); ECB Conf. 'Monetary Policy Bridging Science and Practice' (Frankfurt); U. Penn-Wharton Conf. 'Liquidity and Financial Fragility' (Philadelphia); 8th BIS Research Network Meeting: Assessing the Impact of the Post-Crisis Financial Regulatory Reforms (Basel); 45th EFA Annual Meeting (Warsaw); NBER International Seminar on Macroeconomics (Dublin); FIRS Annual Conf. (Barcelona); Cass BS 2nd Workshop on Corporate Debt Markets (London); Sapienza-Bocconi-Banca d'Italia Conf. 'New Frontiers in Banking: from Corporate Governance to Risk Management' (Rome).

Sci. Committee Member Cass BS 2nd Workshop on Corporate Debt Markets; 11th Swiss Winter Conference on Financial Intermediation; DB-Frankfurt School of Finance and Management Conference 'Bank Business Models: Structural Changes and Their Systemic Implications'.

ICREA MEMOIR 2018



Jordi Poater

Universitat de Barcelona

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. Afterwards I was appointed Senior Associate Researcher at the Department of Theoretical Chemistry and Amsterdam Center for Multiscale Modeling of the VUA. I have published 130 scientific publications in peer-reviewed journals, which have received more than 4.500 citations. My H-Index is 36, and I appear as “Scientist” at the Essential Science Indicators.

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. Afterwards, I have become an expert in the application of Kohn-Sham molecular orbital theory complemented with quantitative bond energy decomposition analyses to biological issues. In particular, the study of the DNA replication mechanism 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 DNA bases.

Selected publications

- **Poater J**, Duran M & Solà M 2018, 'Aromaticity determines the relative stability of kinked vs. straight topologies in polycyclic aromatic hydrocarbons', *Front Chem*, 6;561.
- Ritschel B, **Poater J**, Dengel H, Bickelhaupt FM & Lichtenberg C 2018, 'Double CH Activation of a Masked Cationic Bismuth Amide', *Angew Chem Int Edit*, 57, 14, 3825 - 3829.
- El Bakouri O, Sola M & **Poater J** 2018, 'Planar vs. three-dimensional X-6(2-), X2Y42-, and X3Y32- (X, Y = B, Al, Ga) metal clusters: an analysis of their relative energies through the turn-upside-down approach (vol 18, pg 21102, 2016)', *Phys Chem Chem Phys*, 20, 5, 3845 - 3846.
- Al Temimi AHK, Belle R, Kumar K, **Poater J**, Betlem P, Pieters BJGE, Paton RS, Bickelhaupt FM & Mecinovic J 2018, 'Recognition of shorter and longer trimethyllysine analogues by epigenetic reader proteins', *Chem Commun*, 54, 19, 2409 - 2412.
- **Poater J**, Gimferrer M & Poater A 2018, 'Covalent and Ionic Capacity of MOFs To Sorb Small Gas Molecules', *Inorg Chem*, 57, 12, 6981 - 6990.
- Narsaria AK, **Poater J**, Fonseca Guerra C, Ehlers AW, Lammertsma K & Bickelhaupt FM 2018, 'Rational Design of Near-Infrared Absorbing Organic Dyes: Controlling the HOMO-LUMO Gap using Quantitative MO Theory', *J Comput Chem*, 39, 2690-2696.

Selected research activities

- Co-PI (garante) of María de Maeztu Grant to IQTCUB (2M€, 2018-2022).
- Granted with FPI PhD fellowship.
- PI of Societat Catalana de Química grant to organize meeting in Barcelona (co-chair): Annual Meeting of the Network in Theoretical and Computational Chemistry of Catalonia (XRQTC).
- PI of MINECO research grant (2017-2019).
- Appointed Secretary of the Institute of Theoretical and Computational Chemistry (IQTCUB).
- Supervised 2 TFG undergraduate students.
- Delivered invited talks in Sofia (Bulgaria), Oviedo (Spain), Kragujevac (Serbia) and Quintana Roo (Mexico).
- Member of 3 PhD committees (Amsterdam, San Sebastián and Barcelona).
- Collaborator in dissemination activities of the Càtedra de Cultura Científica i Comunicació Digital (UdG).

ICREA MEMOIR 2018



Albert Pol

Institut d'Investigacions Biomèdiques August Pi i Sunyer
Life & Medical Sciences

In June 1993 I obtained my degree in Biology at the University of Barcelona (UB). I continued my studies in the Biochemistry Dept. and the Cell Biology Dept. of the Medical School (UB). In July 1998 I obtained my PhD and I moved to the laboratory of Prof RG Parton in the University of Queensland (Australia) as a NHMRC Research Officer. My professional independent research career started in 2002 when I was awarded a "Ramón y Cajal" grant from the Spanish Science and Technology Ministry. In November 2006 I obtained an I3 grant from the same ministry and in November 2007 I was incorporated as an ICREA Research Professor at the Cell Proliferation and Signalling team (IDIBAPS). In addition, I am Associated Professor in the Cell Biology Dept. of the Medical School (UB). Today I combine my research with teaching in biomedical sciences and in a PhD Programme for young investigators. www.celltrafficbcn.cat/Home.html.

Research interests

The aim of our project is to characterize - in health and in disease - the cellular processes that are regulated or altered due to lipid accumulation within the cells. All prokaryote and eukaryote cells maintain the competence of accumulating lipids in organelles known as intracellular lipid droplets. In healthy cells, a small population of lipid droplets is present at all times, though these organelles become abundant in response to different physiopathological conditions such as obesity, diabetes, fatty liver, arteriosclerosis and even cancer. Recent advances in the cell biology of lipid droplets have shown that they are multifunctional organelles that are metabolically very active and thus constitute key elements in the complex exchange of lipids and proteins in constant movement within the cells. In this scenario, we are especially focused in the biological cost of the accumulation of cholesterol in organelles such as mitochondria and the role of caveolin in these fluxes.

Selected research activities

- Invited conference at the 18th HFSP Awardees Meeting. July 10th Toronto (Canada).
- Cell Biology & Developmental Biology lectures at the School of Pharmacy and the Medical School of the University of Barcelona.
- Master of Biomedicine for PhD students at UB

ICREA MEMOIR 2018



Antonio Postigo

Institut d'Investigacions Biomèdiques August Pi i Sunyer
Life & Medical Sciences

CURRENT POSITION: * ICREA Professor of Life and Medical Sciences. IDIBAPS (Barcelona) * Adjunct Visiting Professor, JG Brown Cancer Center, Univ. of Louisville School of Medicine (USA) **IMMEDIATE PREVIOUS POSITION:** * Special Fellow & Instructor. Washington University School of Medicine (USA) **RESEARCH FUNDING:** * **Public Agencies:** European Commission / Ministry of Economy & Competitiveness (MINECO) / AGAUR, * **Private Foundations:** Leukemia Research Foundation / AVON Breast Cancer Campaign / La Marató de TV3 Foundation / La Caixa Foundation / Spanish Association Against Cancer (AECC) / Olga Torres Foundation / Academy of Medical and Health Sciences of Catalonia / Duchenne Parent Project Association

Research interests

Our group studies molecular mechanisms regulating gene expression in health and disease with a particular focus on transcriptional regulation. Ongoing projects investigate gene regulation in inflammation, cancer, stem cell determination and differentiation, and tissue injury and regeneration. We use a wide range of technical approaches that include conditional transgenic mice, *ex vivo* culture and manipulation of normal and malignant primary cells, differentiation of human embryonic stem cells, and high-throughput techniques (e.g., RNAseq, proteomics). As molecular models, we use the EMT transcription factors ZEB1 and ZEB2 that play key roles in a number of physiological and pathological processes.

Selected publications

- Liu Y, Siles L, Lu X, Dean K, Cuatrecasas M, **Postigo A*** & Dean DC* 2018, '**Mitotic polarization of transcription factors during asymmetric division establishes fate of forming cancer cells**', *Nature Communications*, 9:2424 (*co-corresponding authors). IF: 12.4. NOTE: Selected by the journal for "Editors' Highlights"
- Ninfali C, Siles L, Darling DS & **Postigo A*** 2018, '**Regulation of muscle atrophy-related genes by the opposing transcriptional activities of ZEB1/CtBP and FOXO3**', *Nucleic Acid Res*, 46:10697-708 (*corresponding author). IF: 11.6
- Invited REVIEW: Liu Y, Siles L, **Postigo A*** & Dean DC* 2018, '**Epigenetically distinct sister chromatids and asymmetric generation of tumor-initiating cells**', *Cell Cycle*, 17:2221-9 (* co-corresponding authors).

Selected research activities

Grant Evaluations for international agencies during 2018:

* Fondo de Investigación Científica y Tecnológica (FonCyT), Argentina (Feb 2018)

* Institut National du Cancer (INCa), France (June 2018)

Membership in the Editorial Boards of Scientific Journals:

* Total ongoing editorial board memberships: 11 journals

ICREA MEMOIR 2018



Pilar Prieto
 Universitat Pompeu Fabra
 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 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

- **Prieto P** & Borràs-Comes J 2018, 'Question intonation contours as dynamic epistemic operators', *Natural Language & Linguistic Theory*, 36, 2, 563 - 586.
- Kushch O, Igualada A & **Prieto P** 2018, 'Prominence in speech and gesture favour second language novel word learning', *Language Cognition And Neuroscience*, 33, 8, 992 - 1004.
- Llanes-Coromina J, Vilà-Giménez I, Kushch O, Borràs-Comes J & **Prieto P** 2018, 'Beat gestures help preschoolers recall and comprehend discourse information', *Journal of Experimental Child Psychology* 172 (8), 168-188.
- **Prieto P** & Borràs-Comes J 2018, 'Question intonation contours as dynamic epistemic operators'. *Natural Language and Linguistic Theory* 36 (2), 563-586.
- Armstrong M, Esteve-Gibert N, Hübscher I, Igualada A & **Prieto P** 2018, 'Developmental and cognitive aspects of children's disbelief comprehension through intonation and facial gestures'. *First Language* 38(6), 596-616.
- **Prieto P** & Esteve-Gibert N (Eds.) 2018, *The Development of Prosody in First Language Acquisition*. John Benjamins: Amsterdam.

ICREA MEMOIR 2018



Valerio Pruneri
 Institut de Ciències Fotòniques
 Engineering Sciences

Valerio Pruneri is Corning Inc. Chair leading the Optoelectronics group at the Institute of Photonic Sciences (ICFO). Previously he worked for Avonex, Corning, Pirelli, and the University of Southampton. He has given more 70+ invited talk and is inventor of 40+ patents. He has taken part in 40+ technical or steering committees of international conferences. He serves on the QEOD board of the European Physical Society, the advisory board of ACREO AB Fiber Optic Centre and VLC Photonics. He was awarded the PhD Thesis Philip Morris Prize, Photonics Pirelli Fellowship, IBM Faculty award, Paul Ehrenfest Best paper award, Corning Inc. Professorship and Duran Farell Prize for technological research. His work has led to numerous industrial collaborations (e.g. Corning Inc., Carl Zeiss and HP) and the creation of two spin offs, quaside (2017) and sixsenso-water (to be launched 2019).

Research interests

Valerio Pruneri leads the Optoelectronics group at the Institute of Photonic Sciences (ICFO). The group is working on ultrathin materials, nano-structured biomimetic surfaces, micro- and nano-engineered integrated and fibre optic devices for telecommunication, sensing, aerospace, energy and quantum cryptography. In particular the main driving is to carry out research which bridges the academic and the industrial worlds, by developing fundamental ideas which will have an impact on commercial products.

Selected publications

- Rombaut J, Maniyara RA, Bellman R, Acquard D, Baca A, Osmond J, Senaratne W, Quesada M, Baker DE, Mazumder P & **Pruneri V** 2018, '**Antireflective transparent oleophobic surface by non-interacting cavities**', *ACS Appl. Mater. Interfaces*, 10, 49, pp. 43230-43235.
- Yesilkoy F, Terborg RA, Pello J, Belushkin AA, Jahani Y, **Pruneri V** & Altug H 2018, 'Phase-sensitive plasmonic biosensor using a portable and large field-of-view interferometric microarray imager', *Nature: Light-science & Applications*, 7, 17152.
- Gopalan KK, Paulillo B, Mackenzie DMA, Rodrigo D, Bareza N, Whelan PR, Shivayogimath A & **Pruneri V** 2018, 'Scalable and Tunable Periodic Graphene Nanohole Arrays for Mid-Infrared Plasmonics', *Nano Letters*, 18, 9, 5913 - 5918.
- Terborg RA, Torres JP & **Pruneri V** 2018, 'Technique for generating periodic structured light beams using birefringent elements', *Optics Express*, 26, 22, 28938 - 28947.

Selected research activities

- 4 EU projects (2 of them as coordinator)
- 4 PhD students graduated
- 2 patent applications filed

ICREA MEMOIR 2018



Aurora Pujol

Institut d'Investigació Biomèdica de Bellvitge
Life & Medical Sciences

Dr Aurora Pujol received her MD from the Autonomous University of Barcelona in 1993 and her PhD in Cell and Molecular Biology from the University of Heidelberg/ German Cancer Research Center in 1998. She trained in Human Genetics with Prof JL Mandel at the IGBMC, Strasbourg, generating and characterizing mouse models for a rare neurometabolic disorder, adrenoleukodystrophy (X-ALD), combined with diagnostic activities as Medical Geneticist at the Louis Pasteur Hospital. In 2005, she became ICREA Professor and Director of the Neurometabolic Diseases Lab at IDIBELL. In 2017 she obtained the specialty in Clinical Genomics by the American Board ABMGG, at the NIH, USA. Her lab is a member of the Spanish Network of Rare Diseases CIBERER, and of the Undiagnosed Diseases International Network of NIH (UDNI), USA. Dr Pujol serves at the Neurobiology of Disease and J of Neuroscience Research Editorial Boards. She is a reference for translational genomics for the leukodystrophies.

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 and for drug target identification. These involve redox and metabolic homeostasis, mitochondria dynamics, proteostasis and cellular stress responses. Tailored preclinical tests have yielded four licensed patents, three phase II/III clinical trials, and two Orphan Drug Designations. A second research line applies clinical and functional genomics for diagnostics and gene discovery. We are identifying novel disease-causing genes and modeling disease using iPSC-derived brain organoid cultures and zebrafish. Results are advancing scientific knowledge while serving the undiagnosed patient's community.

Selected publications

- Guissart C, (35 more coauthors), **Pujol A** & Kury S 2018, 'Dual Molecular Effects of Dominant RORA Mutations Cause Two Variants of Syndromic Intellectual Disability with Either Autism or Cerebellar Ataxia', *American Journal Of Human Genetics*, 102, 5, 744 - 759.
- Jorge-Torres OC et al. 2018, 'Inhibition of Gsk3b Reduces Nfkb1 Signaling and Rescues Synaptic Activity to Improve the Rett Syndrome Phenotype in Mecp2-Knockout Mice', *Cell Reports*, 23, 6, 1665 - 1677.
- Fourcade S, Parameswaran J, Goicoechea L, Launay N, Ruiz M, Sedel F & **Pujol A** 2018, 'Beneficial effects of high-dose biotin (MD1003) in models of X-linked adrenoleukodystrophy', *Multiple Sclerosis Journal*, 24, 521 - 522.
- Fourcade S, Outeiro TF & **Pujol A** 2018, 'SIRT2 in age-related neurodegenerative disorders', *Aging* (Albany NY), 10(3):295-296.
- Schlüter A, Sandoval J, Fourcade S, Díaz-Lagares A, Ruiz M, Casaccia P, **Esteller M** & **Pujol A** 2018, 'Epigenomic signature of adrenoleukodystrophy predicts compromised oligodendrocyte differentiation', *Brain Pathol.* 28(6):902-919.
- Ranea-Robles P, Launay N, Ruiz M, Calingasan N, Dumont M, Naudi A, Beal F, Fourcade S & **Pujol A** 2018, 'Aberrant regulation of the GSK-3 beta/NRF2 axis unveils a novel therapy for adrenoleukodystrophy', *Embo Mol Med*, 10, 8, UNSP e8604.
- S Yagüe, M Veciana, C Casasnovas, M Ruiz, J Pedro, J Valls-Solé, **A Pujol** 2018, 'Evaluation of afferent pain pathways in adrenomyeloneuropathic patients', *Clinical Neurophysiology*, 129(3):507-515.
- Rotroff DM, Pijut SS, Marvel SW, Jack JR, Havener TM, **Pujol A**, Schluter A, et al 2018, 'Genetic variants in HSD17B3, SMAD3, and IPO11 impact circulating lipids in response to fenofibrate in individuals with type 2 diabetes', *Clin Pharmacol Ther.* 2103, 4, 712 - 721.

Selected research activities

Late Breaking Talk, Plenary. "Biallelic variants in *degs1*: novel disease with therapeutic hope". European Society of Human Genetics, Milan, Italy, June 17-19th 2018.

ICREA MEMOIR 2018



Víctor F. Puntès

Institut d'Investigació Biomèdica de Bellvitge Institut Català de Nanociència i Nanotecnologia, Vall d'Hebron Institut de Recerca Experimental Sciences & Mathematics

Born in Barcelona in 1970, Prof. Víctor Franco Puntès studied chemical engineering at the Louis Pasteur University (Strasbourg, France) and chemistry at the Autonomous University of Barcelona (Barcelona, Spain), graduating in 1994. He obtained his PhD in Physics at the University of Barcelona (1998), working on Giant Magnetoresistance in granular alloys. Then he spent more than 3 years in Berkeley (California, USA) as a postdoc, first in the group of Prof. Krishnan Kannan (National Center for Electron Microscopy, Lawrence Berkeley Laboratory) and then in the group of Prof. Paul Alivisatos (College of Chemistry, UC Berkeley). In 2003 he obtained a Ramón y Cajal Fellowship and worked in the Physics Dep. at the University of Barcelona. In 2005, he moves to the Catalan Institute of Nanotechnology (ICN - now ICN2) as ICREA Research Professor and creates the Inorganic Nanoparticles Group. Since December 2014 he holds a double affiliation ICN2 and VHIR.

Research interests

Prof. Víctor Puntès works on the synthesis, characterisation and applications of engineered inorganic nanoparticles (NPs). 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.). This allows for the deliberate modification of these systems, or the use of NPs for witnessing and reporting things.

Selected publications

- Schultz CL, Gray J, Verweij RA, Busquets-Fite M, **Puntès V**, Svendsen C, Lahive E & Matzke M 2018, 'Aging reduces the toxicity of pristine but not sulphidised silver nanoparticles to soil bacteria', *Environ Sci-nano*, 5, 11, 2618-2630.
- Bastus NG & **Puntès V** 2018, 'Nanosafety: Towards Safer Nanoparticles by Design', *Curr Med Chem*, 25, 35, 4587-4601.
- Makama S, Kloet SK, Piella J, van den Berg H, de Ruijter NCA & **Puntès VF** et al. 2018, 'Effects of systematic variation in size and surface coating of silver nanoparticles on their in vitro toxicity to macrophage RAW 264.7 cells', *Toxicological Sciences* vol. 162, 1, 79-88.
- Boraschi D, Swartzwelter B, Melillo D, Marino R, Della Camera G, Barbero F, **Puntès V** & Italiani P 2018, 'Evolution of innate immunity, lessons learned for assessing safety and efficacy of nanomaterials and nanodrugs', *Isj-invertebrate Survival Journal*, 15, 116-117.
- Russo L, Merkoci F, Patarroyo J, Piella J, **Merkoci A**, Bastus NG & **Puntès V** 2018, 'Time- and Size-Resolved Plasmonic Evolution with nm Resolution of Galvanic Replacement Reaction in AuAg Nanoshells Synthesis', *Chem Mater*, 30, 15, 5098-5107.
- Ocal SK, Patarroyo J, Kiremitler NB, Pekdemir S, **Puntès VF** & Onses MS 2018, 'Plasmonic assemblies of gold nanorods on nanoscale patterns of poly (ethylene glycol): Application in surface-enhanced Raman spectroscopy', *Journal Of Colloid And Interface Science*, 532, 449-455.
- Schultz CL, Lahive E, Lawlor A, Crossley A, **Puntès V**, Unrine JM, Svendsen C & Spurgeon DJ 2018, 'Influence of soil porewater properties on the fate and toxicity of silver nanoparticles to *Caenorhabditis elegans*', *Environ Toxicol Chem*, 37, 10, 2609-2618.
- Russo L, **Puntès V** & **Merkoci A** 2018, 'Tunable electrochemistry of gold-silver alloy nanoshells', *Nano Research*, vol 11, pp-633-6345.
- Casals E, Gusta MF, Montana L, Mendoza M, Maiz N, Carreras E & **Puntès V** 2018, 'Nanotechnology for Maternal Foetal Medicine', *Int J Ped & Neo Heal.* vol. 2, pp. 57-66.

ICREA MEMOIR 2018



Josep Quer Villanueva
 Universitat Pompeu Fabra
 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 am co-editor of the journal *Sign Language & Linguistics*.

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

- Quer J 2018, 'On categorizing types of role shift in Sign languages', *Theoretical Linguistics*, 44, 3-4, 277 - 282.
- Barberà G & Quer J 2018, 'Nominal referential values of semantic classifiers and role shift in signed narratives', in *Linguistic foundations of narration in spoken and sign languages*, eds. Huebl A & Steinbach M, 251-274. Amsterdam/Philadelphia: John Benjamins.
- Barberà G, Cabredo Hofherr P & Quer J 2018, 'Agent-backgrounding in Catalan Sign Language (LSC)', *Sign Language & Linguistics*, 21.2: 335-349.
- Quer J 2018, 'Les llengües de signes, fetes visibles', *Llengua, Societat i Comunicació*, 16: 1-5.
- Quer J (editor) 2018, 'Les llengües de signes, fetes visibles', *Llengua, Societat i Comunicació*, 16.
- Sánchez Amat J & Quer J 2018, 'El desenvolupament de les llengües de signes', in Aparici Aznar M & Igualada A (eds.), *El desenvolupament del llenguatge i de la comunicació*, 221-237. Barcelona: FUOC.
- Anastasopoulos A, Lekakou M, Quer J, Zimianiti E, DeBenedetto J & Chiang D 2018, 'Part-of-Speech Tagging on an Endangered Language: A Parallel Griko-Italian Resource', COLING 2018, Santa Fe, New Mexico, USA, 20-26. *Proceedings of the 27th International Conference on Computational Linguistics*, 2529-2539.

ICREA MEMOIR 2018



Romain Quidant
 Institut de Ciències Fotòniques
 Engineering Sciences

I received a PhD in Physics (2002) from the University of Dijon, in France. Right after defending my thesis, I joined ICFO as a postdoctoral researcher. This was the year of its creation and I was lucky enough to get actively involved into the early developments of the Institute. In 2006, I was appointed junior Professor (tenure-track) and group leader of the Plasmon NanoOptics group at ICFO. In 2009, I became tenure Professor both at ICFO and ICREA. While my core expertise is in fundamental nano-optics, I am very much interested in multidisciplinary research, interfacing physics with other disciplines of science, as well as in technology transfer. I am recipient of 4 ERC grants (StG2010, PoC2011, PoC2015 and CoG2015) and several international and national prizes (Fresnel2009, City of BCN2010, ICO2012, CAT2014, BS2017). Since 2014, I serve as an associate editor for ACSPhotonics (American Chemical Society).

Research interests

Our research focuses on nano-optics, at the interface between Photonics (the science of light) and Nanotechnology. We use the unique optical properties of nanostructures as an enabling toolbox to design solutions to scientific and technological challenges, in a wide set of disciplines, from fundamental physics to biotechnology and medicine. This makes our group highly multidisciplinary and involved in both basic and applied research. The most fundamental part of our work is mainly directed towards enhanced light/matter interaction and quantum physics. From a more applied viewpoint, our team investigates new strategies to control light and heat at the nanometer scale for biomedical applications, including lab-on-a-chip technology and targeted hyperthermia. We are also extensively involved in tech-transfer, with three technologies being incubated in the ICFO KTT Launch pad.

Selected publications

- Garcia-Guirado J, Svedendahl M, Puigdollers J & **Quidant R** 2018, 'Enantiomer-Selective Molecular Sensing Using Racemic Nanoplasmonic Arrays', *Nano Letters*, 18, 10, 6279 - 6285.
- Garcia-Guirado J, Rica RA, Ortega J, Medina J, Sanz V, Ruiz-Reina E & **Quidant R** 2018, 'Overcoming Diffusion-Limited Biosensing by Electrothermoplasmonics', *Acs Photonics*, 5, 9, 3673 - 3679.
- Afridi A, Canet-Ferrer J, Philippet L, Osmond J, Berto P & **Quidant R** 2018, 'Electrically Driven Varifocal Silicon Metalens', *Acs Photonics*, 5, 11, 4497 - 4503.
- Morales-Dalmau J, Vilches C, de Miguel I, Sanz V & **Quidant R** 2018, 'Optimum morphology of gold nanorods for light-induced hyperthermia', *Nanoscale* 10, 5, 2632 - 2638.
- Schell AW, Svedendahl M & **Quidant R** 2018, 'Quantum Emitters in Hexagonal Boron Nitride Have Spectrally Tunable Quantum Efficiency', *Advanced Materials*, 30, 14, 1704237.
- Rodriguez-Fajardo V, Sanz V, de Miguel I, Berthelot J, Acimovic SS, Porcar-Guezenc R & **Quidant R** 2018, 'Two-color dark-field (TCDF) microscopy for metal nanoparticle imaging inside cells', *Nanoscale*, 10, 8, 4019 - 4027.
- Conangla GP, Schell AW, Rica RA & **Quidant R** 2018, 'Motion Control and Optical Interrogation of a Levitating Single Nitrogen Vacancy in Vacuum', *Nano Letters*, 18, 6, 3956 - 3961.
- Yavas O, Acimovic SS, Garcia-Guirado J, Berthelot J, Dobosz P, Sanz V & **Quidant R** 2018, 'Self-Calibrating On-Chip Localized Surface Plasmon Resonance Sensing for Quantitative and Multiplexed Detection of Cancer Markers in Human Serum', *Acs Sensors*, 3, 7, 1376 - 1384.

ICREA MEMOIR 2018



Jelena Radjenović
Institut Català de Recerca de l'Aigua
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 several prestigious fellowships: Queensland Early Career Smart Future Fellowship, Marie Curie International Incoming Fellowship, Ramon y Cajal fellowship. 2017-2022: ERC Starting Grant ELECTRON4WATER.

Research interests

I am an expert in chemical and electrochemical advanced (waste)water treatment, with a focus on the fate of chemical contaminants. 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. Over the last years, I have been investigating electrochemical treatment systems and surpassing their major limitation - low current efficiency - by integrating them with engineered, low-cost carbon nanostructured materials in a nanoelectrochemical system (NES). In addition, I am developing a hybrid nano-biotreatment based on accelerating the redox microbial reactions in anaerobic respiration by the addition of low-cost carbon nanomaterials. Electron shuttling by graphene derivatives drastically enhances the removal of pollutants and may improve the quality and quantity of the produced biogas, thus generating a positive energy balance.

Selected publications

- Farhat A, Keller J, Tait S & **Radjenovic J** 2018, 'Oxidative capacitance of sulfate-based boron-doped diamond electrochemical system', *Electrochemistry Communications*, 89, 14 - 18.
- Andres Garcia E, Agulló-Barceló M, Bond P, Keller J, Gernjak W & **Radjenovic J** 2018, 'Hybrid electrochemical-granular activated carbon sytem for the treatment of greywater', *Chemical Engineering Journal*, vol. 352, pp 405-411.

Selected research activities

In collaboration with Prof Wolfgang Gernjak, I have been working on the development of UV/peroxodisulfate process for the removal of carcinogenic disinfection byproduct, N-nitrosodimethylamine (NDMA), from water. Furthermore, we have elucidated the role of water matrix in the degradation of persistent organic pollutants by the abovementioned process. We have two research manuscripts currently under evaluation for publication.

I have initiated a large, pilot-scale study of electrochemical system for the extraction and recovery of nitrogen from waste streams (i.e., anaerobic digestate, urine). The project is led by Wetsus, European Centre of Excellence for Sustainable Water Technology.

ICREA MEMOIR 2018



Ángel Raya

Centre de Medicina Regenerativa de Barcelona
Life & Medical Sciences

Ángel Raya is an ICREA Research Professor at the Center of Regenerative Medicine in Barcelona (CMRB). 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. In 2014 he was appointed 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

- Olgasi et al. 'Patient-Specific iPSC-Derived Endothelial Cells Provide Long-Term Phenotypic Correction of Hemophilia A', *Stem Cell Reports*, 11, 6, 1391 - 1406. 2018
- Notari et al. 'The local microenvironment limits the regenerative potential of the mouse neonatal heart'. *Sci Adv*, Vol. 4, no. 5, eao5553. 2018
- Parga et al. 'Prostaglandin EP2 Receptors Mediate Mesenchymal Stromal Cell-Neuroprotective Effects on Dopaminergic Neurons', *Mol Neurobiol*, 55 (6): 4763-4776. 2018
- Matamoros-Angles et al. 'iPS cell cultures from a Gerstmann-Sträussler-Scheinker patient with the Y218N PRNP mutation recapitulate Tau pathology'. *Mol Neurobiol*, 55:3033-48. 2018
- Kim et al, 'The Small GTPase RAC1/CED-10 Is Essential in Maintaining Dopaminergic Neuron Function and Survival Against α -Synuclein-Induced Toxicity', *Mol Neurobiol*, 55, 9, 7533-7552. 2018
- Fontcuberta-PiSunyer et al. 'Modulation of the endocrine transcriptional program by targeting histone modifiers of the H3K27me3 mark', *Biochim Biophys Acta*, 1861(5):473-480. 2018
- Tolosa et al. 'MicroRNA alterations in iPSC-derived dopaminergic neurons from Parkinson disease patients', *Neurobiol Aging*, 69:283-291. 2018
- Suh et al. 'Long-Term Labeling of Hippocampal Neural Stem Cells by a Lentiviral Vector', *Frontiers In Molecular Neuroscience*, 11, 415. 2018

Selected research activities

Patents filled

Valls-Margarit M, Iglesias O, Jane R, Martinez E, Raya A. Human cardiac tissue construct related methods of use, Ownership: CMRB/IBEC, Priority number: EP18382391, Priority Country: Europe, Priority date: 04/06/2018

Invited speaker

Ramon Areces International Symposium on Applications of Gene Editing, Madrid 01/18
9th SETGyC Biennial Congress, Mallorca 03/18
IBV/CSIC Seminar Series, Valencia 06/18
SSIEM Annual Symposium, Athens 09/18
2nd NMS Symposium, Lisbon 10/18

ICREA MEMOIR 2018



Victoria Reyes-García
 Universitat Autònoma de Barcelona
 Social & Behavioural Sciences

Victoria Reyes-García (PhD Anthropology, 2001, U. of Florida) is ICREA Research Professor at the Institut de Ciència i Tecnologia Ambientals (ICTA), Universitat Autònoma de Barcelona. Her research focuses on local ecological knowledge systems, including their benefits, drivers of change, and potential contributions to conservation and development. From 1999 to 2004 she lived among Tsimane' hunter-gatherers in the Amazon, where she has long-term research. Since 2006 she coordinates the Laboratory for the Analysis of Socio-Ecological Systems in a Global World (LASEG), which catalyses research on the dynamic relations people-environments. She has about 200 peer-reviewed articles and three edited books. In 2010 she received an ERC Starting Grant to study the adaptive nature of local knowledge using a cross-cultural approach and in 2017 she received an ERC Consolidator Grant to study the contribution of local knowledge to climate change research.

Research interests

My research encompasses the interdisciplinary study of 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 societies, and 2) social responses to environmental issues. My research draws on the insights from the natural and behavioural sciences 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, 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

- Calvet-Mir L, Benyei P, Aceituno-Mata L, Pardo-de-Santayana M, Lopez-Garcia D, Carrascosa-Garcia M, Perdomo-Molina A & **Reyes-García V** 2018, 'The Contribution of Traditional Agroecological Knowledge as a Digital Commons to Agroecological Transitions: The Case of the CONECT-e Platform', *Sustainability*, 10, 9, 3214.
- Gallois S, Lubbers MJ, Hewlett B & **Reyes-García V** 2018, 'Social Networks and Knowledge Transmission Strategies among Baka Children, Southeastern Cameroon', *Human Nature*, 29, 4, 442-463.
- Fernandez-Llamazares A, Helle J, Eklund J, Balmford A, Moraes MR, **Reyes-García V** & Cabeza M 2018, 'New law puts Bolivian biodiversity hotspot on road to deforestation', *Current Biology*, 28, 1, R15 - R16.
- Bauchet J, Undurraga EA, **Reyes-García V**, Behrman JR & Godoy RA 2018, 'Conditional cash transfers for primary education: Which children are left out?', *World Development*, 105, 1 - 12.
- Gallois S & **Reyes-García V** 2018, 'Children and Ethnobiology', *Journal Of Ethnobiology*, 38, 2, 155 - 169.
- **Reyes-García V**, Fernandez-Llamazares A, Gueze M & Gallois S 2018, 'Does Weather Forecasting Relate to Foraging Productivity? An Empirical Test among Three Hunter-Gatherer Societies', *Weather Climate And Society*, 10, 1, 163 - 177.
- **Reyes-García V**, Gallois S, Diaz-Reviriego I, Fernandez-Llamazares A & Napitupulu L 2018, 'Dietary Patterns of Children on Three Indigenous Societies', *Journal of Ethnobiology*, 38, 2, 244 - 260.
- **Reyes-García V**, Benyei P & Calvet-Mir L 2018, 'Traditional Agricultural knowledge as commons', In Vivero-Pol JL, Ferrando T, de Schutter O & Mattei U (Eds). *Routledge Handbook of Food as a Commons*. Routledge.

Selected research activities

Lead Author, Global Assessment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

Academic coordinator, Postgrau en Dinamització Local Agroecològica, UAB

Guarantor, ICTA's Maria de Maeztu Unit of Excellence

ICREA MEMOIR 2018



Marta Reynal-Querol

Universitat Pompeu Fabra
Social & Behavioural Sciences

Marta Reynal-Querol is an ICREA Research Professor at the Department of Economics and Business at Universitat Pompeu Fabra (UPF) and Research Professor of the Barcelona GSE. She is also an Affiliated Professor at the BGSE, and Director of the Master in Economics at UPF. She is the Director of IPEG since December 2016. She is a Research Fellow at the CEPR, a Research Fellow at the CESifo and a Full Member at the EUDN. She is Fellow of the EEA. She was member of the Council of the European Economic Association (EEA) between 2011 and 2015. She is member of the Editorial Board of the Journal of Conflict Resolution. She won an ERC-Consolidator grant in 2014 and also an ERC-Starting grant obtained in the first call of the ERC. She won the Banco Herrero prize 2011 awarded annually to an 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

- *Scientific Chair of the EEA Annual Congress 2018, Cologne, Germany*
- Organizer of the EEA Pre-Congress session joint with IEA
- Member of the IEA Executive Committee, since June 2017
- Research Professor, Barcelona GSE, 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-Consolidator Grant (2015-2020)
- PI of the Grant (Grant BFU2011-12345), Spanish Ministry of Economy and Competitiveness.
- Co-organizer of the workshop "Political Economy of Development and Conflict"
- Invited talk: RIDGE-LACEA, Montevideo, Uruguay;
- Director of IPEG, since December 2016
- Director of the Master in Economics (BarcelonaGSE-UPF), since September 2012

ICREA MEMOIR 2018



Paul Reynolds

Universitat de Barcelona
Humanities

At UCL studied for my BA (1980) and PhD (1991) (Settlement and Pottery of the Vinalopo Valley (Alicante), AD 400-700), which included a detailed review of ceramics and trade in W Mediterranean ports (published as BAR 588 & 604 in 1993, 1995). Have studied and published ceramics from excavations in Spain (Cartagena, Valencia), Roman Syria (Beirut, Homs, Basit, Zeugma), Albania (Butrint, Durres), Greece (Athens, Corinth, Thesproteia, Nicopolis-Actium, Patras) and North Africa (Carthage, Utica, Leptis Magna). The book *Hispania and the Roman Mediterranean, AD 100-700: ceramics and trade* was published in 2010. Co-editor of the series *Roman and Late Antique Mediterranean Pottery*.

Research interests

The principal aim of my research is the study of the economy of the Classical and Late Antique Mediterranean, the lower Danube-Black Sea and Atlantic through the definition of regional ceramic typologies (forms and archaeometry) and the analysis of the regional distribution of ceramics in major ports. This focuses on the long-distance movement of local, regional and imported fine table-wares, amphorae & cooking wares. I am interested in all factors that contributed to the supply of goods: private, state, city, ecclesiastical & administrative structures.

Selected publications

- **Reynolds P** 2018, 'Phocean Red Slip Ware (Late Roman C)', *Oxford Dictionary of Late Antiquity*, Oxford.
- **Reynolds P** 2018, 'T.s. hispánica tardía', *Oxford Dictionary of Late Antiquity*, Oxford.
- **Reynolds P & Vroom J** 2018, 'Amphorae', *Oxford Dictionary of Late Antiquity*, Oxford.
- **Reynolds P** 2018, 'Çandarli Ware', *Oxford Dictionary of Late Antiquity*, Oxford.
- Costa A, **Reynolds P** & Vroom J 2018, 'Pottery in Late Antiquity, AD 300-700', *Oxford Dictionary of Late Antiquity*, Oxford.
- **Reynolds P** 2018, 'African Red Slip Ware', *Oxford Dictionary of Late Antiquity (ODLA)*, Oxford.
- **Reynolds P** 2018, 'Sigillées Dérivées Paléochrétiennes (DSP)', *Oxford Dictionary of Late Antiquity (ODLA)*, Oxford.
- Costa S, **Reynolds P** & Vroom J 2018, 'Pottery-Roman and Post-Roman', *Oxford Dictionary of Late Antiquity (ODLA)*, Oxford.
- Ruiz Montes P, Peinado Espinosa MV & Fernández García Mal (eds.) 2018, '**Estudios para la configuración de las facies cerámicas altoimperiales en el Sur de la Península Ibérica**', *RLAMP 11*. Archaeopress, Oxford (284pp) (**Reynolds P** Series Editor).
- González Cesteros H & Berni Millet P 2018, 'Roman Amphorae in Neuss: Augustan to Julio-Claudian Contexts', *RLAMP 12*. Archaeopress, Oxford (182pp) (**Reynolds P** Series Editor).

Selected research activities

Field work: Tunisia (Arab pottery at Utica-Utique) and Greece (Roman-Byzantine pottery of the American excavations in Lechaion, the western port of Corinth; Roman pottery of Patras).

HAR2017-84242-P *Ánforas romanas y análisis de contenidos. El consumo de alimentos de la Baetica, Africa y el Oriente levantino en Gades, Pompeii y Roma (ss I a.C.- I d.C.) (RACA-Med)*: sampling and analysis of contents of Spanish amphorae in Cadiz.

Chemical analyses of the amphorae and plain wares of Butrint (Butrint Foundation grant in 2015). The thin-section analyses also funded by the BF are included in my forthcoming volume on the Roman Pottery of the Vrina Plain (Butrint) excavations (volume III) due for publication in 2019.

ICREA MEMOIR 2018



Lluís Ribas de Pouplana

Institut de Recerca Biomèdica de 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 a scientific advisor to aTyr Ltd.

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 of species, and what specific adaptations allow certain organisms to fabricate proteins that are inaccessible to other species. 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. We want to contribute to the resolution of this problem through the study of an essential mitochondrial protein that we discovered in the lab.

Selected publications

- Rafels-Ybern À, Torres AG, Grau-Bove X, **Ruiz-Trillo I & Ribas de Pouplana** 2018, 'Codon adaptation to tRNAs with Inosine modification at position 34 is widespread among Eukaryotes and present in two Bacterial phyla', *RNA Biology*, 15, 4-5, 500 - 507.
- Torres AG, Wulff TF, Rodriguez-Escriba M, Camacho N & **Ribas de Pouplana L** 2018, 'Detection of Inosine on Transfer RNAs without a Reverse Transcription Reaction', *Biochemistry*, 57, 39, 5641 - 5647.
- **Ribas de Pouplana L** 2018, 'Genetic code and metabolism: The perpetual waltz.', *Journal of Biological Chemistry*, 293(49):19157-19158.
- Silva J, Aivio S, Knobel PA, Bailey LJ, Casali A, Vinaixa M, Garcia-Cao I, Coyaud E, Jourdain AA, Perez-Ferreros P, Rojas AM, Antolin-Fontes A, Samino-Gené S, Raught B, González-Reyes A, **Ribas Pouplana L**, Doherty AJ, Yanes O & Stracker TH 2018, 'EXD2 governs germ stem cell homeostasis and lifespan by promoting mitoribosome integrity and translation.', *Nature Cell Biology*, 20, 2, 162.
- Arguello RJ, Reverendo M, Mendes A, Camosseto V, Torres AG, **Ribas de Pouplana L**, van de Pavert SA, Gatti E & Pierre P 2018, 'SunRiSE - measuring translation elongation at single-cell resolution by means of flow cytometry', *Journal Of Cell Science*, 131, 10, UNSP jcs214346.
- Charlton MH, Aleksis R, Saint-Leger A, Gupta A, Loza E, **Ribas de Pouplana L**, Kaula I, Gustina D, Madre M, Lola D, Jaudzems K, Edmund G, Randall CP, Kime L, O'Neill AJ, Goessens W, Jirgensons A & Finn PW 2018, 'N-Leucyl Benzenesulfonamides as Structurally Simplified Leucyl-tRNA Synthetase Inhibitors', *Acs Medicinal Chemistry Letters*, 9, 2, 84 - 88.

ICREA MEMOIR 2018



Jose Luis Riechmann
Centre de Recerca en Agrigenòmica
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 since 2013.

Research interests

Developmental processes in multicellular organisms are dependent on the cellular capacity for differential gene expression. That capacity is hardwired and encoded in the genome, in the form of cis-regulatory sequences that determine when, where, and how genes are expressed, of transcription factors and transcriptional co-regulators that act on those sequences, and of other types of regulatory proteins or RNAs. My research interest has focused on transcriptional regulation and development, using the plant *Arabidopsis thaliana* as a model system. This has included studies on the floral transition and flower development, genomic analyses of transcription factors, and global gene expression analyses, as well as an interest in genomic technologies. The current focus of the laboratory is the study at a global level of gene regulatory networks that control development in Arabidopsis, including proteomic approaches, and the characterization of the Arabidopsis peptidome.

Selected publications

- Fabregas N, Lozano-Elena F, Blasco-Escamez D, Tohge T, Martinez-Andujar C, Albacete A, Osorio S, Bustamante M, **Riechmann JL**, Nomura T, Yokota T, Conesa A, Perez Alfocea F, Fernie AR & Cano-Delgado AI 2018, 'Overexpression of the vascular brassinosteroid receptor BRL3 confers drought resistance without penalizing plant growth', *Nature Communications*, 9, 4680.

Selected research activities

- The 'Severo Ochoa Center of Excellence' distinction, an award from the 'Ministerio de Economía y Competitividad', was granted to CRAG (1/2016-12/2019). PI and Scientific Director in the award.

ICREA MEMOIR 2018



Florent Rivals

Institut Català de Paleoecologia Humana i Evolució Social
Humanities

Graduated in Biology at the University Paul Sabatier in Toulouse, Florent Rivals received his PhD in Prehistory from the University of Perpignan (France) in 2002. In 2004, he completed a postdoctoral research at the American Museum of Natural History and in 2005, he was awarded a postdoctoral fellowship from the Humboldt Foundation at the *Universität Hamburg* (Germany). He was appointed ICREA Junior Researcher (2007 to 2012) at the *Institut Català de Paleoecologia Humana i Evolució Social* (IPHES) in Tarragona and since October 2013, he is ICREA Research Professor at the same institution. He participates in several national and international projects, and he is principal investigator of the "NEANDERLIFE 2" project funded by the *Ministerio de Ciencia, Innovación y Universidades*. F. Rivals is co-author of about 90 peer-reviewed articles in international journals.

Research interests

Florent Rivals has a primary research interest in evolutionary paleoecology and the ecological context of evolution. The analysis of mammalian fauna from Plio-Pleistocene sites provides the framework for studying the evolution of hominins. His research focuses on the impact of climate-driven environmental changes on hominins, and Neanderthals in particular. Examining mammal teeth, such as bison, deer, horse and mammoth, under a microscope and looking at the marks left by the food they ate (known as the last supper phenomenon), provides insight into the habitats they roamed just before they died. The changes in diet over thousands of years are used to reconstruct ancient environments, to track shifts related to climatic changes, and to understand hominin behavioral strategies in different ecological settings. Beyond Europe, his research is also recently focussing on the Near East (Levant), Africa (Tanzania and Morocco), and South America (Chile, Argentina, Brasil).

Selected publications

- Romagnoli F, Nishiaki Y, **Rivals F** & Vaquero M 2018, 'Time uncertainty, site formation processes, and human behaviours: New insights on old issues in High-Resolution Archaeology', *Quaternary International*, vol. 474B, pp 99-102.
- **Rivals F** & Alvarez-Lao DJ 2018, 'Ungulate dietary traits and plasticity in zones of ecological transition inferred from late Pleistocene assemblages at Jou Puerta and Rexidora in the Cantabrian Region of northern Spain', *Palaeogeography Palaeoclimatology Palaeoecology*, vol. 499, pp 123-130.
- **Rivals F**, Uno KT, Bibi F, Pante MC, Njau J & de la Torre I 2018, 'Dietary traits of the ungulates from the HWK EE site at Olduvai Gorge (Tanzania): Diachronic changes and seasonality', *Journal of Human Evolution*, vol. 120, pp 203-214.
- Gonzalez-Guarda E, Petermann-Pichincura A, Tornero C, Domingo L, Agustí J, Pino M, Abarzua AM, Capriles JM, Villavicencio NA, Labarca R, Tolorza V, Sevilla P & **Rivals F** 2018, 'Multiproxy evidence for leaf-browsing and closed habitats in extinct proboscideans (Mammalia, Proboscidea) from Central Chile', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 115, no. 37, pp 9258-9263.
- **Rivals F** & Ziegler R 2018, 'High-resolution paleoenvironmental context for human occupations during the Middle Pleistocene in Europe (MIS 11, Germany)', *Quaternary Science Reviews*, vol. 188, pp 136-142.

Selected research activities

- Principal investigator of the research grant "Snapshots of Neanderthal lifestyles 2" funded by the *Ministerio de Ciencia, Innovación y Universidades*.
- Co-direction of the excavations at Teixoneres Cave, Moià (Barcelona), Spain.
- Associate editor for *Quaternary International* (until July 2018) and *Frontiers in Ecology and Evolution*.
- Research stay at the National Natural History Collections of the Hebrew University of Jerusalem (1 month in 2018).
- Associate Professor at the Universitat Rovira i Virgili (Tarragona) in the Erasmus Mundus Master in Quaternary and Prehistory.

ICREA MEMOIR 2018



Stephan Roche

Institut Català de Nanociència i Nanotecnologia
Engineering Sciences

ICREA Prof. Stephan Roche is working at the Catalan Institute of Nanosciences and Nanotechnology-ICN2 and the Barcelona Institute of Science and Technology. He leads the "Theoretical and Computational Nanoscience" group which focuses on quantum physics in Dirac materials (graphene and topological insulators). He pioneered the development of linear scaling computational approaches for wavepacket dynamics, Kubo conductivities, and Landauer-Büttiker conductance in disordered materials. He studied Theoretical Physics at ENS and University UJF (France), received a PhD in Physics in 1996 (CNRS), and worked in Japan, Spain and Germany. He was appointed Assistant Prof. at UJF (2000) and CEA Researcher (2004). He received the Friedrich Wilhelm Bessel prize from the Alexander von Humboldt Foundation (Germany). He is the PI of ICN2 in the GRAPHENE FLAGSHIP, and is deputy leader of the Graphene Spintronics Workpackage.

Research interests

At ICN2, S. Roche and his group theoretically explore exotic quantum transport in Dirac Matter including graphene and topological insulators. Main current interests include (i) the study of quantum interferences and decoherence mechanisms in presence of electron-phonon coupling and spin-orbit interaction, (ii) spin dynamics and spin-torques phenomena in van der Waals heterostructures, (iii) spin Hall and quantum spin Hall effects, valley Hall effects in Dirac Matter (iv) thermoelectricity in two-dimensional materials (v) quantum devices simulation and (vi) quantum technologies (quantum computing and entanglement in many body physics).

Selected publications

- Garcia JH, Vila M, Cummings AW & **Roche S** 2018 'Spin Transport in Graphene/Transition Metal Dichalcogenide Heterostructures', *Chem Soc Rev*, 47, 3359-3379
- Khokhriakov D, Cummings AW, Song K, Vila M, Karpiak B, Dankert A, **Roche S** & Dash SP 2018, 'Tailoring emergent spin phenomena in Dirac material heterostructures', *Sci Adv*, Vol. 4, no. 9, eaat9349.
- Valenzuela SO & Roche S 2018, "a Barrier to Spin Filter", *Nat Electr* 1, 328-329
- Song K, Soriano D, Cummings AW, Robles R, Ordejon P & **Roche S** 2018, 'Spin Proximity Effects in Graphene/Topological Insulator Heterostructures', *Nano Letters* 18 (3), 2033-2039
- Aprojanz J, Power, SR, Bampoulis P, **Roche S**, Jauho AP, Zandvliet HJW, Zakharov AA & Tegenkamp C 2018 'Ballistic tracks in graphene nanoribbons', *Nat Commun* 9, 4426
- Karpiak B, Dankert A, Cummings AW, Power SR, **Roche S** & Dash SP 2018, '1D ferromagnetic edge contacts to 2D graphene/h-BN heterostructures', *2D Materials* 5, 014001
- Gregersen SS, Garcia JH, Jauho AP, **Roche S** & Power SR 2018 'Charge and spin transport anisotropy in nanopatterned graphene', *J Phys Mater* 1 015005
- Marmolejo-Tejada JM, García JH, Petrović MD, Chang P-H, Sheng XL, Cresti A, Plecháč P, **Roche S** & Nikolić BK 2018, 'Eciphering the origin of nonlocal resistance in multiterminal graphene on hexagonal-boron-nitride with *ab initio* quantum transport: Fermi surface edge currents rather than Fermi sea topological valley current', *J Phys Mater*, 1 015006
- Veliev F, Cresti A, Kalita D, Bourrier A, Belloir T, Briançon-Marjollet A, Albrieux M, **Roche S**, Bouchiat V & Delacour C 2018, 'Sensing ion channel in neuron networks with graphene field effect transistors', *2D Materials* 5, 045020
- Lopez-Bezanilla A, Froufe-Pérez LS, **Roche S** & Sáenz JJ 2018, 'Unequivocal signatures of the crossover to Anderson localization in realistic models of disordered quasi-one-dimensional materials', *Phys Rev B* 98, 235423

Selected research activities

Appointment as Editor in Chief of Journal of Physics Materials (Institute of Physics).

ICREA MEMOIR 2018



Xavier Rodó

Institut de Salut Global Barcelona
Experimental Sciences & Mathematics

Head of the CLIMA (Climate & Health Program at ISGlobal, ORCID ID: 0000-0003-4843-6180). Founding director of the IC3 climate institute and former head of the LRC-PCB. 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 46 research projects. Advised over 20 postdoc fellows. Co-chair of CLIVAR-Spain (-2007), SSC of the MEDCLIVAR-ESF, CA and ER of the AR4-WGII (IPCC2007). SCM of the Drought Integration Group (DIG) of the World Climate Research Program (WCRP) and of the ISIMIP Health Impact Models for IPCC AR6. Board Member of Nature Scientific Reports 'Earth & Environmental Sciences' and of the OPCC to monitor climate change in the Pyrenees.

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), both in endemic regions and in epidemic conditions (e.g. fringe areas of deserts and highlands in Africa and Asia). An emerging area of my research entails understanding the interaction between climate, pollution and the aerial microbiome for their effects on human health.

Selected publications

- Grossi C, Vogel FR, Curcoll R, Àgueda A, Vargas A, **Rodó X** & Morguá J-A 2018, 'Study of the daily and seasonal atmospheric CH₄ mixing ratio variability in a rural Spanish region using 222Rn tracer', *Atmospheric Chemistry and Physics*, 18:5847-5860.
- Draibe J, **Rodó X**, Fulladosa X, Martínez-Valenzuela L, Diaz-Encarnación M, et al. 2018, 'Seasonal variations in the onset of positive and negative renal ANCA-associated vasculitis in Spain', *Clinical Kidney Journal*, 11-4:468-473.
- Samreth D, Arnavielhe S, Ingenrieth F, Bedbrook A, Onorato GL, Murray R, Almeida R, Mizani MA et al & the MASK study group 2018, 'Geolocation with respect to personal privacy for the Allergy Diary app – a MASK study', *World Allergy Organization Journal*, 11:15.
- Bousquet J, Anto JM, Annesi-Maesano I, Dedeu T, **Rodó X** et al. 2018, 'POLLAR: Impact of air POLLution on Asthma and Rhinitis; a European Institute of Innovation and Technology Health (EIT Health) project', *Clinical and Translational Allergy*, 8:36.
- Bousquet J, Arnavielhe S, Bedbrook A, Bewick M, **Rodó X** and MASK study group 2018, 'MASK 2017: ARIA digitally-enabled, integrated, person-centred care for rhinitis and asthma multimorbidity using real-world-evidence', *Clinical and Translational Allergy*, 25(8):45.
- Rusinol M, Fernandez-Cassi X, Timoneda N, Carratala A, **Rodo X** et al. 2018, *Journal Of Environmental Management*, 223:1100-1100.

Selected research activities

Jury of the Earth and Environmental Sciences Prize, Premis Ciutat de Barcelona, 2018. Scientific Committee Member, ISIMIP Climate Impact Models Intercomparison Program. Health Impact Models for IPCC AR6. Lead Scientist of a GRC-GenCat. Scientific Advisor of Re-City 'Cities and Climate Change'. Co-PI of the Marie Curie ITN HELICAL and the UIA Barcelona Climate Project. Over 10 Intl. presentations (Keynote/Invited Speaker).

Lead Scientist in the implementation of the first Urban Lab for the monitoring of urban airborne hazards (AeroBioHealth).

ICREA MEMOIR 2018



Antoni Rodríguez-Fornells

Institut de Salut Global Barcelona Universitat de Barcelona,
 Institut d'Investigació Biomèdica de Bellvitge
 Social & Behavioural Sciences

I got my PhD at the University of Barcelona (UB, 1996) about individual differences in impulsiveness. Afterwards, I worked at the University of Magdeburg (Germany, 1999-2002) as a post-doctoral researcher. My main topics of research were bilingual language processing, executive functions and the brain correlates of error monitoring. In 2002, I got a "Ramón y Cajal" research position from the Spanish Government and afterwards I joined ICREA as a Research Professor. Since then, I have created an interdisciplinary 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.

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 especially its interface with executive functions and the reward system). This approach has been recently applied to understand the preserved learning mechanisms in aphasic people. We recently explored 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

- Ripollés P, Ferreri L, Mas-Herrero E, Alicart H, Gómez-Andrés A, Marco-Pallarés J, Antonijoan RM, Noesselt T, Valle M, Riba J & **Rodríguez-Fornells A** 2018, 'Intrinsically regulated learning is modulated by synaptic dopamine signaling', *eLife*, 7, pii: e38113.
- Grau-Sanchez J, Duarte E, Ramos-Escobar N, Sierpowska J, Rueda N, Redon S, de Las Heras MV, Pedro J, Serkamo T & **Rodríguez-Fornells A** 2018, 'Music-supported therapy in the rehabilitation of subacute stroke patients: a randomized controlled trial', *Annals Of The New York Academy Of Sciences*, 1423, 1, 318 - 328.
- Vaquero L, Ramos-Escobar N, Francois C, Penhune V & **Rodríguez-Fornells A** 2018, 'White-matter structural connectivity predicts short-term melody and rhythm learning in non-musicians', *Neuroimage*, 181, 252 - 262.
- Gurtubay-Antolin A, León-Cabrera P & **Rodríguez-Fornells A** 2018, 'Neural evidences of hierarchical cognitive control during haptic processing: an fMRI study', *eNeuro*, 0295-18.
- Sierpowska J, Fernandez-Coello A, Gomez-Andres A, Camins A, Castaner S, Juncadella M, Gabarros A & **Rodríguez-Fornells A** 2018, 'Involvement of the middle frontal gyrus in language switching as revealed by electrical stimulation mapping and functional magnetic resonance imaging in bilingual brain tumor patients', *Cortex*, 99, 78 - 92.
- Mas-Herrero E, Karhulahti M, Marco-Pallares J, Zatorre RJ & **Rodríguez-Fornells A** 2018, 'The impact of visual art and emotional sounds in specific musical anhedonia', *Progress in Brain Research*, 237, 399 - 413.
- Simo M, Gurtubay-Antolin A, Vaquero L, Bruna J & **Rodríguez-Fornells A** 2018, 'Performance monitoring in lung cancer patients pre- and post-chemotherapy using fine-grained electrophysiological measures', *Neuroimage-clinical*, 18, 86 - 96.

ICREA MEMOIR 2018



Angel R. Nebreda

Institut de Recerca Biomèdica de 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 as well as in 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

We investigate cell regulation mechanisms, especially regarding how cells interpret different signals to elaborate the appropriate responses. Our work focuses on signal integration by p38 MAPKs and their role in tumorigenesis. We use a combination of biochemical approaches and studies in cancer cell lines to investigate how this signaling pathway contributes to tumor cell homeostasis. We also use genetically modified mice, which allow the modulation of p38 MAPK signaling in a regulated and tissue-specific manner. Our aim is to elucidate physiological functions of p38 MAPK signaling and its role in the initiation and progression of breast, lung and colorectal tumors. We are very interested in the identification of therapeutic opportunities based on the modulation of p38 MAPK activity using chemical compounds. Moreover, we study the regulation and functions of the RINGO proteins, a family of atypical activators of the cell cycle kinases Cdk1 and Cdk2.

Selected publications

- Canovas B, Igea A, Sartori AA, **Gomis RR**, Paull TT, Isoda M, Perez-Montoyo H, Serra V, Gonzalez-Suarez E, Stracker TH & **Nebreda AR** 2018, 'Targeting p38 alpha Increases DNA Damage, Chromosome Instability, and the Anti-tumoral Response to Taxanes in Breast Cancer Cells', *Cancer Cell*, 33, 6, 1094-1110.
- Youssif C, Cubillos-Rojas M, Comalada M, Llonch E, Perna E, Djouder N & **Nebreda AR** 2018, 'Myeloid p38a signaling promotes intestinal IGF-1 production and inflammation-associated tumorigenesis', *EMBO Mol Med* 10, 7, pii: e8403.
- Del Barco Barrantes I, Stephan-Otto Attolini C, Slobodnyuk K, Igea A, Gregorio S, Gawrzak S, **Gomis RR** & **Nebreda AR** 2018, 'Regulation of Mammary Luminal Cell Fate and Tumorigenesis by p38 α ', *Stem Cell Reports*, 10, 1, 257-271.
- Gawrzak S, Rinaldi L, Gregorio S, Arenas EJ, Salvador F, Urosevic J, Figueras-Puig C, Rojo F, del Barco Barrantes I, Miguel Cejalvo J, Palafox M, Guiu M, Berenguer-Llargo A, Symeonidi A, Bellmunt A, Kalafatovic D, Arnal-Estape A, Fernandez E, Mullauer B, Groeneveld R, Slobodnyuk K, Stephan-Otto Attolini C, Saura C, **Arribas J**, Cortes J, Rovira A, Munoz M, Lluch A, Serra V, Albanell J, Prat A, **Nebreda AR**, **Aznar Benitah S** & **Gomis RR** 2018, 'MSK1 regulates luminal cell differentiation and metastatic dormancy in ER+ breast cancer', *Nature Cell Biology*, 20, 211 - 221.
- Curtis M, Kenny H, Ashcroft B, Mukherjee A, Johnson A, Zhang Y, Helou Y, Battle R, Liu X, Gutierrez N, Gao X, Yamada SD, Lastra R, Montag A, Ahsan N, Locasale JW, Salomon AR, **Nebreda AR** & Lengyel E 2018, 'Fibroblasts mobilize tumor cell glycogen to promote proliferation and metastasis' *Cell Metab*, 29, 1, 141-155.e9.
- De Mol E, Szulc E, Di Sanza CD, Bertocini CW, Fenwick RB, ..., García J, **De Fabritiis GD**, Estébanez-Perpiñá E, McEwan IJ, **Nebreda AR** & **Salvatella X** 2018, 'Regulation of androgen receptor activity by transient interactions of its transactivation domain with general transcription regulators', *Structure*, 26, 145-152.e3.

ICREA MEMOIR 2018



César R. Ranero
 Institut de Ciències del Mar
 Experimental Sciences & Mathematics

My Dr. degree was awarded (1993) by Barcelona University for work at the Earth Sciences Institute (CSIC). After a postdoc (93-99) and tenure (2000) at GEOMAR, I joined ICREA in 2005 to work at the Marine Sciences Institute (CSIC). I have >120 peer-reviewed articles, with > 100 within the SCI with >4800 citations coming from > 2600 articles and h-index = 40. I have >500 contributions to international congresses and delivered >55 invited talks and seminars at European/American/Japan universities, research centers, and congresses/workshops. I have been organizer, convener, or program committee member of >30 international scientific meetings. I have been PI or CO-PI of over a dozen projects that included ship cruises. I have supervised the work of more than 20 graduated and postdoctoral researchers. Since 2007 I coordinate the Barcelona Center for Subsurface Imaging (<http://www.barcelona-csi.cmima.csic.es>) with 20-25 scientists.

Research interests

I study subduction systems, continental rifting, and seafloor spreading. For this end, I regularly lead international scientific teams in experiments to acquire the best possible observations. I work on analysis and processing to obtain robust data sets, and use state-of-the-art imaging techniques. I also work with multibeam bathymetry of seafloor maps. My goal is to interpret seismic observables integrated with other geophysical and geological information to advance conceptually in the understanding of active systems. I study tectonic and magmatic processes at oceanic spreading centers and the rift architecture of continental margins. I also study tectonic processes at convergent plate boundaries, where my interest has been centered on the relations between long-term tectonics, seismogenesis, and fluids in the incoming oceanic and overriding plates. I am particularly interested on the processes that govern the behaviour of earthquakes at subduction zones.

Selected publications

- Booth-Rea G, **Ranero CR** & Grevemeyer I 2018, 'The Alboran volcanic-arc modulated the Messinian faunal exchange and salinity crisis', *Scientific Reports*, 8, 13015.
- Kohn MJ, Castro AE, Kerswell BC, **Ranero CR** & Spear FS 2018, 'Shear heating reconciles thermal models with the metamorphic rock record of subduction', *Proceedings Of The National Academy Of Sciences Of The United States Of America*, 115, 46, 11706 - 11711.
- Jimenez CE, Sallares V & **Ranero CR** 2018, 'Appraisal of Instantaneous Phase-Based Functions in Adjoint Waveform Inversion', *IEEE Transactions On Geoscience And Remote Sensing*, 56, 9, 5185 - 5197.
- Grevemeyer I, **Ranero CR** & Ivandic M 2018, 'Structure of oceanic crust and serpentinization at subduction trenches', *Geosphere*, 14, 2, 395 - 418.
- Geersen J, **Ranero CR** et al. 2018, 'Does permanent extensional deformation in lower forearc slopes indicate shallow plate-boundary rupture?', *Earth And Planetary Science Letters*, 489, 17 - 27.
- Prada M, Sallares V, **Ranero CR** et al. 2018, 'Spatial variations of magmatic crustal accretion during the opening of the Tyrrhenian back-arc from wide-angle seismic velocity models and seismic reflection images', *Basin Res.*, 30, 124 - 141.
- Dannowski A, Morgan JP, Grevemeyer I & **Ranero CR** 2018, 'Enhanced Mantle Upwelling/Melting Caused Segment Propagation, Oceanic Core Complex Die Off, and the Death of a Transform Fault: The Mid-Atlantic Ridge at 21.5 degrees N', *Journal Of Geophysical Research*, 123, 2, 941 - 956.
- Geersen J, **Ranero CR** et al. 2018, 'Active tectonics of the North Chilean marine forearc and adjacent oceanic Nazca Plate', *Tectonics*, 37.
- Gómez de la Peña L, **Ranero CR** & Gràcia E 2018, 'The Crustal Domains of the Alboran Basin (Western Mediterranean)', *Tectonics*, 37.

Selected research activities

- Chief Scientist of FRAME-1 cruise 5 June - 1 August.
- Convener of 2 sessions European Geoscience Union Assembly (Vienna).
- 2018 Fellow of the American geophysical Union (AGU).

ICREA MEMOIR 2018



Antoni Rosell-Melé

Universitat Autònoma de Barcelona
Experimental Sciences & Mathematics

I trained as an analytical chemist at the Chemical Institute of Sarrià (IQS), in Barcelona, and subsequently as an environmental chemist at CSIC under the supervision of J. Grimalt and J. Albaigés. I moved to England in 1990 to earn a PhD in the School of Chemistry at the University of Bristol (completed in 1994), in the group of G. Eglinton, on the application of biomarkers to decipher natural causes of climate change. This has become the central topic of my research career. In 1994 I joined the group of J. Maxwell as a post-doctoral researcher also in the School of Chemistry of Bristol to develop the use of fossil chlorophylls as climatic proxies. In 1996 I was awarded a NERC fellowship at the Department of Fossil Fuels and Environmental Geochemistry at the University of Newcastle, England. In 1999 I became a lecturer in the department of Geography at Durham University, England. In 2001, I joined the UAB and ICTA as an ICREA Research Professor.

Research interests

The main focus of my work is the study of the natural variability of the Earth's climate. My research tools are organic geochemical techniques, which allow the quantitative reconstruction of past climates. My work develops in three main areas i) the development of novel biomarker methods of climate reconstruction; ii) their application to reconstruct the dynamics and role of the ocean on climate over the last 5 million years; and iii) the use of such information to validate and constrain the sensitivity of climate models. I am also involved in the study of the impacts of anthropogenic activities in natural environments. I apply an environmental forensics approach to study the origin and fate of organic pollutants in remote environments, like the deep sea or the Amazonian rainforests. A third area of research is the study of organic matter in an archaeological context, mainly to reconstruct palaeodiets of ancient cultures and the use or function of archaeological artifacts

Selected publications

- **Rosell-Melé A**, Moraleda-Cibriána N, Cartró-Sabaté M, Colomer-Ventura F, Mayor P & Orta-Martínez M 2018, 'Oil pollution in soils and sediments from the Northern Peruvian Amazon', *Science of the Total Environment*, 610-611, 1010-1019.
- Orta-Martínez M, **Rosell-Melé A**, Cartró-Sabaté M, O'Callaghan-Gordo C, Moraleda-Cibrián N & Mayor P, 2018, 'First evidences of Amazonian wildlife feeding on petroleum-contaminated soils: A new exposure route to petrogenic compounds?', *Environmental Research*, 160, 514-517.
- Petrick B, McClymont EL, Littler K, **Rosell-Mele A**, Clarkson MO, Maslin M, Roehl U, Shevenell AE & Pancost RD 2018, 'Oceanographic and climatic evolution of the southeastern subtropical Atlantic over the last 3.5 Ma', *Earth And Planetary Science Letters*, 492, 12 - 21.
- Cao M, Rueda G, Rivas-Ruiz P, Trapote MC, Henriksen M, Vegas-Vilarrubia T & **Rosell-Mele A** 2018, 'Branched GDGT variability in sediments and soils from catchments with marked temperature seasonality', *Organic Geochemistry*, 122, 98 - 114.

ICREA MEMOIR 2018



Joan Rosell-Llompart
 Universitat Rovira i Virgili
 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, inertial impaction, 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 (Universidad de Sevilla, Spain), the "flow blurring" fine liquid atomization regime. 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. He leads the Droplets, interfaces, and flows (DEW) research lab at URV.

Research interests

We deform liquids to shapes such as jets, which are then converted to microscopic solid objects, such as nanoparticles. To overcome surface tension forces, we use electrostatic fields, which pull the liquid surface into a liquid jet, 100 times thinner than a human hair or more. Such electro-hydrodynamic jets become templates for creating nanofibers (electrospinning), nanoparticles (electrospray), and other structures with tailored composition and internal structure. We apply this knowledge to make novel materials for applications in catalysis, pharmaceuticals, medical diagnostics, energy harvesting, and others. We aim to understand the mechanisms by which the starting liquids transform to specific final structures. We also focus on the function-structure relationships of the engineered materials. Finally, we investigate the scaling up of such processes so they can be implemented industrially, and develop specific collection processes such as high resolution 3D printing.

Selected publications

- **Rosell-Llompart J**, Grifoll J & Loscertales IG 2018, 'Electrosprays in the cone-jet mode: From Taylor cone formation to spray development', *Journal of Aerosol Science*, 125, 2 - 31.
- Bodnár E, Grifoll J & **Rosell-Llompart J** 2018, 'Polymer solution electrospraying: A tool for engineering particles and films with controlled morphology', *Journal of Aerosol Science*, 125, 93 - 118.

Selected research activities

- Doctoral thesis supervision - Nikolas Sochorakis 'Electrospray scale-up for the production of particles of pharmaceutical interest.' Universitat Rovira i Virgili, Departament d'Enginyeria Química. Defended on Oct. 18, 2018.
- Organization of congresses - AECyTA advisory committee member for the Aerosol Technology AT2018 conference, Bilbao (Spain), June 18-20, 2018. - Member of scientific committee of RICTA-2018, the 6th Iberian Meeting on Aerosol Science and Technology, Bilbao (Spain), June 20-22, 2018.
- Oral presentations - IAC-2018 (10th International Aerosol Conference), Saint Louis, Missouri (USA), September 2-7, 2018. - AT-2018 (Aerosol Technology 2018), Bilbao (SPAIN), June 18-20, 2018. - Symposium of the European Electrohydrodynamic Atomization Group (Hogeschool Van Hall Larenstein, Leeuwarden, The Netherlands, February 16, 2018).

ICREA MEMOIR 2018



Sven Rosenkranz
 Universitat de Barcelona
 Humanities

Sven received his PhD from the University of St Andrews in 1999. After a research fellowship at UNAM, he worked at the philosophy department at FU Berlin until 2005 and was awarded his senior doctorate (habilitation) in 2004. From 2005 until 2008 he received a DFG Heisenberg Research Fellowship. Sven joined ICREA in 2008. He is Associate Fellow at Arché, St Andrews, and was until its closure in 2015 Honorary Research Fellow at the Northern Institute of Philosophy, Aberdeen. From 2010 until 2013 he coordinated the FP7 ITN PETAF (EC-GA 238128, €1465432) and from 2010 until 2015 served on the executive committee of the Consolider-Ingenio PERSP (CSD2009-00056, €2000000). Since 2014 he is coordinator of the consolidated research group LOGOS (2017-SGR-63). From 2016 until 2019, Sven coordinates the Horizon 2020 ETN *Diaphora* (H2020-MSCA-ITN-2015-675415, €3670854). In September 2018 he was elected member of the *Academia Europaea*.

Research interests

Sven's main research interests lie in metaphysics and epistemology. He is particularly interested in realism, objectivity, fallibility, the logic of justification, the limits of thought and knowledge (if any), and the philosophy of time. Sven has just published a co-authored monograph on tensed theories of time with Springer. He is currently finishing a book manuscript on the logic of justification based on his 2018 *Mind* paper 'The Structure of Justification'.

Selected publications

- Rosenkranz S 2018, 'The Structure of Justification', *Mind*, 127, 506, 309 - 338.
- Correia F & Rosenkranz S 2018, 'Nothing To Come: A Defence Of The Growing Block Theory Of Time', *Synthese Library Series*, Vol. 395, Springer, New York.

Selected research activities

Invited talks and conference presentations:

- 'The Logic of Justification Reloaded', Formal Methods Seminar, King's College London, February 2018
- 'Being in a position to know', First Flemish Epistemology Workshop, Centre for Logic and Philosophy of Science, KU Leuven, May 2018
- 'Towards a logic for *being in a position to know*', Workshop on *Philosophical Applications of Modal Logic*, University of Oslo, June 2018, and Workshop on *Normative Notions Formalised*, Munich Centre for Mathematical Philosophy, LMU, München, August 2018
- 'The Grounding of Tensed Truths', Fifth Annual Conference of the International Association for Philosophy of Time, Yonsei University, Seoul, South Korea, June 2018, and Workshop on *Ockhamism and Philosophy of Time*, University of L'Aquila, Italy
- 'Agnosticism and epistemic norms', Workshop on *Suspension of Belief*, University of Mannheim, October 2018
- 'Indeterminism and the Growing Block Theory of Time' (with Fabrice Correia), DIAPHORA Workshop on *Determinism and Open Choices*, University of Neuchâtel, Switzerland, December 2018

ICREA MEMOIR 2018



Barbara Rossi
 Universitat Pompeu Fabra
 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, ENSAE-CREST, U. of Montreal, Atlanta Fed, ECB, Norges Bank, UCSD, U. of Sydney and Concordia U. Prof. Rossi is the Editor of the *Journal of Applied Econometrics* and 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*. She is a CEPR Fellow and member of the CEPR Business Cycle Dating Committee, a member of the Council of the EEA and the European Standing Committee of the Econometric Society, the Vice 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 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

- Ismailov A & **Rossi B** 2018, 'Uncertainty and Deviations from Uncovered Interest Rate Parity', *Journal of International Money and Finance* 88, pp 242-259

Selected research activities

2015-2019 · Editor, *Journal of Applied Econometrics*
 2017-2019 · Co-editor, *International Journal of Central Banking*
 2017-2019 · Vice Chair of the Scientific Committee of the Euro Area Business Cycle Network
 2017- · Founding Fellow, International Association of Applied Econometrics
 2017-2021 · Member of the Council of the European Economic Association

Invited Speaker at:

-XXIII Latin American and Caribbean Economic Association (LACEA) and Latin American Meeting of the Econometric Society (LAMES), November 2018
 -2018 Asian Meetings of the Econometrics Society (Seoul, Korea)
 -2018 Royal Economic Society Annual Conference (Brighton, UK)
 -2018 Advances in Applied Macro-Finance Conference (Turkey)

ICREA MEMOIR 2018



Carme Rovira

Universitat de Barcelona

Experimental Sciences & Mathematics

Dr. Rovira is ICREA Research Professor at the University of Barcelona (UB). She did part of her PhD research in USA (NCSU and SIU) 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 UB (1999-2001). In 2002 she obtained a Ramón y Cajal position and started her research group at the Parc Científic de Barcelona. She was appointed ICREA Research Professor in 2007 and moved to the UB (Department of Chemistry) in 2012. Dr. Rovira has received research awards from the Government of Catalonia ("Distinció de la Generalitat", 2003) and the Barcelona City Council (Experimental Sciences and Technology, 2016). She is the author of about 140 publications in peer-reviewed journals and books, mainly in the fields of Theoretical Chemistry and Computational Biology.

Research interests

The research at Dr. Rovira's group (<http://www.ub.edu/sqpbio>) 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 to help in the design of more efficient enzymes and inhibitors. In the last few years, her research has been focused on heme proteins (peroxidases and catalases) and carbohydrate-active enzymes.

Selected publications

- Bilyard MK, Bailey H, Raich L, Gafitescu M, Machida T, Iglesias-Fernández J, Lee SS, Spicer CD, **Rovira C**, Yue WW & Davis BG 2018, 'Palladium-mediated enzyme activation suggests multiphase initiation of glycogenesis'. *Nature*, 563, 235-240.
- Lagunas A, Guerra-Castellano A, Nin-Hill A, Díaz-Moreno I, de la Rosa MA, Samitier J, **Rovira C** & **Gorostiza P** 2018, 'Long distance electron transfer through the aqueous solution between redox partner proteins'. *Nat Commun*, 9, 5157.
- Wang B, Johnston EM, Li P, Shaik S, Davies GJ, Walton PH & **Rovira C** 2018, 'QM/MM studies into the H₂O₂-dependent activity of lytic polysaccharide monooxygenases: evidence for the formation of a caged hydroxyl radical intermediate', *ACS Catalysis*, 8, 1346-1351.
- Chevrier DM, Raich L, **Rovira C**, Das A, Luo Z, Yao Q, Chatt A, Xie J, Jin R, Akola J & Zhang P 2018, 'Molecular-scale ligand effects in small gold-thiolate nanoclusters'. *Journal of the American Chemical Society*, 140, 15430-15436.
- de las Rivas, M, Daniel EJP, Coelho H, Lira-Navarrete E, Raich L, Compañón I, Diniz A, Lagartera L, Jiménez-Barbero J, Clausen H, **Rovira C**, Marcelo F, Corzana F, Gerken TA, Hurtado-Guerrero R 2018, 'Structural and mechanistic insights into the catalytic domain-mediated short-range glycosylation preferences of GalNAc-T4', *ACS Central Science*, 4, 1274-1290.
- Wang, B, Fita I & **Rovira C** 2018, 'Theory Uncovers the Role of the Methionine-Tyrosine-Tryptophan Radical Adduct in the Catalase Reaction of KatGs: Oxygen Release Mediated by Proton-Coupled Electron Transfer', *Chemistry-a European Journal*, 24, 20, 5388 - 5395 (*Hot Paper* by Ed).
- Coines J, Alfonso-Prieto M, Biarnés X, Planas A & **Rovira C** 2018, 'Oxazoline or oxazolinium ion? 2018, The protonation state and conformation of the reaction intermediate of chitinase enzymes revisited' *Chemistry - A European Journal*, 24, 19258-19265.

Selected research activities

- Financed projects from MICINN, AGAUR and EU.
- Invited talks at several conferences in EU.
- One PhD and one MSc theses defended.

ICREA MEMOIR 2018



Joan-Pau Rubiés
Universitat Pompeu Fabra
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 the Department of International History at the London School of Economics and Political Science. He was Reader in International History at the LSE until 2012, when he accepted the offer of a Research Professorship at ICREA, which he holds at Universitat Pompeu Fabra. He has been twice visiting professor at the École des Hautes Études (Paris and Marseille). 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 and have 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. I am currently developing various lines of research: 1. Travel writing and ethnography, literary and visual 2. Religious missions, religious dialogue and cultural mediation 3. The intellectual impact of travel writing and the origins of the Enlightenment 4. Diplomacy and cultural encounters 5. The comparative history of early modern empires and globalization. I am the coordinator of the Research Group on Ethnographies, Cultural Encounters and Religious Missions (ECERM) at Universitat Pompeu Fabra, which has received funding from the ERC (Marie Curie Program), AGAUR (SGR) and MINECO: <http://www.upf.edu/ecerm/>

Selected publications

- **Rubiés JP** 2018, 'Comparing Cultures in the Early Modern World. Hierarchies, Genealogies and the Idea of European Modernity', in: *Regimes of Comparatism: Frameworks of Comparison in History, Religion and Anthropology*, edited by R.Gagné, S.Goldhill and G.E.R.Lloyd, Brill, Leiden and Boston, 116-172.
- **Rubiés JP** 2018, '1622 y la crisis de Ormuz ¿Decadencia o reorientación?', in José Antonio Martínez Torres (coord.) *Conexiones imperiales en ultramar: España y Portugal, 1575-1668, Mélanges de la Casa de Velázquez. Nouvelle Série*, 48 (2):121-151.
- **Rubiés JP** 2018, 'Juan González de Mendoza y el descubrimiento Europeo de China', in Diego Sola, *El Cronista de China. Juan González de Mendoza entre la misión, el imperio y la historia*. Barcelona: Edicions Universitat de Barcelona, pp 15-27.
- **Rubiés JP** 2018, 'Unfabling the East: The Enlightenment Encounter with Asia, by Jürgen Osterhammel', *Times Higher Education*.

Selected research activities

The Research Group *Ethnographies, Cultural Encounters and Religious Missions* (ECERM) which I lead at Universitat Pompeu Fabra was upgraded to the status of Consolidated Group by AGAUR, with new finance until 2020.

Some of the talks I gave in international events in 2018:

From idolatry to religions: the missionary discourses on Hinduism and Buddhism compared, 1550-1700. *The Early-modern Catholic Invention of "Oriental" "Religions"*. University of Austin, Texas.

What is left of the Renaissance? The discovery of the world and man from a cosmopolitan perspective. *Burckhardt at 200: The Civilization of the Renaissance reconsidered*. The British Academy, London.

Imperial Agency and Cultural Mediations: Re-assessing the Portuguese Loss of Ormuz in 1622. *The Iberian World and the East*. Maison Française in Oxford.

The Boxer Codex as an enigma: in search of an authorial voice. *Early Modern Cultural Encyclopaedias*. University of Hamburg.

Translating languages and (mis) translating cultures in the Jesuit missions. *A Host of Tongues*. Universidade Nova, Lisbon.

ICREA MEMOIR 2018



Iñaki Ruiz-Trillo

Institut de Biologia Evolutiva
Life & Medical Sciences

Iñaki Ruiz-Trillo is an ICREA Research Professor at the Institut de Biologia Evolutiva (CSIC-UPF) in Barcelona. His educational background includes a B.S. and a PhD 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 60 peer-reviewed articles, most of them in high impact journals, such as *Cell*, *Science*, *eLife*, and *PNAS*. He has lead several research projects, including 2 ERC grants. He is an EMBO member and serves in the editorial board of several journals. His current research interests include the origin of multicellular animals and the evolution of complex life forms.

Research interests

The lab is interested in understanding how multicellular animals emerged from their unicellular ancestors. To this aim, we perform comparative genomic analyses between multicellular animals and their closest unicellular relatives to unravel the nature of the unicellular ancestor that gave rise to animals. We are also currently developing molecular techniques and transgenesis tools in the closest unicellular relatives to Metazoa. Finally, we are also interested in unraveling the hidden diversity among opisthokonts lineages using metabarcoding data.

Selected publications

- Lopez-Escardo D, Paps J, de Vargas C, Massana R, **Ruiz-Trillo I** & del Campo J 2018, 'Metabarcoding analysis on European coastal samples reveals new molecular metazoan diversity', *Scientific Reports*, 8, 9106.
- Rafels-Ybern A, Gabriel Torres A, Grau-Bove X, **Ruiz-Trillo I** & **Ribas de Pouplana L** 2018, 'Codon adaptation to tRNAs with Inosine modification at position 34 is ...', *RNA Biology*.15, 4-5, 500 - 507.
- Parra-Acero H, Ros-Rocher N, Perez-Posada A, Kozyczkowska A, Sanchez-Pons N, Nakata A, Suga H, Najle SR & **Ruiz-Trillo I** 2018, 'Transfection of *Capsaspora owczarzaki*, a close unicellular relative of animals', *Development*, 145, 10, UNSP dev162107.
- Ondracka A, Dudin O & **Ruiz-Trillo I** 2018, 'Decoupling of Nuclear Division Cycles and Cell Size during the Coenocytic Growth of the Ichthyosporean *Sphaeroforma arctica*', *Current Biology*, 28, 12, 1964.
- Grau-Bove X, **Ruiz-Trillo I** & **Irimia M** 2018, 'Origin of exon skipping-rich transcriptomes in animals driven by evolution of gene architecture', *Genome Biology*, 19, 135.
- Brate J, Neumann RS, Fromm B, Haraldsen AAB, Tarver JE, Suga H, Donoghue PCJ, Peterson KJ, **Ruiz-Trillo I**, Grini PE & Shalchian-Tabrizi K 2018, 'Unicellular Origin of the Animal MicroRNA Machinery', *Current Biology*, 28, 20, 3288.
- Arroyo AS, Lopez-Escardo D, Kim E, **Ruiz-Trillo I** & Najle SR 2018, 'Novel Diversity of Deeply Branching Holomycota and Unicellular Holozoans Revealed by Metabarcoding in Middle Parana River, Argentina', *Frontiers In Ecology And Evolution*, 6, 99.
- López-Escardó D, López-García P, Moreira D, **Ruiz-Trillo I** & Torruella G 2018, 'Parvularia atlantis gen. et sp. nov., a Nucleariid Filose Amoeba (Holomycota, Opisthokonta), *The Journal of Eukaryotic Microbiology* 65(2):170-179

ICREA MEMOIR 2018



Jorge G. Russo
 Universitat de Barcelona
 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 L. 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.

Selected publications

- **Russo JG** & Zarembo K 2018, 'Wilson loops in antisymmetric representations from localization in supersymmetric gauge theories', *Rev. Math. Phys.*, vol 30, no.07, p. 1840014. (in "*Ludwig Faddeev Memorial Volume*").
- Bourget A, Rodriguez-Gomez D & **Russo JG** 2018, 'A limit for large R-charge correlators in N=2 theories', *Journal Of High Energy Physics*, , 5, 074.
- **Russo JG** 2018, 'Exact gravitational plane waves and two-dimensional gravity', *Phys.Lett. B784*, pp.142-145.

Selected research activities

Invited speaker at Workshop "Supersymmetric Quantum Field Theories in the Non-perturbative Regime", The Galileo Galilei Institute for Theoretical Physics (GGI) (april 2-May 5, 2018), Florence, Italy. Title of talk: "Correlation Functions in N=2 Theories from Localization"

Invited speaker at Workshop "Non-Perturbative Effects in Supersymmetric Field Theories", at International Institute of Physics, Natal (Oct 15-Nov 2, 2018). Title of talk: "Toda unchained in N=2 superconformal field theories"

Invited speaker at '7th Bangkok Workshop on High-Energy Theory' (Jan 29 - Feb 2, 2018). Chulalongkorn University, Bangkok, Thailand. Title of talk: "Boundary conformal anomalies on AdS(b)xS(a) spaces"

Co-organizer of the international Workshop "Supersymmetric Quantum Field Theories in the Non-perturbative Regime" at The Galileo Galilei Institute for Theoretical Physics (GGI), Florence, Italy.

Invited Course "Introduction to Supersymmetric Localization" at the Physics Department of Chulalongkorn University, Bangkok, Thailand (February 2018).

ICREA MEMOIR 2018



Neus Sabaté

Institute of Microelectronics of Barcelona - Centre Nacional de Microelectrònica
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.

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 paper-based lab-on-a-chip devices while being environmentally friendly. 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

- Montes-Cebrián Y, del Torno-de Román L, Álvarez-Carulla A, Colomer-Farrarons J, Minter SD, **Sabaté N**, Miribel-Català PL, Esquivel JP 2018, 'Plug-and-Power' Point-of-Care diagnostics: A novel approach for self-powered electronic reader-based portable analytical devices', *Biosensors and Bioelectronics*, vol 118, pp. 88-96.
- del Torno-de Román L, Navarro M, Hughes G, Esquivel JP, Milton RD, Minter SD, **Sabaté N** 2018, 'Improved performance of a paper-based glucose fuel cell by capillary induced flow', *Electrochimica Acta*, vol 282, pp. 336-342.

Selected research activities

Dissemination Activities

- How life and potatoes can inspire a scientist - Talk at the opening ceremony of the Barcelona International Youth Science Challenge
- Participation in Las Científicas Cuentan project for the public awareness of excellent science made by scientific women
- Invited Talk & Round Table participation at the event "Spain Science & Innovation" organized by CDTI in Brussels
- Bateries i piles de combustible de paper: l'energia neta del futur - Talk at 18th edition of Els dissabtes de la Física at UAB
- Invited Talk & Round Table participation at the Circular Innovative solutions for companies in the Health sector Workshop organized by ACCIO

Awards

- Organic Electronics Association Award to the Best Prototype/New Product of the year for the development of a Self-powered sweat patch of Cystic Fibrosis Diagnostics at the Large Organic Printed Electronics Europe Conference 2018

ICREA MEMOIR 2018



Xavier Salvatella

Institut de Recerca Biomèdica de 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 July 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 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 methods to probe the fluctuations of the structure of proteins by combining experimental data and molecular simulations and, on the other hand, at understanding how changes in such motions relate to the molecular recognition of proteins, to their function and to disease.

Selected publications

- De Mol E, Szulc E, Di Sanza C, Martínez-Cristóbal P, Bertocini CW, Fenwick RB, Frigolé-Vivas Marta, Masín M, Hunter I, Buzón V, Brun-Heath I, García J, **De Fabritiis G**, Estébanez-Perpiñá E, McEwan IJ, **Nebreda A & Salvatella X** 2018 'Regulation of Androgen Receptor Activity by Transient Interactions of Its Transactivation Domain with General Transcription Regulators' *Structure*, 26,145-152.
- Sabo TM, Gapsys V, Walter KFA, Fenwick RB, Becker S, **Salvatella X**, de Groot BL, Lee D & Griesinger C 2018, 'Utilizing dipole-dipole cross-correlated relaxation for the measurement of angles between pairs of opposing C alpha H alpha-C alpha H alpha bonds in anti-parallel beta-sheets', *Methods*, 138, 85 - 92.
- Bouchard JJ, Otero JH, Scott DC, Szulc E, Martin EW, Sabri Na, Granata D, Marzahn MR, Lindorff-Larsen K, **Salvatella X**, Schulman BA & Mittag T 2018, 'Cancer Mutations of the Tumor Suppressor SPOP Disrupt the Formation of Active, Phase-Separated Compartments', *Molecular Cell*, 72, 1, 19 - 36.
- Pujols J, Peña-Díaz S, Lazaro DF, Peccati F, Pinheiro F, González D, Carija A, Navarro S, Conde-Giménez M, García J, Guardiola S, Giralt E, **Salvatella X**, Sancho J, Sodupe M, Outeiro TF, Dalfo E & Ventura S 2018, 'Small molecule inhibits alpha-synuclein aggregation, disrupts amyloid fibrils, and prevents degeneration of dopaminergic neurons', *Proc. Natl. Acad. Sci.* 115, 41, 10481 - 10486.

ICREA MEMOIR 2018



Samuel Sánchez

Institut de Bioenginyeria de Catalunya
Engineering Sciences

Samuel (PhD Chemistry, UAB, 2008) is since January 2015 ICREA Professor and Group Leader at the Institute for Bioengineering of Catalonia (IBEC) in Barcelona. In 2009, he worked at NIMS, Japan and from 2010 until 2013, he was Group Leader at the Institute for Integrative Nanosciences, IFW Dresden, Germany. He received several awards: Guinness World Record® 2010 and 2017 for smallest jet engine; IFW-IIN Research Prize 2011 for outstanding scientist; ERC Starting Grant 2012 “Lab-in-a-tube and Nanorobotic Biosensors”, ERC Proof-of Concept 2016 (Microcleaners) and 2018 (Lab-in-a-patch); MIT TR35 as “Innovator of the year under 35” Spain 2014; Princess of Girona Scientific Research Award 2015; “Joven Relevante” Award by the Círculo Ecuéstre de Barcelona and National Research Award for Young Talent from the Catalan Foundation of Research and Innovation (FCRI) 2016.

Research interests

Samuel Sánchez is leader of the “Smart Nano-Bio-Devices” group, working in the multidisciplinary field of Nanosciences with interest in self-powered micro- and nano-systems, small-scaled robots, integrated and flexible nano-(bio)-sensors, active drug delivery systems and 3D (Bio) Printed Soft Robotics. Sánchez’s group has been consolidated as one of the leading groups in catalytic nano-motors from fundamental aspects to various proof-of-concept applications. Currently, the main research lines in the group are: 1. Nanofabrication of self-powered micro- and nanorobots using nanotechnology and new fabrication tools for biomedicine and environmental applications. 2. 3D Printing and 3D BioPrinting for soft robotics and biomedical engineering. 3. Fabrication of ultracompact and flexible devices for biosensing. 4. Physics of active colloids near surfaces.

Selected publications

- Parmar J, Vilela D, Villa K, Wang J & **Sanchez S** 2018, ‘Micro- and Nanomotors as Active Environmental Microcleaners and Sensors’, *Journal of the American Chemical Society*, vol. 140, no. 30, pp 9317-9331.
- Patino T, Feiner-Gracia N, Arque X, Miguel-Lopez A, Jannasch A, Stumpp T, Schaeffer E, Albertazzi L & **Sanchez S** 2018, ‘Influence of Enzyme Quantity and Distribution on the Self-Propulsion of Non-Janus Urease-Powered Micromotors’, *Journal Of The American Chemical Society*, 140, 25, 7896 – 7903.
- Katuri J, Uspal WE, Simmchen J, Miguel-Lopez A & **Sanchez S** 2018, ‘Cross-stream migration of active particles’, *Science Advances*, vol. 4, no. 1, eaao1755.
- Hortelão AC, Patiño T, Perez-Jiménez A, Blanco À & **Sánchez S** 2018, ‘Enzyme-Powered Nanobots Enhance Anticancer Drug Delivery’, *Advanced Fundamental Materials*, vol 28, no. 25.
- Vilela D, Cossio U, Parmar J, Martinez-Villacorta AM, Gomez-Vallejo V, Llop J & **Sanchez S** 2018, ‘Medical Imaging for the Tracking of Micromotors’, *Acs Nano*, vol. 12, no 2, pp1220-1227.
- Katuri J, Caballero D, Voituriez R, Samitier J & **Sanchez S** 2018, ‘Directed Flow of Micromotors through Alignment Interactions with Micropatterned Ratchets’, *ACS Nano*, vol. 12, no. 7, pp 7282-7291.
- Patiño T, Arqué X, Mestre R, Palacios L & **Sánchez S** 2018, ‘Fundamental Aspects of Enzyme-Powered Micro and Nanoswimmers’, *Accounts of Chemical Research*, vol. 51, no. 11, pp 2662-2671.
- Xuan M, Mestre R, Gao C, Zhou C, He Q & **Sanchez S** 2018, ‘Noncontinuous Super-Diffusive Dynamics of a Light-Activated Nanobottle Motor’, *Angewandte Chemie International Edition*, vol. 57, no 23, 6838 – 6842.

Selected research activities

15+ scientific invited talks, seminars and outreach
 ERC-Proof-of-Concept
 2 patent applications
 20 appearances in the media
 Sci. Advisory Board of LabChip Journal
 2 cover pages: JACS, App.Mat.Today.
 5 Best Poster Awards

ICREA MEMOIR 2018



María Victoria Sánchez-Vives

Institut d'Investigacions Biomèdiques August Pi i Sunyer
Life & Medical Sciences

María V. Sanchez-Vives, MD, PhD in Neurosciences, has been ICREA Research Professor at the IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer) since 2008, where she is Head of the Systems Neuroscience group. She is also co-Director of the Event Lab (Experimental Virtual Environments in Neuroscience and Technology) and Adjunct Professor at the Dept. of Basic Psychology, University of Barcelona. She previously held a position as 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. Her independent research has been supported by national and international agencies. Since 2013 she has been Chief Editor of *Frontiers in Systems Neuroscience*.

Research interests

Neuronal and connectivity properties determining the emergent activity generated by neuronal networks. Aspects of spontaneous rhythmic neural activity: its regulating mechanisms, the information it encodes, and the consequences of this activity upon the network. We use an experimental and computational approach, with an interest in neurotechnology. The integration of the cortical information giving rise to bodily representation and the combination of brain activity and virtual reality for understanding these processes is another research line that we are pursuing.

Selected publications

- D'Andola M, Rebollo B, Casali AG, Weinert JF, Pigorini A, Villa R, Massimini M & **Sanchez-Vives MV** 2018, 'Bistability, Causality, and Complexity in Cortical Networks: An in Vitro Perturbational Study', *Cerebral Cortex*, 28, 7, 2233 - 2242.
- Rebollo B, Perez-Zabalza M, Ruiz-Mejias M, Perez-Mendez L & **Sanchez-Vives MV** 2018, 'Beta and gamma oscillations in prefrontal cortex during NMDA hypofunction: an in vitro model of schizophrenia features', *Neuroscience*, 383:138-149
- Seinfeld S, Arroyo-Palacios J, Iruretagoyena G, Hortensius R, Zapata LE, Borland D, de Gelder B, Slater M & **Sanchez-Vives MV** 2018, 'Offenders become the victim in virtual reality: impact of changing perspective in domestic violence', *Scientific Reports* 8: 2692.
- Suarez-Perez A et al. 2018, 'Quantification of signal-to-noise ratio in cerebral cortex recordings using flexible MEAs ...' *Frontiers in Neural Technology* 12: 862.
- Perez-Marcos D, Martini M, Fuentes CT, Rivas AIB, Haggard P & **Sanchez-Vives MV** 2018, 'Selective distortion of body image by asynchronous visuotactile stimulation'. *Body Image*, 24, 55-61.
- Pazzini L, Polese D, Weinert JF, Maiolo L, Maita F, **Sanchez-Vives MV** & Fortunato G 2018, 'An ultra-compact integrated system for brain activity recording and stimulation validated over cortical slow oscillations *in vivo* and *in vitro*', *Scientific Reports* 8: 16717

Selected research activities

- *Local organizer* of the intl workshop: "Understanding Consciousness", Barcelona
- *Organizer of workshops* at European Institute of Theoretical Neuroscience: "Brain states" and "Sleep and Aging" (Paris)
- *Keynote speaker* at "Augmentation of brain function" (Laussane) and "1st Intl Neuroscience Conference", Romania
- *Invited talks* at intl conferences in Madrid (ECC15), Barcelona ("Does your brain need a body?"), Dresden (PRETRA 2018), EITN (Paris), New York (NANS)
- *Seminars*: Univ of Pavia, Yale Univ, ICFO (Barcelona), Hospital Toledo
- *TEDex* talk at IESE

ICREA MEMOIR 2018



Anna Sanpera

Universitat Autònoma de Barcelona
Experimental Sciences & Mathematics

I graduated at Universitat Autònoma de Barcelona in 1986. From 1988-1992 Ph.D fellow (FPI) from the Ministerio de Educación y Ciencia at the Universitat Autònoma de Barcelona. In 1993, I moved to the University of Oxford, first as a research fellow and then as Fleming fellowship. In 1996, I moved to Saclay (Paris) as an European Post-Doctoral Research Fellow. In 1998 I was appointed research fellow at the Leibniz University, in Hannover (Germany) where I did my habilitation and became Professor Assistant. Since 2005 I am an ICREA Research Professor. My research interests are quite interdisciplinary and range from quantum information theory, to quantum gases and more recently condensed matter. Presently, I am working in the interface between quantum information and condensed matter. I have stable collaborations with different research groups both at national and international level. Otherwise I am fond of literature, sports and children.

Research interests

My research interest are Quantum Information, Atomic Physics and more recently Condensed Matter 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 and build, in a near future, a quantum computers and simulators able to perform tasks that classical computers cannot. I am also working in Quantum Thermometry, Quantum Learning and Quantum Metrology to exploit the advantages quantum physics offers us to improve machine learning tasks as well as the determination of unknown parameters with a precision that classical physics cannot achieve.

Selected publications

- Tura J, Aloy A, Quesada R, **Lewenstein M & Sanpera A** 2018, 'Separability of diagonal symmetric states: a quadratic conic optimization problem', *Quantum*, 2, UNSP 45.
- De Chiara G & **Sanpera A** 2018, 'Genuine quantum correlations in quantum many-body systems: a review of recent progress', *Reports On Progress In Physics*, 81, 7, 074002.
- Mehboudi M, **Sanpera A** & Parrondo JMR 2018, 'Fluctuation Dissipation Theorem for non-equilibrium states', *Quantum* 2, 66.

ICREA MEMOIR 2018



Joan Seoane

Vall d'Hebron Institut d'Oncologia
Life & Medical Sciences

Director of the Translational Research program 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 Professor of the Autonomous University of 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.

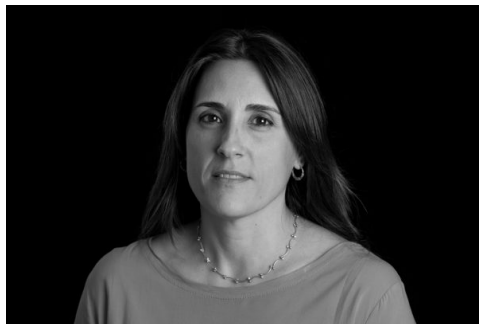
Research interests

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

- Yates LR, **Seoane J**, Le Tourneau C, Siu LL, Marais R, Michiels S, Soria JC, Campbell P, Normanno N, Scarpa A, Reis-Filho J, Rodon J, Swanton C & Andre F 2018, 'The European Society of Medical Oncology (ESMO) Precision Medicine Glossary', *Ann Oncol.*; 29(1):30-35.
- Martínez-Ricarte F, Mayor R, Martínez-Sáez E, Rubio-Pérez C, Pineda E, Cordero E, Cicuéndez M, Poca MA, **López-Bigas N**, Ramon y Cajal S, Vieito M, Carles J, Tabernero J, Vivancos A, Gallego S, Graus F, Sahuquillo J & **Seoane J** 2018, '**Molecular diagnosis of diffuse gliomas through sequencing of cell-free circulating tumour DNA from cerebrospinal fluid**', *Clinical Cancer Research*, 2018 Jun 15;24(12):2812-2819.
- Capdevila J, Mayor R, Mancuso FF, Iglesias C, Caratù G, Matos I, Zafón C, Hernando J, Petit A, Nuciforo P, Cameselle-Teijeiro JM, Álvarez 4, Recio JA, Tabernero J, Matias-Guiu X, Vivancos A & **Seoane J** 2018, '**Early evolutionary divergence between papillary and anaplastic thyroid cancers**', *Ann Oncol.* ; 29(6): 1454-1460.
- Liu Q, Ma L, Jones T, Palomero L, Pujana MA, Martinez-Ruiz H, Ha P, Murnane J, Cuartas I, **Seoane J**, Baumann M, Linge A & Barcellos-Hoff MH 2018, 'Subjugation of Tgfβ signaling by human papilloma virus in head and neck squamous cell carcinoma shifts DNA repair from homologous recombination to alternative end joining', *Clin Cancer Res.* 2018 Dec 1;24(23):6001-6014.
- **Seoane J** & Capdevila J 2018, 'The right compound for the right target: tackling RET', *Annals Of Oncology*, 29, 8, 1623 - 1625.
- De Mattos-Arruda L, Ng CKY, Piscuoglio S, Gonzalez-Cao M, Lim RS, De Filippo MR, Fusco N, Schultheis AM, Ortiz C, Viteri S, Arias A, Macedo GS, Oliveira M, Gomez P, Teixidó C, Nuciforo P, Peg V, Saura C, Ramon Y Cajal S, Casas FT, Weigelt B, Cortes J, **Seoane J** & Reis-Filho JS 2018, 'Genetic heterogeneity and actionable mutations in HER2-positive primary breast cancers and their brain metastases', *Oncotarget*, 9(29):20617-20630.

ICREA MEMOIR 2018



M. Ángeles Serrano

Universitat de Barcelona
Experimental Sciences & Mathematics

M. Ángeles Serrano obtained her PhD in Physics at the Universitat de Barcelona in 1999. One year later, she also received her Masters in Mathematics for Finance from the CRM-Universitat Autònoma de Barcelona. After four years in the private sector as IT consultant and mutual fund manager, she returned to academia in 2004. She completed her postdoctoral research at Indiana University (USA), the École Polytechnique Fédérale de Lausanne (Switzerland) and IFISC Institute (Spain). She came back to Barcelona in 2009, when she was awarded a Ramón y Cajal Fellowship at UB. In February 2009, she obtained the Outstanding Referee award of the American Physical Society. She is a Founder Member of Complexitat, the Catalan Network for the study of Complex Systems, and a Promoter Member of UBICS, the Universitat de Barcelona Institute of Complex Systems. M. Ángeles Serrano is ICREA Research Professor at the Universitat de Barcelona from October 2015.

Research interests

Complex networks -e.g. the Internet, molecular networks in the cell, or the international trade system- 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, and so for the prediction of their adaptation capabilities and evolution, is the characterization of the multilevel nature of complex networks in space and time. We are investigating the role of space, producing maps of networks embedded in a hidden geometry where distance stands as a measure of the tendency of elements to interact. Our focus is also on multiplexes and on networks of networks, in which different types of interactions coexist, and on the impacts of time variability in the presence of connections. Our applications cover a wide variety of real systems, from biological systems to economic and sociotechnological networks.

Selected publications

- García-Pérez G, Boguñá M & **Serrano MA** 2018, 'Multiscale unfolding of real networks by geometric renormalization', *Nature Physics*, 14, 6, 583 - 589.
- Massucci FA, Sagués F & **Serrano MA** 2018, 'Metabolic plasticity in synthetic lethal mutants: Viability at higher cost', *Plos Computational Biology*, 14, 1, e1005949.
- García-Pérez G, Boguñá M, Allard A & **Serrano MA** 2018, 'A new approach to international trade from Network Geometry. The World Trade Atlas 1870-2013', in *Networks of International Trade and Investment: Understanding globalization through the lens of network analysis*, Gorgoni S, Amighini A & Smith M Eds., Vernon Press.
- García-Pérez G, **Serrano MA** & Boguñá M 2018, 'Soft communities in similarity space', *Journal of Statistical Physics*, 173(3), 775-782.

Selected research activities

- PI of new grant, *Mapping Big Data Systems: embedding large complex networks in low-dimensional hidden metric spaces*, Fundación Banco Bilbao Vizcaya Argentaria (BBVA), 2018-2020.
- Director of PhD thesis, *A geometric approach to the structure of complex networks*, Dr. Guillermo García Pérez, Universitat de Barcelona, November 2018. Grade: Excellent *Cum Laude*.
- Invited talk, *The hidden hyperbolic geometry of international trade: World Trade Atlas 1870-2013*, XVIII World Economic History Congress, Session Networks, Intensity, Extensive Margins of Trade since the 19th Century: New Approaches to Globalization with Large Databases, MIT, Boston, July 29 - August 3, 2018.
- Invited talk, *Multiscale unfolding of real networks by geometric renormalization*, Summer Solstice 2018 International Conference on Discrete Models of Complex Systems, Gdansk, Poland, June 25-27, 2018.
- Standing Committee of the Universitat de Barcelona Institute of Complex Systems UBICS; Board member of the Catalan Network for the study of Complex Systems, complexitat.cat.
- Member of the Selection Committee for the "Mothers of Science" supporting grant, Barcelona Institute of Science and Technology BIST, 2018.

ICREA MEMOIR 2018



Manuel Serrano

Institut de Recerca Biomèdica de Barcelona
Life & Medical Sciences

Manuel Serrano obtained his PhD in 1991 for his research at the Centre for Molecular Biology (CSIC/UAM, Madrid)) under the supervision of M. Salas and J.M. Hermoso. From 1992 to 1996 he worked as a Postdoctoral Fellow in the laboratory of D. Beach at the Cold Spring Harbor Laboratory, New York, USA. In 1997, he returned to Spain to start his own research group at the Spanish National Biotechnology Centre (CSIC, Madrid). He moved to the Spanish National Cancer Research Centre (Madrid) in 2003 to lead the Tumour Suppression Group, where he also served as Director of the Molecular Oncology Programme (2012-2017). In May 2017, he relocated to the Institute for Biomedical Research-IRB Barcelona to establish the Cellular Plasticity and Disease Group within the Molecular Medicine Research Programme. He has accomplished important scientific contributions to the understanding of Ageing from different perspectives: Cancer & Ageing, Metabolism & Ageing, Regeneration & Ageing.

Research interests

The unifying concept that has guided our research is that tumour suppressors protect the organism from many types of damage and regardless of the pathology that damage may cause. Protection from cancer is just one of the outcomes of tumour suppressors, others being protection from chronic diseases, nutritional overload, tissue injuries, or aging. Tumour suppressors often trigger a cellular state known as cellular senescence, and we have pioneered the concept that cellular senescence is critical to signal tissue damage and to elicit tissue regeneration. The key emerging paradigm is that tumour suppressors, by triggering cellular senescence, recruit inflammatory cells and create a tissue microenvironment that favours tissue repair and regeneration. Damage → Tumour Suppressors → Cellular Senescence → (secreted factors) → Cellular Plasticity → Tissue Repair

Selected publications

- **Serrano M** & Barzilai N 2018, 'Targeting senescence', *Nat. Med.*, 24, 1092-1094.
- Senís E, Mosteiro L, Wilkening S, Wiedtke E, Nowrouzi A, Afzal S, Fronza R, Landerer H, Abad M, Niopek D, Schmidt, **Serrano M** & Grimm D 2018, 'AAV vector-mediated in vivo reprogramming into pluripotency', *Nat Commun.* 9, 2651.
- Muñoz-Espín D, Rovira M, Galiana I, Giménez C, Lozano-Torres B, Llanos S, Chaib S, Muñoz-Martin M, Ucero AC, Dann S, VanArsdale T, Shields D, Bernardos A, Murgía JR, Martínez-Mañez M & **Serrano M** 2018, 'A versatile drug delivery system targeting senescent cells', *EMBO Mol. Med.*, 10, pii: e9355.
- Lynch CJ, Bernad R, Calvo I, Nóbrega-Pereira S, Ruiz S, Ibarz N, Martinez-Val A, Graña-Castro O, Gómez-López G, Andrés-León E, Espinosa Angarica V, Del Sol A, Ortega S, Fernandez-Capetillo O, Rojo E, Munoz J & **Serrano M** 2018, 'The RNA polymerase II factor RPAP1 is critical for mediator-driven transcription and cell identity', *Cell Rep.* 22, 396-410.
- Mosteiro L, Pantoja C, De Martino A & **Serrano M** 2018, 'Senescence promotes in vivo reprogramming through p16INK4a and IL-6', *Aging Cell*, 17, e12711.
- Costa-Machado LF, Martín-Hernández R, Sanchez-Luengo MÁ, Hess K, Vales-Villamarin C, Barradas M, Lynch C, de la Nava D, Diaz-Ruiz A, de Cabo R, Cañamero M, Martinez L, Sanchez-Carbayo M, Herranz D, **Serrano M** & Fernandez-Marcos PJ 2018, 'Sirt1 protects from K-Ras-driven lung carcinogenesis', *EMBO Rep.*, 19, pii: e43879.
- Vilas-Martínez JM, Carneiro C, Da Silva-Álvarez S, Ferreirós A, González P, Gómez M, Ortega S, **Serrano M**, García-Caballero T, González-Barcia M, Vidal A & Collado M 2018, 'Adult Sox2+ stem cell exhaustion in mice results in cellular senescence and premature aging', *Aging Cell*, 17:e12834.

ICREA MEMOIR 2018



Luis Serrano

Centre de Regulació Genòmica
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 the group is part of a consortium with the EMBL in Heidelberg aiming at obtaining for the first time a global quantitative understanding of a living system, *Mycoplasma pneumoniae*.

Selected publications

- Radusky L, Modenutti C, Delgado J, Bustamante JP, Vishnopolaska S, Kiel C, **Serrano L**, Marti M & Turjanski A 2018, 'VarQ: A Tool for the Structural and Functional Analysis of Human Protein Variants', *Frontiers In Genetics*, 9, 620.
- Carleton LA, Chakravarthy R, van der Sloot AM, Mnich K, **Serrano L**, Samali A & Gorman AM 2018, 'Generation of rationally-designed nerve growth factor (NGF) variants with receptor specificity', *Biochemical And Biophysical Research Communications*, 495, 1, 700 - 705.
- Delgado Blanco J, Radusky L, Climente-Gonzalez H & **Serrano L** 2018, 'FoldX accurate structural protein-DNA binding prediction using PADA1 (Protein Assisted DNA Assembly 1)', *Nucleic Acids Research*, 46, 8, 3852 - 3863.
- Besray Unal E, Kiel C, Benisty H, Campbell A, Pickering K, Bluethgen N, Sansom OJ & **Serrano L** 2018, 'Systems level expression correlation of Ras GTPase regulators', *Cell Communication And Signaling*, 16, 46.
- Yang J-S, Garriga-Canut M, Link N, Carolis C, Broadbent K, Beltran-Sastre V, **Serrano L** & Maurer SP 2018, 'rec-YnH enables simultaneous many-by-many detection of direct protein-protein and protein-RNA interactions', *Nature Communications*, 9, 3747.
- Zapata L, Pich O, **Serrano L**, Kondrashov FA, Ossowski S & Schaefer MH 2018, 'Negative selection in tumor genome evolution acts on essential cellular functions and the immunopeptidome', *Genome Biol*, 19(1): 67.
- Dmitrijeva M, Ossowski S, **Serrano L** & Schaefer MH 2018, 'Tissue-specific DNA methylation loss during ageing and carcinogenesis is linked to chromosome structure, replication timing and cell division rates', *Nucleic Acids Res*, 46(14): 7022-7039.

Selected research activities

- The MycoSynVac Project coordinated by Luis Serrano was selected to be presented at the European parliament during the event: High-level conference EU research and innovation in our daily life -Panel 1: Health and wellbeing" on Nov. 27th, 2018: <http://www.europarl.europa.eu/streaming?event=20181127-1515-SPECIAL-CONFERENCE&start=00:51:07&end=01:00:03&language=en>

ICREA MEMOIR 2018



James Sharpe
Centre de Regulació Genòmica
Life & Medical Sciences

1997: PhD MRC National Institute for Medical Research at Mill Hill, London (UK). "Cis-regulatory mechanisms of the Hox genes in mouse development". Lab of Dr. Robb Krumlauf.

1997-1998: Postdoc on *Xenopus* development, University of Chile.

1998: MRC Human Genetics Unit, Edinburgh. Postdoc on computational approaches to study mouse limb development.

2001: Development of a 3D optical imaging technique and introduction of the term "Optical Projection Tomography", commercialised under the name Bioptonics.

2003: Group Leader in Edinburgh.

2006: Senior Group Leader at the Centre de Regulació Genòmica, Barcelona (Spain).

2011: Acting Coordinator of the EMBL-CRG Systems Biology Program.

2014: Coordinator of the EMBL-CRG Systems Biology Program.

2017: Head of the EMBL Barcelona.

Research interests

The physical complexity of a human being, or even a single organ, is truly astounding. The goal of my lab is to understand how the activities of gene networks controls the millions of cells which make up our organs - allowing them to communicate with each other, to decide what to do at each moment during embryo development: whether to divide, which way to move, and which cells types to become (cartilage, bone, connective tissue, etc.) We believe this will only be achieved by integrating information into a computer model, and to this end we are developing new imaging and computational methods to understand one example of organogenesis - vertebrate limb development. We combine various systems biology approaches to integrate data on cell activities and gene networks into a realistic 4D computer simulation of the process. This is a truly interdisciplinary endeavour, and the lab is therefore composed of physicists, engineers and computer scientists as well as biologists.

Selected publications

- Diego X, Marcon L, Mueller P & **Sharpe J** 2018, 'Key Features of Turing Systems are Determined Purely by Network Topology', *Physical Review X*, 8, 2, 021071.
- Musy M, Flaherty K, Raspopovic J, Robert-Moreno A, Richtsmeier JT & **Sharpe J** 2018, 'A quantitative method for staging mouse embryos based on limb morphometry', *Development*, 145, 7, UNSP dev154856.
- Moalli F, Ficht X, Germann P, Vladymyrov M, Stolp B, de Vries I, Lyck R, Balmer J, Fiocchi A, Kreuzfeldt M, Merkler D, Iannaccone M, Ariga A, Stoffel MH, **Sharpe J**, Baehler M, Sixt M, Diz-Munoz A & Stein JV 2018, 'The Rho regulator Myosin IXb enables nonlymphoid tissue seeding of protective CD8(+) T cells', *Journal Of Experimental Medicine*, 215, 7, 1869 - 1890.
- Schaerli Y, Jimenez A, Duarte JM, Mihajlovic L, Renggli J, Isalan M, **Sharpe J** & Wagner A 2018, 'Synthetic circuits reveal how mechanisms of gene regulatory networks constrain evolution', *Molecular Systems Biology*, 14, 9, e8102.
- Mayer J, Robert-Moreno A, **Sharpe J** & Swoger J 2018, 'Attenuation artifacts in light sheet fluorescence microscopy corrected by OPTiSPIM', *Light-science & Applications*, 7, 70.
- Martinez-Abadias N, Mateu Estivill R, Sastre Tomas J, Perrine SM, Yoon M, Robert-Moreno A, Swoger J, Russo L, Kawasaki K, Richtsmeier J & **Sharpe J** 2018, 'Quantification of gene expression patterns to reveal the origins of abnormal morphogenesis', *Elife*, 7, e36405.

ICREA MEMOIR 2018



Vassil Skumryev
 Universitat Autònoma de Barcelona
 Engineering Sciences

Vassil Skumryev is ICREA Research Professor at Universitat Autònoma de Barcelona. He received a PhD from the University of Sofia (Bulgaria) in 1983, where he was habilitated in 1991. Prior to joining ICREA in 2003, he had long term appointments, including Visiting Scientist / Professor Positions at Trinity College (Dublin, Ireland); University of Delaware (USA); Max-Planck Institute für Metalforschung (Stuttgart, Germany); The Royal Institute of Technology (Stockholm, Sweden). He has worked in a broad range of magnetic materials and phenomena publishing over 130 scientific papers (incl. Nature, Physical Review Letters, Physics Reports, Physical Review, Advanced Materials, Applied Physics Letters...).

Research interests

Magnetic Structures and Magnetic Phase Transitions (incl. neutron diffraction studies and such at very high magnetic fields); Magnetoelectric Materials and how the interface phenomena in nanostructures of such materials could allow an additional degree of freedom in device design (e.g. new type memory, where the magnetic state is controlled by an electric field or vice versa); Magnetic Nanostructures with Enhanced Thermal Stability (e.g. for a possible application as high-density recording media); Intrinsic Magnetic Phase Separation; Metal-Based Pharmaceuticals (studying the magnetic properties can provide important information for the structure and other properties of such pharmaceuticals); Magnetometry

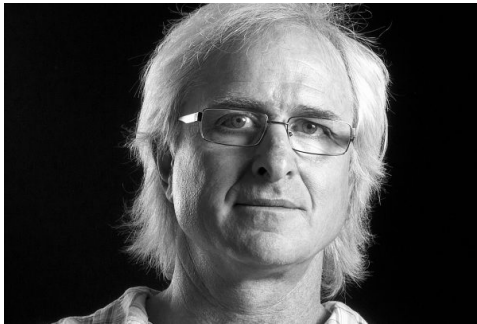
Selected publications

- Urcelay-Olabarria I, Ressouche E, Ivanov VY, **Skumryev V**, Wang Z, Skourski Y, Balbashov AM, Popov YF, Vorob'ev GP, Qureshi N, García-Muñoz JL & Mukhin AA 2018, "Influence of the magnetic field on the stability of the multiferroic conical spin arrangement of $Mn_{0.80}Co_{0.20}WO_4$ ", *Physical Review B* 98, 134430 (editor's suggestion)
- Chattopadhyay S, Simonet V, **Skumryev V**, Mukhin AA, Ivanov VY, Aroyo MI, Dimitrov DZ, Gospodinov M & Ressouche E 2018, "Single-crystal neutron diffraction study of hexagonal multiferroic $YbMnO_3$ under a magnetic field", *Physical Review B* 98, 134413.
- Qureshi N, Ruiz-Martín MD, Puente-Orench I, Fernández-Díaz MT, Balbashov AM, Ivanov VY, **Skumryev V** & Mukhin AA 2018, "Conical magnetic structures in multiferroic $SrSc_xFe_{12-x}O_{19}$ hexaferrites derived from powder neutron diffraction", *Physical Review B* 98, 094411.
- Gamino M, de Andrade AMH, Salazar Cuaila JL, Schmidt JE, **Skumryev V** & Geshev J 2018, 'Exchange bias and major coercivity enhancement in strongly-coupled CuO/Co films', *Journal of Magnetism and Magnetic Materials*, 449, 5-9.
- Salazar JB, Pereira LG, Grande PL, Schmidt JE, Schneider JA, Nicolodi S, **Skumryev V**, Harres A, Steadman P, Bencok P, Dobrynin A & Geshev J 2018, "Unveiling the Mechanisms Governing the Exchange Coupling and Coercivity Modifications in Annealed or Ion-Irradiated Ir-Mn/Fe/Co and Ir-Mn/Ni-Fe/Co films", *Physical Review Applied* 10, 064021.

Selected research activities

- Editorial board member: The European Physical Journal Plus (Springer)
- User Committee Member of the European Magnetic Field Laboratory

ICREA MEMOIR 2018



Gustavo A. Slafer
 Universitat de Lleida
 Life & Medical Sciences

Gustavo Slafer (PhD, University of Melbourne) is ICREA Research Professor at the University of Lleida (Catalonia, Spain), where he is also Associate Professor (Dept. Crop & Forest Sci.) He is also currently (i) Honorary Professor of the School of Biosciences, University of Nottingham, UK; (ii) Editor of particular sections of Crop Science and Spanish Journal of Agricultural Research, (iii) Handling Editor of Food and Energy Security, (iv) Associate Editor of Euphytica; and (v) member of the Editorial or Advisory Boards of Field Crops Research, European Journal of Agronomy and Agricultural and Food Science. Until Dec. 2018 he has co-edited 6 scientific books, by publishers in USA and UK, and published 40 chapters in international books and more than 170 papers in JCR-journals. His h-index at Dec. 2018 was 52 (WoS-CoreCollection). He has been invited several times to deliver talks in international conferences.

Research interests

I study the mechanisms underlying the responses of grain crops to environmental and genetic factors. My research approach has been always focused at the crop level of organization. The environmental factors include management practices such as irrigation or fertilization (among other less manageable environmental factors including radiation, photoperiod and temperature). Genetic factors include from general breeding strategies to the action of particular genes or groups of genes. The general aim is identifying alternatives to traditional farming and breeding practices to enhance the efficiency of resource use, as an avenue to increase simultaneously both crop productivity and agricultural sustainability.

Selected publications

- **Slafer GA** & Savin R 2018, 'Can N management affect the magnitude of yield loss due to heat waves in wheat and maize?', *Current Opinion In Plant Biology*, 45, B, 276 - 283.
- Ochagavia H, Prieto P, Savin R, Griffiths S & **Slafer GA** 2018, 'Dynamics of leaf and spikelet primordia initiation in wheat as affected by Ppd-1a alleles under field conditions', *Journal Of Experimental Botany*, 69, 10, 2621 - 2631.
- Prieto P, Ochagavia H, Savin R, Griffiths S & **Slafer GA** 2018, 'Dynamics of floret initiation/death determining spike fertility in wheat as affected by Ppd genes under field conditions', *Journal Of Experimental Botany*, 69, 10, 2633 - 2645.
- Ordonez RA, Savin R, Cossani CM & **Slafer GA** 2018, 'Maize Grain Weight Sensitivity to Source-Sink Manipulations under a Wide Range of Field Conditions', *Crop Science*, 58, 6, 2542 - 2557.
- Ochagavia H, Prieto P, Savin R, Griffiths S & **Slafer GA** 2018, 'Earliness per se effects on developmental traits in hexaploid wheat grown under field conditions', *European Journal of Agronomy*, 99: 214-223.
- Prieto P, Ochagavia H, Savin R, Griffiths S & **Slafer GA** 2018, 'Physiological determinants of fertile floret survival in wheat as affected by earliness per se genes under field conditions', *European Journal of Agronomy*, 99: 206-213
- Elia M, **Slafer GA** & Savin R 2018, 'Yield and grain weight responses to post-anthesis increases in maximum temperature under field grown wheat as modified by nitrogen supply', *Field Crops Research*, 221, 228 - 237.
- Perez-Gianmarco TI, **Slafer GA** & Gonzalez FG 2018, 'Wheat pre-anthesis development as affected by photoperiod sensitivity genes (Ppd-1) under contrasting photoperiods', *Functional Plant Biology*, 45, 6, 645 - 657.

ICREA MEMOIR 2018



Ricard Solé
 Universitat Pompeu Fabra
 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 an ambitious program on synthetic biology. The later area includes an exploration of synthetic multicellular systems, synthetic swarm intelligence and strategies to redesign existing ecosystems to fight climate change and its future impact.

Selected publications

- Valverde S, Piñero J, Corominas-Murtra B, Montoya J, Joppa L & **Solé R** 2018, 'The architecture of mutualistic networks as an evolutionary spandrel', *Nature Ecology & Evolution*, 2(1), 94.
- **Solé R** & Conde-Pueyo N 2018, 'Ultrasound approach tracks gut microbes', *Nature*, 553, 7686, 36 - 37.
- Seoane LF & **Solé RV** 2018, 'Information theory, predictability and the emergence of complex life', *Royal Society Open Science*, 5, 2, 172221.
- Pinero J & **Solé R** 2018, 'Nonequilibrium Entropic Bounds for Darwinian Replicators', *Entropy*, 20, 2, 98.
- Vidiella B, Sardanyes J & **Solé R** 2018, 'Exploiting delayed transitions to sustain semiarid ecosystems after catastrophic shifts', *Journal Of The Royal Society Interface*, 15, 143, 20180083.
- Aguade-Gorgorio G & **Solé R** 2018, 'Adaptive dynamics of unstable cancer populations: The canonical equation', *Evolutionary Applications*, 11, 8, 1283 - 1292.
- **Solé RV**, Montanez R, Duran-Nebreda S, Rodriguez-Amor D, Vidiella B & Sardanyes J 2018, 'Population dynamics of synthetic terraformation motifs', *Royal Society Open Science*, 5, 7.
- Seoane LF & **Solé R** 2018, 'The morphospace of language networks', *Scientific Reports*, 8, 10465.
- Rosas-Casals M, Valverde S & **Solé R** 2018, 'A Simple Spatiotemporal Evolution Model of a Transmission Power Grid', *Ieee Systems Journal*, 12, 4, 3747 - 3754.
- **Solé R**, Ollé-Vila A, Vidiella B, Duran-Nebreda S & Conde-Pueyo N 2018, 'The road to synthetic multicellularity', *Current Opinion in Systems Biology*, 7, 1-8.
- Corominas-Murtra B, Seoane LF & **Solé R** 2018, 'Zipf's Law, unbounded complexity and open-ended evolution', *J. R. Soc. Interface* 15: 20180395.

ICREA MEMOIR 2018



Martín Sombra

Universitat de Barcelona
Experimental Sciences & Mathematics

Born in 1970 in Ezpeleta (Argentina), Martín Sombra studied Mathematics as an undergraduate at the University of La Plata. He did his PhD thesis on Computer Algebra at the University of Buenos Aires. He then did postdoctoral stays at the MSRI at Berkeley, the IAS at Princeton, and the IMJ at 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, and became afterwards Full Professor at the University of Bordeaux 1. He finally moved back to Barcelona, joining ICREA in 2009. He works on problems at the interface of Algebraic Geometry, Number Theory and Complexity Theory. He currently collaborates with research groups in Barcelona, Paris, Caen, Bordeaux and Buenos Aires.

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

- Chang M-C, D'Andrea C, Ostafe A, Shparlinski I E & **Sombra M** 2018, 'Orbits of polynomial dynamical systems modulo primes', *Proceedings of the American Mathematical Society*, vol. 146 , pp. 2015-2025.

Selected research activities

Invited talks (selected)

- Talk at the "ARCADES Doctoral School II and ESR Days in Barcelona" at UB, 3 - 7 September
- Seminar talks at U. Regensburg, Chalmers & U. Gotheborg, ICMAT (Madrid) and IMJ (Paris)

Organization

- IMUB colloquium

Managerial

- Member of the board of directors of the FoCM Society
- Member of the advisory board of the series of conferences MEGA
- Member of the IMUB steering committee

Supervision of PhD thesis

- Roberto Gualdi, 'Height of cycles in toric varieties', UB & Université de Bordeaux, France, 20 September (joint with A. Yger)

ICREA MEMOIR 2018



Jordi Sort
 Universitat Autònoma de Barcelona
 Engineering Sciences

Jordi Sort leads the 'Group of Smart Nanoengineered Materials, Nanomechanics and Nanomagnetism' (comprising around 20 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 and mechanical performance. He received awards from the Catalan and Spanish Physical Societies as well as the Federation of European Materials Societies. At present, Prof. Sort has supervised 13 PhD Theses, has published 284 articles (6830 citations in ISI, $h = 39$), has issued 5 patents and has managed 27 national/international research projects, being Coordinator of an European Training Network (ITN) and a Consolidator Grant from the ERC.

Research interests

Jordi Sort is investigating the nanomechanical and nanomagnetic properties of innovative and advanced materials, including lithographed structures, thin films and bulk specimens. Among his most relevant recent achievements one can mention: the use of nanoindentation and selective ion irradiation to create magnetic structures embedded in non-magnetic matrices; observation of magneto-electric effects in nanoporous alloys; 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 characterization of mesoporous materials and onion-type nanoparticles with interlayer magnetic interactions; the development of advanced biodegradable materials for orthopedic implants; the characterization of remotely-actuated magnetic nanowires for biomedical applications. Further information at: <http://jsort-icrea.uab.cat/index.htm>.

Selected publications

- Quintana A, Menendez E, Liedke MO, Butterling M, Wagner A, Sireus V, Torruella P, Estrade S, Peiro F, Dendooven J, Detavernier C, Murray PD, Gilbert DA, Liu K, Pellicer E, **Nogues J & Sort J** 2018, 'Voltage-Controlled ON-OFF Ferromagnetism at Room Temperature in a Single Metal Oxide Film', *ACS Nano*, 12, 10, 10291 - 10300.
- Dislaki E, Robbenolt S, Campoy-Quiles M, **Nogués J**, Pellicer E & **Sort J** 2018, 'Coercivity modulation in Fe-Cu pseudo-ordered porous films controlled by an applied voltage', *Advanced Science*, 1800499.
- Robbenolt S, Quintana A, Pellicer E, **Sort J** 2018, 'Large magnetoelectric effects mediated by electric-field-driven nanoscale phase transformations in sputtered (nanoparticulate) and electrochemically dealloyed (nanoporous) Fe-Cu films', *Nanoscale*, 10, 30, 14570 - 14578.
- Zhang J, Quintana A, Menéndez E, Coll M, Pellicer E & **Sort J** 2018, 'Electrodeposited Ni-based magnetic mesoporous films as smart surfaces for atomic layer deposition', *ACS Applied Materials & Interfaces* vol. 10, no. 17, pp. 14877-14885.
- Quintana A, Menéndez E, Isaraín-Chavez E, Fornell J, Solsona P, Fauth F, Baró MD, **Nogués J**, Pellicer E & **Sort J** 2018, 'Tunable magnetism in nanoporous CuNi alloys by reversible voltage-driven element-selective redox processes', *Small*, vol. 14, no. 21, 1704396.
- Li Z, Lopez-Ortega A, Aranda-Ramos A, Tajada JL, **Sort J**, Nogues C, Vavassori P, **Nogues J** & Sepulveda B 2018, 'Simultaneous local heating/htermometry based on plasmonic magnetochromic nanoheaters', *Small* vol. 14, no. 24, 1800868.

Selected research activities

- 33 publications (27 in indexed journals, 10 with ISI I.F. > 7, 3 book chapters, 1 Cover).
- Editorial Board of 6 ISI journals.
- 17 invited talks at International Conferences.
- 3 patents (alive).
- Organizer/Scientific Committee of 8 conferences.
- Supervisor of 3 Theses defended in 2018.
- Research highlighted/Interviews in TVE, Divulcat, GEFES.
- Coordinator: H2020-ITN (SELECTA), ERC-CoG (SPIN-PORICS), MINECO (Retos), SGR.

ICREA MEMOIR 2018



Salvador Soto-Faraco

Universitat Pompeu Fabra
Social & Behavioural Sciences

I graduated in Psychology at the Universitat de Barcelona (1994), and I got a PhD in Cognitive Science and Language (1999) in the same university. I worked as a postdoctoral researcher at the University of Oxford (UK) and at the University of British Columbia (Canada) until 2002. I was awarded a "Ramón y Cajal" research fellowship, which allowed me to start my own research group at Universitat de Barcelona and in 2005 I became ICREA Research Professor and established the Multisensory Research Group at the Parc Científic de Barcelona thanks to public and private funding. Since 2009, I am based at the Universitat Pompeu Fabra, where I combine research and teaching as one of the group leaders at the Center for Brain and Cognition. In 2010 I received an individual Starting Grant from the ERC. Currently, the MRG group works on basic and applied research projects supported by local (MINECO, AGAUR) and EU (ERC) funding agencies.

Research interests

Humans, like other animals, are endowed with a wide range of sensory capacities such as hearing, feeling, seeing, smelling... This rich variety of senses allows our brains to represent the surrounding environment with fidelity and precision, so that we can parse information, store it in memory and, react successfully as a function of events. However, to achieve coherent mental representations of the environment our brains must coordinate the distinct sources of sensory information effectively across their different temporal properties, spatial frames of reference, and encoding formats. I am interested in the neural and behavioural principles underlying the selection and integration of such multi-sensory information. To achieve this, I use an experimental approach based on psychophysics, a variety of neuroimaging methods to measure neural activity (EEG, fMRI), and brain stimulation techniques (TMS).

Selected publications

- Castro Santa J, Exadaktylos F & **Soto-Faraco S** 2018, '**Beliefs about others' intentions determine whether cooperation is the faster choice**', *Scientific Reports*, vol. 8, Article number: 7509
- Castro L, **Soto-Faraco S**, Moris Fernandez L, & Ruzzoli M 2018, 'The breakdown of the Simon effect in cross-modal contexts: EEG evidence', *European Journal Of Neuroscience*, 47, 7, 832 - 844.
- Sanchez-Garcia C, Kandel S, Savariaux C & **Soto-Faraco S** 2018, 'The Time Course of Audio-Visual Phoneme Identification: a High Temporal Resolution Study', *Multisensory Research*, 31, 1-2, 57 - 78.
- Morís Fernández L, Torralba Cuello M & **Soto-Faraco S** 2018, '**Theta oscillations reflect conflict processing in the perception of the McGurk illusion**', *European Journal of Neuroscience*, 48, 7, 2630 - 2641.
- Biau E, Fromont LA & **Soto-Faraco S** 2018, '**Beat Gestures and Syntactic Parsing: An ERP Study**', *Language Learning*, 68(s1): 102-126.

Selected research activities

Associate Editor: Multisensory Processes

ICREA MEMOIR 2018



Clivia M. Sotomayor Torres

Institut Català de Nanociència i Nanotecnologia
Engineering Sciences

Clivia obtained her PhD in Physics in 1984 (Manchester Univ., UK). She held tenured appointments at St. Andrews and Glasgow Universities and became a C4 professor at Wuppertal Univ. (Germany) in 1996. During 2004-8 she was a research professor at Univ. College Cork, Tyndall National Institute (Ireland). Since May 2007 she is with ICREA based at the Catalan Institute of Nanoscience & Nanotechnology where she 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 508 scientific papers, of which 450 are indexed, has an h-index of 45 and over 8000 citations. She edited six books on low dimensional structures and nanofabrication. She was a guest professor at the KTH Royal Institute of Technology in Sweden for five years until September 2018.

Research interests

Her group investigates new concepts for multi-state variables based on the engineered interactions of phonons with photons, electrons and magnons, 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. Our experimental research is anchored in novel nanofabrication methods including dimensional and defectivity metrology. The latter is essential to set up standards in manufacturing to ease the uptake of nanotechnology products. This year we launched research activities in topological matter aiming at dissipationless energy transport. In addition we successfully explored thermal conductivity of nanofluids.

Selected publications

- Maire J, Arregui G, Capuj N, Colombano MF, Griol A, Martinez A, **Sotomayor Torres CM** & Navarro-Urios D 2018, 'Optical modulation of coherent phonon emission in optomechanical cavities', *APL Photonics*, vol. 3, no. 12, pp 126102.
- Navarro-Urrios D, Capuj NE, Maire J, Colombano M, Jaramillo-Fernandez J, Chavez-Angel E, Martin LL, Mercade L, Griol A, Martinez A, **Sotomayor Torres CM** & Ahopelto J 2018, 'Nanocrystalline silicon optomechanical cavities', *Optics Express*, 26, 8, 9829 - 9839.
- Rodríguez-Laguna MR, Castro-Alvarez A, Sledzinska M, Maire J, Costanzo F, Ensing B, Pruneda M, Ordejon P, **Sotomayor Torres CM**, Gomez-Romero P & Chavez-Angel E 2018, 'Mechanisms behind the enhancement of thermal properties of graphene nanofluid', *Nanoscale*, vol. 10, 15402-15409.
- Arregui G, Navarro-Urrios D, Kehagias N, **Sotomayor Torres CM** & Garcia PD 2018, 'All-optical radio-frequency modulation of Anderson localized modes', *Physical Review B*, vol. 98, no. 18, pp 180202, 6 pages.
- Kehagias N, Francone A, Guttmann M, Winkler F, Fernandez A & **Sotomayor Torres CM** 2018, 'Fabrication and replication of re-entrant structures by nanoimprint lithography methods', *Journal of Vacuum Science & Technology B*, vol 36, 06JF01.
- Francone A, Kehoe T, Obieta I, Saez-Martinez V, Bilbao L, Khokhar A, Gadegaard N, Delgado Simao C, Kehagias N & **Sotomayor Torres CM** 2018, 'Integrated 3D Hydrogel Waveguide Out-Coupler by Step-and-Repeat Thermal Nanoimprint Lithography: A Promising Sensor Device for Water and pH', *Sensors*, vol. 18, nº 10, pp 3240.
- Benavente E, Navas D, Devis S, Segovia M, **Sotomayor Torres CM** & Gonzalez G 2018, 'Composites of Laminar Nanostructured ZnO and VOx-Nanotubes Hybrid as Visible Light Active Photocatalysts', *Catalysts*, 8, 2, 93.

Selected research activities

- Board member, Danish National Research Foundation.
- EU H2020 FET Advisory Group Chair and ERC Panel member.
- EU FET Open PHENOMEN project coordinator.
- Member, Expert Committee for the Excellence Strategy of German Universities.

ICREA MEMOIR 2018



Laura Soucek

Vall d'Hebron Institut d'Oncologia
Life & Medical Sciences

Laura Soucek graduated in 1996 in Biological Sciences at University La Sapienza in Rome, Italy. She obtained her PhD in Genetics and Molecular Biology at the National Research Center, in Rome. In 2001 she joined University of California San Francisco, initially as postdoctoral fellow and later, in 2006 as Assistant Researcher. There she published in high impact international journals. Since early 2011, Dr. Soucek heads the Mouse Models of Cancer Therapies Group at the Vall d'Hebron Institute of Oncology (VHIO), in Barcelona. She received prestigious awards and grants from AACR, the Miguel Servet Program, the FERO Foundation, the Association for International Cancer Research, the European Research Council, FIS and BBVA. In October 2014 she was appointed ICREA Research Professor. In December 2014 she founded a spin-off company, Peptomyc S.L.. In April 2015, she became Associate Professor at the Universitat Autònoma de Barcelona.

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 Peptides (CPPs) and nanoparticle technologies. These innovative treatments could boost our therapeutic arsenal against the majority of human cancers.

Selected publications

- Casacuberta-Serra S & **Soucek L** 2018, 'Myc and Ras, the Bonnie and Clyde of immune evasion', *Translational Cancer Research*, 7, S457 - S459.
- Jauset T, Massó-Vallés D, Martínez-Martín S, Beaulieu M-E, Foradada L, Fiorentino FP, Yokota J, Haendler B, Siegel S, Whitfield JR & **Soucek L** 2018, 'BET inhibition is an effective approach against KRAS-driven PDAC and NSCLC', *Oncotarget*, 9:18734-18746.

Selected research activities

Scientific Editor for: *Cancer Discovery*.

Reviewer for: *Anti-cancer Drugs*, *BBA (Biochimica et Biophysica Acta)*, *BioEssays*, *Cancer Discovery*, *Cancer Immunology and Immunotherapy*, *Cancer Immunology Research*, *Cancer Research*, *Cancer Treatment Review*, *Cell Chemical Biology*, *Clinical Cancer Research*, *Current Pharmaceutical Design*, *Developmental Dynamics*, *Drug Discovery Today*, *E-Biomedicine*, *Gastroenterology Research and Practice*, *Gut*, *International Journal of Biological Sciences*, *IJEP (International Journal of Experimental Pathology)*, *Journal of Cellular Biochemistry (JCB)*, *Journal of Experimental and Clinical Cancer Research*, *JoVE Peer Reviewed Scientific Video Journal - Methods and Protocols*, *Molecular Biology and Evolution*, *Molecular Biology Reports*, *Nature*, *Nature Cell Biology*, *Nature Communications*, *Nature Medicine*, *Oncogene*, *Oncogenesis*, "Oncology" books iConcept Press Ltd, *Oncotarget*, *Peptide Science*, *Plos One*, *Therapeutic Advances in Chronic Disease*, *Tumor Biology*.

ICREA MEMOIR 2018



Kestutis Staliunas

Universitat Politècnica de Catalunya
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 Bundesanstalt (PTB) Braunschweig, Germany, 1991-1992. Between 1993-2003 senior research fellow in Braunschweig PTB and University of Hanover researching on nonlinear pattern formation in laser systems and Bose condensates. Since 2004 ICREA research professor in Universitat Politècnica de Catalunya (UPC), Barcelona, head of research group on lasers, photonics and meta-photonics, nonlinear laser dynamics. Professional experience: around 250 articles in scientific journals with appr. 5000 citations (h-factor 42); appr. 500 presentations in conferences (more than 100 invited ones); 2 patents, 2 monographs. Up to now directed (or currently directing) 17 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, microchips, are too noisy. We develop new physical concepts and new techniques to manipulate the spatial structure of radiation, by using micro-modulated smart photonic materials: photonic crystals, metamaterials, nonhermitian 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

- Cheng Y-C & **Staliunas K** 2018, 'Near-field flat focusing mirrors', *Applied Physics Reviews*, 5, 1, 011101.
- Perego AM, Turitsyn SK & **Staliunas K** 2018, 'Gain through losses in nonlinear optics', *Light-science & Applications*, 7, 43.
- Perego AM, Smirnov SV, **Staliunas K**, Churkin DV & Wabnitz S 2018, "Self-Induced Faraday Instability Laser", *Phys. Rev. Letters*, 120, 213902 (2018)
- Hayran A, Herrero R, Botey M, Kurt H & **Staliunas K** 2018, 'Invisibility on demand based on a generalized Hilbert transform', *Physical Review A*, 98, 1, 013822.
- Jimenez N, Romero-Garcia V, Garcia-Raffi LM, Camarena F & **Staliunas K** 2018, 'Sharp acoustic vortex focusing by Fresnel-spiral zone plates', *Applied Physics Letters*, 112, 20, 204101.
- Bor E, Babayigit C, Kurt H, **Staliunas K** & Turdnev M 2018, 'Directional invisibility by genetic optimization', *Optics Letters*, 43, 23, 5781 - 5784.
- Hayran Z, Kurt H, Herrero R, Botey M & **Staliunas K** 2018, 'All-Dielectric Self-Cloaked Structures', *Acs Photonics*, 5, 5, 2068 - 2073.
- Ahmed WW, Herrero R, Botey M, Hayran Z, Kurt H & **Staliunas K** 2018, 'Directionality fields generated by a local Hilbert transform', *Physical Review A*, 97, 3, 033824.
- Waseem Ahmed W, Kumar S, Medina J, Botey M, Herrero R & **Staliunas K** 2018, 'Stabilization of broad-area semiconductor laser sources by simultaneous index and pump modulations', *Optics Letters*, 43, 11, 2511 - 2514.
- Bor E, Turdnev M, Yasa UG, Kurt H & **Staliunas K** 2018, 'Asymmetric light transmission effect based on an evolutionary optimized semi-Dirac cone dispersion photonic structure', *PHYSICAL REVIEW B* 98, 245112.

Selected research activities

Invited and plenary talks: ICTON'18 Bucarest, CLEO'18 San Jose, ICLO'19 Sankt Petersburg, Nonlinear Photonics'18 Novosibirsk; Master course "Optical Materials and Metamaterials" in Europhotonics programme.
Defended PhD thesis: Auro Perego (Aston University), Zeki Hayran (TOBB University); Waqas Ahmed (UPC)
Committees of PhD Thesis: M. Tamosiunaite (Vilnius University);

ICREA MEMOIR 2018



Luc Steels
 Universitat Pompeu Fabra
 Engineering Sciences

Luc Steels studied linguistics at the University of Antwerp (Belgium) and computer science at the Massachusetts Institute of Technology (USA). His main research field is Artificial Intelligence covering a wide range of intelligent abilities, including vision, robotic behavior, conceptual representations and language. In 1983 he became a professor of computer science at the University of Brussels (VUB) and in 1996 he founded the Sony Computer Science Laboratory in Paris and became its first director. Currently he is ICREA Research Professor at the Institute for Evolutionary Biology (CSIC,UPF). Steels has been PI in a dozen large-scale European projects and almost 40 PhD theses have been granted under his direction. He has produced over 300 articles and edited 15 books directly related to his research.

Research interests

The origins and evolution of languages remains one of the most exciting unresolved puzzles of science today. The problem is even more difficult than biological evolution because there are no fossil records. Clearly social, biological and cultural evolution all have played a role but the details still allude scientific explanation. My research over the past decade has focused on developing theoretical models of language evolution. I set up experiments in which a population of robots autonomously develops their own communication systems with properties similar to human languages. We have focused on explaining the origins of color terms, spatial expressions, determiners, case grammar and agreement systems. So far these experiments use exclusively a process of cultural evolution, but through my recent affiliation with the Institute for Evolutionary Biology I now try to complete this picture by looking at the biological evolution of the cognitive foundations needed for language.

Selected publications

- **Steels L** 2018, 'What needs to be done to ensure the ethical use of AI?', *Artificial Intelligence Research and Development Z Falomir et al. (Eds.)* in 21st International Conference of the Catalan Association for Artificial Intelligence. IOS Press.
- **Steels L** & Lopez de Mantaras R 2018, 'The Barcelona declaration for the proper development and usage of artificial intelligence in Europe', *AI Communications*, vol. 31, no. 6, pp. 485-494.
- **Steels L**, Beuls K & Van Eecke P 2018, 'Usage-based learning of grammatical categories', in: Atzmueller M & Duivesteijn W (eds.) *Proceedings of BNAIC 2018, Series Communications in Computer and Information Sciences*, Springer Verlag, Berlin.
- **Steels L** 2018, 'Artificial Intelligence and Urban Community Memories' in: Diez T (ed) *Fab City. The mass distribution of (almost) everything*. Iaac Fab Lab, Barcelona, p. 34-45.

Selected research activities

- 8/1 College de France, Paris. "Intelligence artificielle et modèles théoriques de l'origine du langage" Cours Stanislas Dehaene (invited talk)
- 17,19,23,26 /4, 3 may Franqui chair, Univ of Leuven. "Het enigma van taalevolutie" (invited lectures)
- 19/4 Flagey theatre, Brussels. "Will AI lead to digital immortality." Ted-Talk Brussels.
- 9/6 Teatro Goldoni, Venice, "Consiglio a giovani scienziati." Lectio Magistralis Ca'Foscari (invited talk)
- 3/12 Montreal (Ca) "A brief history of agent-based models for the emergence of human- language-like communication systems" Neural Information Processing Conference. Workshop on Emergent Communication. (invited talk)
- reviews for Netherlands Science Foundation and Canadian Science Foundation
- participation in hearings on AI for the European Commission and the Belgian Senate.

ICREA MEMOIR 2018



Massimiliano Stengel

Institut de Ciència de Materials de Barcelona
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

- Casals, Blai; Schiaffino, Andrea; Casiraghi, Arianna; Hamalainen, Sampo J.; Gonzalez, Diego Lopez; van Dijken, Sebastiaan; **Stengel, Massimiliano**; Herranz, Gervasi 2018, 'Low-Temperature Dielectric Anisotropy Driven by an Antiferroelectric Mode in SrTiO₃', *Physical Review Letters*, 120, 21, 217601.
- Dreyer, Cyrus E.; **Stengel, Massimiliano**; Vanderbilt, David 2018, "Current-density implementation for calculating flexoelectric coefficients", *Physical Review B* 98, 075153.
- **Stengel, Massimiliano**; Vanderbilt, David 2018, 'Quantum theory of mechanical deformations', *Physical Review B*, 98, 12, 125133.

Selected research activities

Invited talks:

- "Macroscopic polarization from antiferrodistortive cycloids in ferroelastic SrTiO₃", Korea Advanced Institute of Science and Technology (KAIST), Republic of South Korea
- "Macroscopic Polarization from Antiferrodistortive Cycloids in Ferroelastic SrTiO₃", International Workshop on Topological Structures in Ferroic Materials - TOPO2018 (Natal, Brazil)
- "New functionalities from gradient couplings: Flexoelectricity and more", APS March Meeting, Los Angeles, CA (USA)

ICREA MEMOIR 2018



Thomas Sturm
 Universitat Autònoma de Barcelona
 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 (Scientific Assistant, 1995-2000); UCSD (Visiting Lecturer, 2000), the Berlin-Brandenburg Academy of Sciences & Humanities (Scientific Coordinator, research group "Psychological Thought and Practice", 2001-2005), the Max Planck Institute for the History of Science (Lorenz Krüger Fellow, 2005-2007, Research Fellow 2007-2009), and the Dept. of Philosophy, UAB (Ramón y Cajal Scholar, 2009-2014). I am member of the UAB's Center for History of Science (CEHIC), the Kant-edition at the Berlin-Brandenburg Academy of Sciences & Humanities, and an Associate Research Fellow at the Wilhelm Wundt Center for Philosophy & History of Psychology, Universidade Federal Juiz de Fora (Brazil).

Research interests

How is reason or rationality understood in philosophy and the human sciences? How should it be understood? These are the guiding questions for much of my research, which comprises topics reaching from early modern philosophy - esp. concerning Immanuel Kant's philosophy - up to current discussions at the interface of philosophy, psychology, and economics. I study aspects of reason in Kant's philosophy in relation to his notions of truth and science; I analyze the history as well as the potentials and limits of scientific theories of rationality; and I also study their role in politics, social science, and ethics. I'm moreover interested in the philosophy of knowledge, mind, and science. Methodologically, I combine the tools of analytic philosophy with the history of science: I am unconvinced by widespread opinions according to which they cannot, or should not, be integrated.

Selected publications

- **Sturm T** 2018, 'Lambert and Kant on truth' in Dyck C & Wunderlich F (eds.), *Kant and his German Contemporaries*, Cambridge: Cambridge University Press, pp. 113-133.
- **Sturm T** 2018, 'Anthropologie in pragmatischer Hinsicht' in Berger L & Schmidt E (eds.), *Kleines Kant-Lexikon*, Stuttgart: UTB, pp. 89-93.
- **Sturm T** 2018, 'Psychologie' in Berger L & Schmidt E (eds.), *Kleines Kant-Lexikon*, Stuttgart: UTB, p. 223.
- **Sturm T** 2018, 'Wissenschaft' in Berger L & Schmidt E (eds.), *Kleines Kant-Lexikon*, Stuttgart: UTB, pp. 276-277.

Selected research activities

Projects:

PI, *Barcelona HPS Group*

PI, *Naturalism and the sciences of rationality* (2016-2020) - MINECO project FFI2016-79923-P

Member, *Project New edition of Part I, "Works", of the Academy edition of Kant's Collected Writings* (2017-2024; PI: V. Gerhardt, Berlin-Brandenburg Academy of Sciences and Humanities) - DFG project GE 657/16-1

Invited speaker at the Universities of Kaliningrad (Keynote), Bremen, Göttingen, Hannover, and UPF Barcelona

Dissemination: "Katalonien aus philosophischer Sicht: Begriffsverwirrungen und mangelhafte Argumentationen." Interview, *Neue Debatte*, June 9, 2018 ("Cataluña desde un punto de vista filosófico: confusión conceptual, argumentación deficiente". *Presenza*, July 10, 2018).

Organization of conferences:

2nd Barcelona HPS Workshop: Rationality & Probability, May 2018

Reflections on Replication: Psychology's Current Crisis - Workshop, with I. Flis, Utrecht, Feb. 2018

PhD theses completed:

Nov. 9, 2018 Lara Scaglia (UAB): *Kant's notion of a transcendental schema* (director)

May 31, 2018 Héctor L. Pacheco Acosta (UAB): *Time and memory in Kant's theory of the self* (co-director)

Director of 4 ongoing PhD theses

Editorial board member: *ConTextos Kantianos* - *Enrahonar* - *Psicologia em Pesquisa* - *Rivista Internazionale di Filosofia e Psicologia*

Review activities (selected): *German Research Council (DFG)* - *German Council of Science (WR)* - *Kantian Journal* - *Studies in History and Philosophy of Science* - *Synthese*

ICREA MEMOIR 2018



Fran Supek

Institut de Recerca Biomèdica de Barcelona
Life & Medical Sciences

Fran Supek is an ICREA professor based at the Institute for Research in Biomedicine (IRB Barcelona), a part of the Barcelona Institute of Science and Technology. Fran leads the Genome Data Science laboratory, which specializes in large-scale statistical analyses of genomic, transcriptomic and epigenomic data. Fran obtained his PhD in Molecular biology in 2010 from the University of Zagreb, while working as an early-stage researcher at the RBI (Croatia). This was followed by a postdoctoral stay at the Centre for Genomic Regulation (as a Marie Curie fellow) and in 2017 he started his group at the IRB as a Ramon y Cajal fellow. Fran is the PI of the ERC Starting Grant HYPER-INSIGHT and an author on 34 research papers and 2 book chapters, cited 3614 times.

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 genomic signatures of negative or positive selection, which are often challenging to distinguish from the background DNA sequence variability that results from accumulated mutations. Such novel methodologies provide opportunities to gain insight into evolution of genomes, by revealing details of the interplay between mutation and selection. The biological questions I addressed include learning about evolution of gene function and regulation, in particular related to mechanisms underlying stress resistance and disease. In addition, I am interested in distributions of genetic variants in the human germline and soma, which can reveal how DNA repair is organized along eukaryotic chromosomes.

Selected publications

- Avgustinova A*, Symeonidi A, Castellanos A, Urdirioz-Urricelqui U, Solé-Boldo L, Martín M, Pérez-Rodríguez I, Prats N, Lehner B, **Supek F***, Aznar-Benitah S* 2018, 'Loss of G9a preserves mutation patterns but increases chromatin accessibility, genomic instability and aggressiveness in skin tumours', *Nature Cell Biology*, vol. 20, pp 1400-1409. (* corr. auth.)

Selected research activities

PRIOR TO MY ICREA APPOINTMENT - SELECTED PUBLICATIONS OF 2018

- Park S, **Supek F** & Lehner B 2018, 'Systematic discovery of germline cancer predisposition genes through the identification of somatic second hits', *Nature Communications*, vol. 9, no. 1, pp 2601.

- Levatić J, Pavić K, Perković I, Uzelac L, Ester K, Kralj M, Kaiser M, Rottmann M, **Supek F***, Zorc B* 2018, 'Machine learning prioritizes synthesis of primaquine ureidoamides with high antimalarial activity and attenuated cytotoxicity', *European Journal of Medicinal Chemistry*, vol. 146, pp 651-667. (*corr. auth.)

- Vidulin V, Šmuc T, Džeroski S & **Supek F** 2018, 'The evolutionary signal in metagenome phyletic profiles predicts many gene functions', *Microbiome*, vol. 6, no. 1, pp 129.

ICREA MEMOIR 2018



Hans Supèr
Universitat de Barcelona
Life & Medical Sciences

2017-present: Director of ACAP; 2013-present: CTO Braingaze SL; 2009-2014: Director of the 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

The understanding of the functional organization of the cerebral cortex that underlies cognitive behavior. I started my scientific journey by studying the ontogenetic and evolutionary development of the cerebral cortex to get a grasp of the immense complexity of the cortex. To learn about the functional organization of the neocortex, I continued my research studying system neurophysiology in awake, behaving monkeys and neural circuit dynamics using computer simulations. In 2011 we discovered a novel role of eye vergence movements in cognitive processing. We termed it Cognitive Vergence. The use of Cognitive Vergence to measure cognition has been patented world-wide, and I founded the start-up company (Braingaze) in 2013. End 2017 I started the centre ACAP at the UB where graduate and master students can carry out clinical work using Cognitive Vergence. Currently my research investigates 1) the neural mechanism of dynamic neural interactions, 2) the function of eye movements in visual cognition (Cognitive Vergence), and 3) clinical applications of Cognitive Vergence i early diagnosis of mental pathology being ADHD, Alzheimer, ASD, Dyslexia. Methods we use are computational spiking networks, eye tracking, machine learning, and psychophysics.

Selected publications

- Esposito F & **Supèr H** 2018, 'Vergence responses to face stimuli in young children', *Neuroreport*, 29(3):219-223.

Selected research activities

- Winner EIT Health Headstart competition.
- Finalists of the Disruptive program of Sanitas.

ICREA MEMOIR 2018



Marcel Swart

Universitat de Girona

Experimental Sciences & Mathematics

Marcel Swart obtained his PhD degree at the University of Groningen under the guidance of Prof. Herman Berendsen, Prof. Gerard Canters and Prof. Jaap Snijders. After postdoctoral stays in Amsterdam, he was appointed ICREA Júnior researcher and in 2009 ICREA Research Professor at the University of Girona. He was elected Fellow of the Young Academy of Europe in 2014, Director of the IQCC institute in 2015, and Fellow of the Royal Society of Chemistry in 2015. He is Founding Member and Vice-President of the QBIC Society, and of the RSEQ-GEQC specialized group on computational chemistry.

He organized the Girona Seminars on Predictive Catalysis (2016, 2018), edited the first textbook on spin states "Spin states in Biochemistry and Inorganic Chemistry" (Wiley), and was Chair of COST Action CM1305 (2014-2018). He participates in evaluation committees (ANEP, FWO, LaCaixa), and is member of editorial boards of scientific journals.

Research interests

He works in the field of theoretical (bio)inorganic and supramolecular chemistry, and works on transition-metal complexes, metalloproteins, enzymes, and DNA. The development of computational tools for these studies is an important ingredient, to which he has contributed largely both with his own software (QUILD, DRF90) as in contributions in general purpose software (ADF, NWChem). One of the main areas where these tools are applied is in the field of transition-metal chemistry, the spin states involved, and the effect this has on reactivity, selectivity, chemical bonding and spectroscopy. For this he developed spin-state consistent density functional (SSB-D, S12g).

His research on the development of theoretical chemistry tools was awarded the Young Scientist Excellence Award 2005, the 2012 MGMS Silver Jubilee Prize, and a special award by the Serbian Chemical Society in honor of their 120 anniversary for his continuous support for advancing chemical sciences in Serbia.

Selected publications

- K. Rajabimoghadam, Y. Darwish, U. Bashir, D. Pitman, S. Eichelberger, M. Siegler, **M. Swart** & I. Garcia-Bosch, 'Catalytic Aerobic Oxidation of Alcohols by Copper Complexes Bearing Redox-Active Ligands with Tunable H-bonding Groups', *J. Am. Chem. Soc.* 2018, 140, 16625-16634.
- J. Chen, A. Draksharapu, D. Angelone, D. Unjaroen, S.K. Padamati, R. Hage, **M. Swart**, C. Duboc & W.R. Browne, 'H₂O₂ Oxidation by Felli-OOH Intermediates and its Impact on Catalytic Efficiency', *ACS Catal.* 2018, 8, 9665-9674.
- T. Hamlin, **M. Swart** & F.M. Bickelhaupt, 'Nucleophilic Substitution (S_N2): Dependence on Nucleophile, Leaving Group, Central Atom, Substituents, and Solvent', *ChemPhysChem* 2018, 19, 1315-1330.
- F. Vlahovic, M. Gruden & **M. Swart**, 'Rotating iron and titanium sandwich complexes', *Chem. Eur. J.* 2018, 24, 5070-5073.
- M.L. Merlini, G.J.P. Britovsek, **M. Swart** & P. Belanzoni, 'Understanding the catalase-like activity of a bio-inspired manganese(II) complex with a pentadentate NSNSN ligand framework. A computational insight into the mechanism', *ACS Catal.* 2018, 8, 2944-2958.

Selected research activities

- Author of computational chemistry software (ADF, DRF90, NWChem, QUILD)
- Supervisor of six PhD students
- Supervised PhD theses by S. Stepanovic (Belgrade) and A. Romero-Rivera (Girona)
- Member of Editorial Board of *Inorg. Chim. Acta*, *J. Mol. Graph. Model.*, *J. Serb. Chem. Soc.*, *Comp. Chem. Highlights* and *J. Comp. Meth. Sci. Engin.*
- Member of External Scientific Advisory Board FosterOpenScience Plus
- Member Higher Education, Research and Culture in European Societies (HERCuLES) Group
- Organizer Girona Seminar on Predictive Catalysis, and online popularity poll for density functionals (DFT2018)
- Invited speaker at ICQC (Menton, FR), QBIC-IV (Bath, UK), ESPA2018 (Toledo, ES), ICCP10 (Munich, DE), Annual Meeting Academia Europaea-Young Academy of Europe (Barcelona, ES), and "Frontiers in Chemistry" seminar (Padova, IT)

ICREA MEMOIR 2018



Albert Tarancón

Institut de Recerca en Energia de Catalunya
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 Institute of Microelectronics of Barcelona (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 the Nanoionics and Fuel Cells Group. Currently, he is ICREA Professor at IREC and leads a group of 20+ people devoted to nanomaterials for alternative energy technologies and their applicability in powering portable devices and hydrogen/synthetic fuels production. He has been principal investigator of 9 EU research projects, including one ERC-Consolidator Grant and two H2020 coordinated projects (FET Proactive and FCH JU), attracting a total amount of 15+ M€.

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. Nanoionics is 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 real devices for radically new applications. In this direction, he was recently awarded with an ERC CoG to implement disruptive Nanoionics concepts in Si-integrated micro-SOFC technology and a FET Proactive project on new micro energy technologies.

Selected publications

- F. Chiabrera, I. Garbayo, L. López-Conesa, G. Martín, A. Ruiz-Caridad, M. Walls, L. Ruiz-González, A. Kordatos, M. Núñez, A. Morata, S. Estradé, A. Chroneos, F. Peiró & **A. Tarancón** 2018, 'Engineering Transport in Manganites by Tuning Local Nonstoichiometry in Grain Boundaries', *Advanced Materials*, 1805360 (**Selected for the cover image**) - Ahead
- A. Morata, M. Pacios, G. Gadea, C. Flox, D. Cadavid, **A. Cabot** & **A. Tarancón** 2018, 'Large-area and adaptable electrospun silicon-based thermoelectric nanomaterials with high energy conversion efficiencies', *Nature Communications*, 9, 4759.
- A. M Saranya, A. Morata, D. Pla, M. Burriel, F. Chiabrera, I. Garbayo, A. Hornés, J. A Kilner & **A. Tarancón** 2018, 'Unveiling the Outstanding Oxygen Mass Transport Properties of Mn-Rich Perovskites in Grain Boundary-Dominated La_{0.8}Sr_{0.2}(Mn_{1-x}Co_x)_{0.85}O_{3±δ} Nanostructures', *Chemistry of Materials*, 30, 5621-5629.
- E. Hernandez, F. Baiutti, A. Morata, M. Torrell & **A. Tarancón** 2018, 'Infiltrated mesoporous oxygen electrodes for high temperature co-electrolysis of H₂O and CO₂ in solid oxide electrolysis cells', *Journal of Materials Chemistry A*, 6, 9699 - 9707.

Selected research activities

- Best Innovation Prize 2018 (FCH JU Awards)
- Coordinator of the new 7M€ EU HARVESTORE project granted within the Future Eemerging Technologies (H2020-FET Proactive) programme
- Coordinator of ULTRASOFC (ERC-CoG), Cell3Ditor (H2020-FCH JU), 3DMADE (MINECO) and NANOEN (SGR)
- Editor of a new journal of IoP Publishing (Institute of Physics): *Journal of Physics: Energy*
- Organizer of the EMRS symposium on Solid State Ionics (10th edition) (>250 abstracts)
- 1 Keynote and 3 Invited Lectures in international reputed conferences
- Dissemination actions at the CCCB Exhibition "After the end of the World" (Beta and City Stations)

ICREA MEMOIR 2018



Gian Gaetano Tartaglia

Centre de Regulació Genòmica
Life & Medical Sciences

* 2014 - ICREA Research Professor * 2013 ERC Grant * 2010 - Group Leader, Bioinformatics and Genomics Program, Centre for Genomic Regulation, Barcelona (Spain) * 2011 - Clare Hall Life Member, University of Cambridge (UK) * 2005-2010 - Postdoctoral Fellow, Clare Hall College, Chemistry Department, University of Cambridge (UK) * 2001-2005 - PhD, Biochemistry Department, University of Zurich, Zurich (CH) * 1996-2000 - MPhil Theoretical Physics, Statistical Mechanics, University la Sapienza, Rome (Italy)

Research interests

My main focus is to understand the role played by RNA molecules in protein networks. Characterizing protein-RNA associations is key to unravel the complexity and functionality of mammalian genomes and will open up therapeutic avenues for the treatment of a broad range of human disorders. I aim to discover the involvement of RNA molecules in regulatory networks controlling protein production and I am interested in understanding mechanisms whose alteration lead to aberrant aggregation. We have recently observed that interaction between proteins and mRNAs induce feedback loops that are crucial in protein homeostasis. We also found that specific proteins and RNAs phase separate in the cytosol and nucleus when their abundance is significantly high and we are investigating how large assemblies formation affects cell function.

Selected publications

- Qamar S, Wang G, Randle SJ,... **Tartaglia GG**,... St George-Hyslop P 2018, 'FUS Phase Separation Is Modulated by a Molecular Chaperone and Methylation of Arginine Cation- π Interactions', *Cell*, 173, 3, 720.
- Ribeiro DM, Zanzoni A, Cipriano A, Delli Ponti R, Spinelli L, Ballarino M, Bozzoni I, **Tartaglia GG*** & Brun C 2018, 'Protein complex scaffolding predicted as a prevalent function of long non-coding RNAs', *Nucleic Acids Research*, 46, 2, 917-928.*corresponding author
- Cid-Samper F, Gelabert-Baldrich M, Lang B, Lorenzo-Gotor N, Ponti RD, Severijnen LWFM, Bolognesi B, Gelpi E, Hukema RK, Botta-Orfila T & **Tartaglia GG** 2018, 'An Integrative Study of Protein-RNA Condensates Identifies Scaffolding RNAs and Reveals Players in Fragile X-Associated Tremor/Ataxia Syndrome', *Cell Rep.* 25(12):3422-3434.e7.
- Vendramin R., Verheyden Y, Ishikawa H, Goedert L, Nicolas E, Saraf K, Armaos A, Delli Ponti R, Izumikawa K, Mestdagh P, Lafontaine DLJ, **Tartaglia GG**, Takahashi N, Marine JC & Leucci E 2018, 'SAMMSON fosters cancer cell fitness by concertedly enhancing mitochondrial and cytosolic translation', *Nat Struct Mol Biol.* 25(11):1035-1046.

Selected research activities

- Two post-doctoral researchers of the group, Benedetta Bolognesi and Teresa Botta Orfila, became PIs at IBEC and IDIBAPS, respectively
- The group hosts a medical doctor, Alexandra Soriano, who carries out the doctoral studies together with the Hospital Clinic
- Received a European Commission Horizon 2020 grant for algorithms on big data
- Proposed by CRG for the Premi Nacional de Recerca

ICREA MEMOIR 2018



Sergey Tikhonov

Centre de Recerca Matemàtica
Experimental Sciences & Mathematics

I was born in Russia in 1976. I graduated from the Lomonosov Moscow State University in 1999 and obtained my PhD in Mathematics from MSU in 2003. 2004-2006: Marie Curie Fellow at the Centre de Recerca Matemàtica, Barcelona. 2006-2008: Post-doctoral Fellow at the Scuola Normale Superiore, Pisa. 2008-September 2012: ICREA Researcher, CRM. From September 2012, I am an ICREA Research Professor at the Centre de Recerca Matemàtica. 2009: ISAAC Award. 2013: Humboldt Research Fellowship for Experienced Researchers.

Research interests

Mostly my research deals with 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

- Nursultanov E, **Tikhonov S** & Tleukhanova N 2018 'Norm convolution inequalities in Lebesgue spaces', *Rev Mat Iberoam*, 34, 2, 811-838.
- Dyachenko M & **Tikhonov S** 2018, 'Smoothness and asymptotic properties of functions with general monotone Fourier coefficients', *J. Fourier Anal. Appl.*, 24(4), 1072-1097.
- Dyachenko M, Nursultanov E & **Tikhonov S** 2018, 'Hardy-type theorems on Fourier transforms revised', *J Math Anal Appl*, 467, 171-184.
- Dung D, Temlyakov V, Ullrich T & **Tikhonov S** (Ed.) 2018, *Hyperbolic cross approximation*, Advanced Courses in Mathematics - CRM Barcelona. Basel: Birkhäuser/Springer.
- Gorbachev D, Lifyand E & **Tikhonov S** 2018, 'Weighted norm inequalities for integral transforms', *Indiana Univ. Math. J.*, 67, 5, 1949-2003.
- Gorbachev D & **Tikhonov S** 2018, 'Wiener's problem for positive definite functions', *Mathematische Zeitschrift*, 289, 859-874.
- Dyachenko M, Nursultanov E & **Tikhonov S** 2018, 'Hardy--Littlewood and Pitt's inequalities for Hausdorff operators', *Bulletin des Sciences Mathématiques*, 147, 40-57.

Selected research activities

PhD defenses in 2018:

- Nestor Costa (UAB, co-directed with J. Bruna),
- Alberto Debernardi (UAB),
- Ainur Jumabayeva (UAB),
- Askhat Mukanov (UAB),
- Yerzhan Toleugazy (Al-Farabi KazNU, co-directed with K. Bekmaganbetov).

Visiting Positions: Invited Researcher, Institute of Mathematics of Acad. of Sciences, Prague, Czech Republic.

Talks: St.Petersburg Summer Meeting in Mathematical Analysis, St. Petersburg, Russia; Jaen Conference on Approximation Theory, Jaen, Spain; The Prague seminar on function spaces, Charles University, Prague, Czech Republic.

Colloquium talks: Pontificia Universidad Católica del Perú, Lima, Peru; Universidad Complutense de Madrid, Spain.

Member of Editorial board: Analysis Mathematica, Journal of Mathematical Analysis and Applications, Demonstratio Mathematica, Jaen Journal on Approximation, Bulletin of Mathematical Analysis and Applications, Abstract and Applied Analysis.

ICREA MEMOIR 2018



Matthias Tischler
 Universitat Autònoma de Barcelona
 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 the Universities of Heidelberg, Munich and Frankfurt. He obtained his PhD in Heidelberg (1998). After holding PostDoc positions at Paris (DHI) and Bamberg, 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 Austrian Academy of Sciences (IMAFO) 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 the University of Notre Dame, USA (2016). 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.

Research interests

My studies are raising the question about the geographical, linguistic, religious, cultural and mental borders of the multi-layered legacy in the centers and peripheries of the Medieval Worlds. First, 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 German, Anglo-Saxon, French, Italian and Hispanic 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. On this basis, I have been able to pursue studies on early Christian polemics against Islam, on the linguistic and religious borders between Christians, Jews and Muslims, and on processes of religious and cultural passages, entanglement and dis/integration among the members of the three monotheisms, especially in the Carolingian and Iberian Worlds.

Selected publications

- **Tischler M** 2018, *Journal of Transcultural Medieval Studies* 5, 1-2, 442 pp. (Editor-in-Chief).
- **Tischler M** 2018, 'Karl der Große in der Erinnerung der Karolingerfamilie' in: *Erinnerungswege*. Kolloquium zu Ehren von Johannes Fried (Frankfurter Historische Abhandlungen 49), ed. by Gudian J et al., Stuttgart, p. 37-52.
- **Tischler M** 2018, 'Eine unbekannte zeitgenössische Handschrift von Hugos von Sankt Viktor Werk 'De tribus diebus' in Siegburg. Beobachtungen zur frühen Verbreitung Viktoriner Theologie zwischen Paris, dem Rheinland und Südostdeutschland, *Mitteilungen des Instituts für Österreichische Geschichtsforschung* 126, p. 110-117.
- **Tischler M** 2018, 'Pergamins plens de pols i pobles particulars. Nova recerca en matèria de manuscrits carolingis i d'història pública a la Catalunya del segle XXI', *Zeitschrift für Katalanistik* 31, p. 345-349.
- **Tischler M** 2018, 'Supposed and True Knowledge of the Qur'ān in Early Medieval Latin Literature, Eighth and Ninth Centuries', *Journal of Transcultural Medieval Studies* 5, 1, p. 7-54.
- **Tischler M** 2018, 'Religiöse Alterität und scholastische Irrtumsbekämpfung. Neue Umgangsformen der hochmittelalterlichen Bildungselite mit dem Islam' in: *Irrtum - Error - Erreur* (Miscellanea Mediaevalia 40), ed. by Speer A Mauriège M, Berlin/Boston, p. 281-324 and 819.

Selected research activities

1st Reviewer of the Thesis of Habilitation by Dr. B Müller-Schauenburg: *Das Kirchenbild Benedikts [XIII.] im Spiegel der Komposition seiner Bibliothek*, Phil.-Theol. Hochschule Sankt Georgen, Frankfurt/Main, June 15, 2018.
 Co-Director of the FWF-Project "Bible and Historiography in Transcultural Iberian Societies, 8th to 12th Centuries" (2015-2019) and the HERA-Project "After Empire: Using and Not Using the Past in the Crisis of the Carolingian World, c.900-c.1050" (2016-2019).
 Series Co-Editor of Forte, AJ (ed.), *Friguli Commentarius in evangelium secundum Matthaeum* (Rarissima Mediaevalia Opera Latina 6), Munster/W. 2018.

ICREA MEMOIR 2018



Xavier Tolsa

Universitat Autònoma de Barcelona
Experimental Sciences & Mathematics

I was born in Barcelona in 1966. First I studied engineering, but later I turned to mathematics. After obtaining my PhD in mathematics in 1998 (UAB), I spent about one year in Gotteborg (University of Gotteborg - Chalmers) and another year in Paris (Université de Paris-Sud), until I came back to Barcelona (UAB) by means of a "Ramón y Cajal" position. In 2002 I was awarded the Salem Prize by the Institute of Advanced Study and Princeton University for the proof of the semiadditivity of analytic capacity and my works in the so called Painlevé problem. Since 2003 I am an ICREA Research Professor. In 2004 I received the prize of the European Mathematical Society for young researchers. In 2012 I was awarded an ERC Advanced Grant to develop the project "Geometric analysis in the Euclidean space". My current research in mathematics focuses in Fourier analysis, geometric measure theory, and potential theory.

Research interests

I work in mathematical analysis. My research deals with complex analysis, Fourier analysis and geometric measure theory. Particularly, I am interested in the relationship between analytic notions such as analytic capacity or harmonic measure, and geometric concepts like rectifiability. In a sense, analytic capacity measures how much a set in the plane is visible or invisible for analytic functions. On the other hand, rectifiability tells you if a set is contained in a countable collection of curves with finite length. Some years ago, I proved that analytic capacity is semiadditive. This was an open problem since the early 1960s. More recently I have studied related problems in higher dimensions. In particular, in a recent collaboration with F. Nazarov and A. Volberg I have proved the so called David-Semmes conjecture in the codimension 1 case. This result has important applications to the study of harmonic measure, which is another of my main interests.

Selected publications

- Martikainen H, Mourgoglou M & **Tolsa X** 2018, 'Improved Cotlar's inequality in the context of local Tb theorems'. *J. Funct. Anal.* 274, no.5, 1255-1275
- Jaye B, Nazarov F & **Tolsa X** 2018, 'The measures with an associated square function operator bounded in L^2 '. *Advances in Mathematics* 339, 60-112
- **Tolsa X** & Volberg A 2018, 'On Tsirelson's theorem about triple points for harmonic measure'. *International Mathematics Research Notices*, Vol. 2018, No. 12, pp. 3671-3683
- Garnett J, Mourgoglou M & **Tolsa X** 2018, "Uniform rectifiability in terms of Carleson measure estimates and e -approximability of bounded harmonic functions". *Duke Mathematical Journal*, Vol. 167, No. 8, 1473 -1524.
- Girela-Sarrión D & **Tolsa X** 2018, 'The Riesz transform and quantitative rectifiability for general Radon measures'. *Calc. Var. PDE*, 57:16.

Selected research activities

Plenary talks in conferences and workshops, and minicourses

- Harmonic Analysis of Elliptic and Parabolic Partial Differential Equations. CIRM, Marseille, April 2018.
- Minicourse "Harmonic measure via blow up methods and monotonicity formulas". ICMAT (Madrid), May 2018.
- Workshop on Real Harmonic Analysis and its Applications to PDE's and Geometric Measure Theory: on the occasion of the 60th birthday of Steve Hofmann. ICMAT, Madrid, May 2018.
- Geometric Measure Theory and its Connections Conference. Helsinki, June 2018.
- Geometric Aspects of Harmonic Analysis (in honor of Fulvio Ricci). Cortona, Italy, June 2018.
- Research Program in Harmonic Analysis. Park City Mathematics Institute (IAS Princeton), Utah, July 2018 (stay of three weeks and an invited talk).
- CMI at 20. Analysis and Probability Workshop. Clay Mathematics Institute. Oxford, September 2018.
- Conference "PDEs and Geometric Measure Theory". ETH Zürich, October 2018.

Direction of the PhD Thesis "Singular Integral Operators and Rectifiability", by Petr Chunaev. June 2018, UAB.

ICREA MEMOIR 2018



Josefa Toribio
 Universitat de Barcelona
 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 publications

- **Toribio J** 2018, 'Visual experience: rich but impenetrable', *Synthese*, 195 (8): 3389-3406.
- **Toribio J** 2018, 'Implicit bias: from social structure to representational format', *Theoria. An International Journal for Theory, History and Foundations of Science*, 33(1), pp. 41-60.

Selected research activities

Refereed Conference Presentations

- Toribio, J. "Accessibility, implicit biases, and epistemic justification". 26th Conference of the European Society for Philosophy and Psychology (ESPP 2018). Rijeka, Croatia, September 10-13, 2018.
- Toribio, J. "Accessibility, implicit biases, and epistemic justification". 9th Conference of the Spanish Society for Logic, Methodology and Philosophy of Science. Madrid, November, 13-16, 2018.

Invited Talks

- Toribio, J. "Implicit bias: a challenge for accessibilism?" LOGOS Seminar. January 31st 2018.
- Toribio, J. "Deflating (non)conceptualism: game over". Workshop on Content and Concepts. University of Barcelona. May 10-11, 2018.
- Toribio, J. "Implicit bias: a challenge for accessibilism?" Workshop "How implicit is implicit bias?". Centre for Philosophical Psychology. University of Antwerp. May 31st, 2018.
- Toribio, J. "Experience as discrete". Congrès International Triennal de la Société de Philosophie Analytique, Louvain-la-Neuve. Belgium, July 2-5, 2018. Keynote speaker.

Research Management

- Co-organizer of the First International Workshop on Content and Concepts, funded by "The Complexity of Perception: A multidimensional approach", MINECO FFI2014-51811-P. Barcelona, May 10-11, 2018.
- Collaborator of the Spanish State Research Agency ("Agencia Estatal de Investigación). Mind, Language and Thought (Philosophy).

MA dissertations directed:

- Ruy Schneider (CCiL 2017-2018): Why do we need nonconceptual content?
- Tamara Juburi (CCiL 2017-2018): Implicit Bias: Applying Leslie's theory of generics towards a new doxastic approach.

ICREA MEMOIR 2018



Juan Manuel Toro
Universitat Pompeu Fabra
Social & Behavioural Sciences

I was born in Bogotá (Colombia) in 1976. I studied Psychology at the Universidad Nacional de Colombia. In 2005, I got a PhD from the Universitat de Barcelona, and moved to work as a postdoc with Jacques Mehler at the Language and Cognitive Development lab at SISSA (Trieste, Italy). Later I was a research fellow under the Ramón y Cajal program. My studies are mainly funded through a grant awarded by the European Research Council (ERC Starting Grant). 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.

Research interests

I am interested in studying why the ability of language has only emerged in humans and not in other animals. I tackle this issue using a combination 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, including the ability to extract information from speech using prosodic and statistical regularities. We have also showed how phonological representations guide general learning mechanisms. Recently, we are also exploring music cognition, including consonance processing, brain entrainment to metrical structures and harmonic predictions. Through this work, I have tried to unveil what is uniquely human and what is shared with other animals in the field of language processing.

Selected publications

- Crespo-Bojorque P, Monte-Ordoño J & **Toro JM** 2018, 'Early neural responses underlie advantages for consonance over dissonance', *Neuropsychologia*, 117, 188-198.

Selected research activities

- Exploring what we share, and what we don't, with other species on language processing. University of Osnabruck (Germany).
- Coordinator, Master in Brain and Cognition, Universitat Pompeu Fabra.
- Associate Editor, *Journal of Language Evolution*.
- Interviews and media coverage: EURAXESS, CORDIS, UPF press, El Tiempo

ICREA MEMOIR 2018



David Torrents

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
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 last 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 understanding the relationship between genomic variation and disease, in order to generate the basis for more precise medical care.

Selected publications

- Sadler JBA, Wenzel DM, Williams LK, Guindo-Martínez M, Alam SL, Mercader JM, **Torrents D**, Ullman KS, Sundquist WI, Martin-Serrano J. 2018, 'A cancer-associated polymorphism in ESCRT-III disrupts the abscission checkpoint and promotes genome instability', *Proc Natl Acad Sci U S A.*, 18;115(38): E8900-E8908.
- Bonas-Guarch S, Guindo-Martínez M, Miguel-Escalada I, Grarup N, Sebastian D, Rodríguez-Fos E, Sanchez F, Planas-Felix M, Cortes-Sanchez P, Gonzalez S, Timshel P, Pers Tune H, Morgan CC, Moran I, Atla G, Gonzalez JR, Puiggros M, Martí J, Andersson EA, Diaz C, Badia RM, Udler M, Leong A, Kaur V, Flannick J, Jorgensen T, Linneberg A, Jorgensen ME, Witte DR, Christensen C, Brandslund I, Appel EV, Scott RA, Luan J, Langenberg C, Wareham NJ, Pedersen O, Zorzano A, Florez JC, Hansen T, Ferrer J, Maria Mercader J & **Torrents D** 2018, 'Re-analysis of public genetic data reveals a rare X-chromosomal variant associated with type 2 diabetes (vol 9, 321, 2018)', *Nature Communications*, 9, 2162.
- Beekman R, Chapaprieta V, Russiñol N, Vilarrasa-Blasi R, Verdaguer-Dot N, Martens JHA, Duran-Ferrer M, Kulis M, Serra F, Javierre BM, Wingett SW, Clot G, Queirós AC, Castellano G, Blanc J, Gut M, Merkel A, Heath S, Vlasova A, Ullrich S, Palumbo E, Enjuanes A, Martín-García D, Beà S, Pinyol M, Aymerich M, Royo R, Puiggros M, Torrents D, Datta A, Lowy E, Kostadima M, Roller M, Clarke L, Flicek P, Agirre X, Prosper F, Baumann T, Delgado J, López-Guillermo A, Fraser P, Yaspo ML, Guigó R, Siebert R, **Martí-Renom MA**, Puente XS, López-Otín C, Gut I, Stunnenberg HG, Campo E, **Martin-Subero JI**. 2018, 'The reference epigenome and regulatory chromatin landscape of chronic lymphocytic leukemia', *Nature Medicine*; 24(6):868-880.

ICREA MEMOIR 2018



Diego F. Torres

Institut de Ciències de l'Espai
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 of 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 became Director of the Institute of Space Sciences in March 2016.

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 about 30 scientists since its foundation in 2006. You can know more about all this, including links to my publications, from my webpage, <https://sites.google.com/view/dft-research>

Selected publications

- Soriano JF, Anchordoqui LA & **Torres DF** 2018, 'Photo-disintegration of He-4 on the cosmic microwave background is less severe than earlier thought', *Physical Review D*, 98, 4, 043001.
- Li J, **Torres DF**, Lin TT, Grondin M-H, Kerr M, Lemoine-Goumard M & de Ona Wilhelmi E 2018, 'Observing and Modeling the Gamma-Ray Emission from Pulsar/Pulsar Wind Nebula Complex PSR J0205+6449/3C 58', *Astrophysical Journal*, 858, 2, 84.
- **Torres DF** & Lin T 2018, 'Discovery and Characterization of Superefficiency in Pulsar Wind Nebulae', *The Astrophysical Journal Letters*, Volume 864, Issue 1, article id. L2, 8 pp.
- Li J, **Torres DF**, Coti ZF, Papitto A, Kerr M & Rea N 2018, 'Theoretically Motivated Search and Detection of Non-thermal Pulsations from PSRs J1747-2958, J2021+3651, and J1826-1256', *The Astrophysical Journal Letters*, volume 868, issue 2, article id. L29, 7 pp.
- dos Anjos RC, Soriano JF, Anchordoqui LA, Paul TC, **Torres DF**, Krizmanic JF, Paglione TAD, Moncada RJ, Sarazin F, Wiencke L & Olinto AV 2018, 'Ultrahigh-Energy Cosmic Ray Composition from the Distribution of Arrival Directions', *Physical Review D*, 98, 123018.
- **Torres DF** 2018, 'Order parameters for the high-energy spectra of pulsars', *Nature Astronomy*, 2, 3, 247 - 256.

Selected research activities

- Director of the Institute of Space Sciences (ICE, CSIC).
- Published 11 papers this year. Most (9/11) with small groups of authors or alone, and 2 with large collaborations.
- Member of Fermi-LAT and the Cherenkov Telescope Array.
- Editor-in-Chief, Journal of High Energy Astrophysics, Elsevier.
- Director, Sant Cugat Forum on Astrophysics.
- Have been an evaluator for projects or promotions of several countries and a peer reviewer for several astrophysical journals.

ICREA MEMOIR 2018



Joan Torruella
 Universitat Autònoma de Barcelona
 Humanities

Joan Torruella holds a PhD in Linguistics by the Autonomous University of Barcelona, a Masters in Philosophy by the University of Manchester, and a Masters in Lexicography by the University Pompeu Fabra in Barcelona. He obtained a research grant by the Ministero degli Affari Esteri of Italy to conduct research on Romance Studies at the University of Florence. Later he worked at the University of Manchester as a Lecturer of Spanish and Catalan, while in turn he conducted his Masters in Philosophy. He has worked on a wide range of computing tools and resources in collaboration with the Istituto di Linguistica Computazionale of the Consiglio Nazionale delle Ricerche in Pisa (Italy). He is ICREA Research Professor since January 2005. He is also co-director of the journal "Scriptum Digital", co-director of the CORHIBER Portal and a member of the Seminar of Philology and Computer Science. In 2009 he was awarded the Research Excellence Prize (PREI 2008).

Research interests

My work consists of the research in the mediaeval Hispanic lexicon and of the development and application of new computer tools in order to understand and describe the process of language from real and quantifiable datum extracted from balanced corpora. At this moment I am working in contrastive studies among different Hispanic languages and in the realization of a corpus of texts of the Catalan language previous to the XVII century (Corpus Informatizat del Català Antic). I am also working in the development of a portal in internet with scientific information about the lexicon of the Ibero-Romance languages (Portal de Léxico Hispánico). I'm currently working on those projects: development of a semi-automatic lemmatisator of the Old Catalan language; study of how to measure the lexical richness of the texts and the preparation of a computer program to do it, and a corpus of notarial documents written in Castilian language in Catalonia in the XVIII century.

Selected publications

- **Torruella J** & Huertas S 2018, 'Las voces de especialidad: caracterización general', in Clavería G i Freixas M (coords.), *El diccionario de la Academia en el siglo XIX: la 5.ª edición (1817) al microscopio*, pp. 253-273, Arco/Libros, Madrid.
- Clavería G, Freixas M & **Torruella J** 2018, 'Historia interna del Diccionario de la lengua castellana de la Real Academia Española in el siglo XIX (1817-1852): el léxico especializado', in Garriga C, Pascual ML & Pedraza MB (eds.), *Lengua de la ciencia y lenguajes de especialidad*, Coruña, Anexos de la Revista de Lexicografía, pp. 209-229.

Selected research activities

Director, with Dr. Johannes Kabatek (Univ. of Zurich), of the *Portal de Corpus Històrics Hiberorromànics (CORHIBER)*.
<http://www.corhiber.org>.

Director of the project "*Corpus de documents castellans escrits en Catalunya en el segle XVIII*". Funding institution: MINECO
 Co-Director of the *Scriptum Digital Journal* (magazine about diachronical corpus and digital edition in Ibero-Romance languages),
<http://scriptumdigital.org>.

Director of *Computerised Corpus of Old Catalan (CICA)*. [Http://www.cica.cat](http://www.cica.cat). Funding institution: Grup de Lexicografia i Diacronia (2014SGR1328).

Editor Consultant of CODEA project (*Corpus de Documents Espanyols anteriors a 1700*) for Castilian texts of Catalonia and Valencia. The project is coordinated by Dr. Pedro Sánchez-Prieto Borja of the Univ. de Alcalá de Henares.

Member of the project "*Historia interna del Diccionario de la Lengua Castellana de la REA en el siglo XIX (1817-1852)*". Funding institution: Ministerio de Ciencia e Innovación (FFI2014-51904-P).

Member of the "*CER Prolope*" (Centre d'estudis i recerca - UAB). Edición y estudio de treinta y seis comedias de Lope de Vega. Funding institution: Ministerio de economía y competitividad (FFI2015-66216-P).

Course on "Lingüística de corpus" in the module *Principios y métodos* del Màster oficial *Lengua española, literatura hispánica y español como lengua extranjera*, in the Dept. de Filologia Espanyola at the Univ. Autònoma de Barcelona.

ICREA MEMOIR 2018



Xavier Trepatri

Institut de Bioenginyeria de Catalunya
Engineering Sciences

Xavier Trepatri 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.

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 and aging.

Selected publications

- Elosegui-Artola A, **Trepatri X** & Roca-Cusachs P 2018, 'Control of Mechanotransduction by Molecular Clutch Dynamics', *Trends In Cell Biology*, vol. 28, no. 5, 356 - 367.
- Latorre E, Kale S, Casares L, Gómez-González M, Uroz M, Valon L, Nair RV, Garreta E, Montserrat N, Del Campo A, Ladoux B, Arroyo M & **Trepatri X** 2018, 'Active superelasticity in three-dimensional epithelia of controlled shape', *Nature*, 563(7730):203-208.
- Good M & **Trepatri X** 2018, 'Cell parts to complex processes, from the bottom up', *Nature*, 563(7730):188-189.
- Uroz M, Wistorf S, Serra-Picamal X, Conte V, Sales-Pardo M, Roca-Cusachs P, **Guimerà R** & **Trepatri X** 2018, 'Regulation of cell cycle progression by cell-cell and cell-matrix forces', *Nature Cell Biology*, vol. 20, no. 6, pp 646-654.
- Labernadie A & **Trepatri X** 2018, 'Sticking, steering, squeezing and shearing: cell movements driven by heterotypic mechanical forces', *Current Opinion in Cell Biology*, vol. 54, pp 57-65.
- **Trepatri X** & Sahai E 2018, 'Mesoscale physical principles of collective cell organization', *Nature Physics*, 14, 7, 671 - 682.
- Shellard A, Szabo A, **Trepatri X** & Mayor R 2018, 'Supracellular contraction at the rear of neural crest cell groups drives collective chemotaxis', *Science*, 362, 6412, 339 - +.
- Pardo-Pastor C, Rubio-Moscardo F, Vogel-González M, Serra SA, Afthinos A, Mrkonjic S, Destaing O, Abenza JF, Fernández-Fernández JM, **Trepatri X**, Albiges-Rizo C, Konstantopoulos K, Valverde MA 2018, 'Piezo2 channel regulates RhoA and actin cytoskeleton to promote cell mechanobiological responses', *Proceedings of the National Academy of Sciences*, vol. 115, no. 8, pp 1925-1930.

ICREA MEMOIR 2018



Isabel Usón

Institut de Biologia Molecular de Barcelona
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 Barcelona as ICREA Research Professor. Her work on structural chemistry and biology has led to over 150 publications. The software ARCIMBOLDO and SHELX are the central output of her work. She is one of the 7 members of the Maria de Maeztu Excellence Unit of Structural Biology at IBMB-CSIC.

Research interests

Macromolecular crystallography provides conclusive structural info. down to atomic detail and has been inextricable from major advances in the life sciences. Nevertheless, this structural model cannot be directly calculated from the experimental data, as we cannot measure the phases of the diffracted X-ray beams. Our group develops methods to exploit the stereochemical knowledge present in small, accurate units such as secondary structure fragments and their association into local folds. Their use to solve the central phase problem of crystallography is implemented in our software ARCIMBOLDO. This has required devising our own particular toolbox for fragments. We are extending this detailed view to map interpretation within the program SHELXE (Sheldrick) and general structure interpretation within our program BORGES_MATRIX. Also, we are extending our work into electron diffraction. As illustrated in paintings by G. Arcimboldo, the information content derived from a correct combination of fragments goes beyond their simple addition.

Selected publications

- Gordo V, Aparicio D, Perez-Luque R, Benito A, Vilanova M, **Usón I**, Fita I* & Ribó M* 2018, 'Structural insights into subunits assembly and the oxyester splicing mechanism of Neq pol split intein', *Cell Chem. Biol.*, 25, P871-879.E2
- **Usón I** & George M 2018, 'SheldrickAn introduction to experimental phasing of macromolecules illustrated by SHELX; new autotracing features', *Acta Cryst D74*, 106-116
- Caballero I, Sammito M, Millán C, Lebedev A, Soler N & **Usón I*** 2018, 'ARCIMBOLDO on Coiled Coils', *Acta Cryst D*. 74, 194-204
- Oeffner RD, Afonine PV, Millan C, Sammito M, **Usón I**, Read RJ & McCoy AJ 2018, 'On the application of the expected log-likelihood gain to decision making in molecular replacement', *Acta Cryst. D74*, 245-255
- Lee M, Batuecas MT, Tomoshige S, Domínguez-Gil T, Mahasenan KV, Dik DA, Heseck D, Millán C, **Usón I**, Lastochkin E, Hermoso JA & Mobashery S 2018, 'Exolytic and endolytic turnover of peptidoglycan by lytic transglycosylase Slt of *Pseudomonas aeruginosa*', *Proceedings of the National Academy of Sciences*, 115:4393-4398.
- McCoy AJ, Oeffner RD, Millan C, Sammito M, **Usón I** & Read RJ 2018, 'Gyre and gimble: a maximum-likelihood replacement for Patterson correlation refinement', *Acta Crystallographica Section D-structural Biology*, 74, 4, 279 - 289.
- Duncce JM, Dunne OM, Ratcliff M, Millán C, Madgwick S, **Usón I** & Davies OR 2018, 'Structural basis of meiotic chromosome synapsis through SYCP1 self-assembly', *Nature Structural & Molecular Biology* 25, pages557-569.

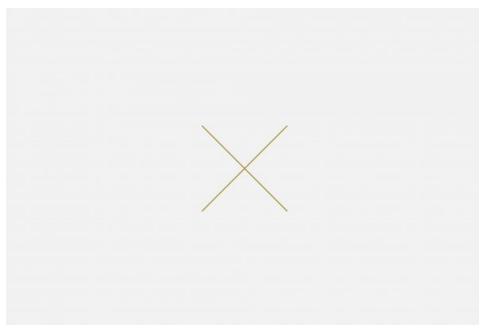
Selected research activities

Organisation of the session "New approaches to structure solution by Crystallography and CryoEM: Computational features and new algorithms" at the European Crystallographic Meeting Congress XXXI.

Invited lecture "All is fair in phasing: the combined artillery in ARCIMBOLDO" in "Combining methods in macromolecular structure determination, including special conditions" 22-27 August 2018, Oviedo (Spain).

Research Stay July-August at CIMR, University of Cambridge.

ICREA MEMOIR 2018



Pablo O. Vaccaro
Institut de Ciències Fotòniques
Engineering Sciences

Pablo Vaccaro earned his MSc in Physics working on LPE of IV-VI compound semiconductors, in 1986, and his PhD in Physics degree working on CdS/CdTe solar cells, in 1991, at Balseiro Institute, Bariloche, Argentina. He joined Prof. Hiroyuki Matsunami's Labs at the Dept. of Electrical Engineering, Kyoto University, Japan, where he conducted post-doctoral research on chemical beam epitaxy of III-V compound semiconductors until 1993. He then moved to Advanced Telecom. Research Institute, in Kyoto, Japan, where he conducted research on MBE of III-V compound semiconductors and optoelectronic devices fabrication, reaching the position of Senior Researcher. In 2006 he was hired by Sharp Corp. at the Advanced Technol. Res. Labs., in Nara, Japan, where he worked on MOCVD of III-N compound semiconductors and fabrication process of blue laser diodes and LEDs. He became ICREA Research Professor at ICMA-B-CSIC, Bellaterra, Spain, in 2010 and he moved to ICFO, Castelldefels, Spain, in 2018.

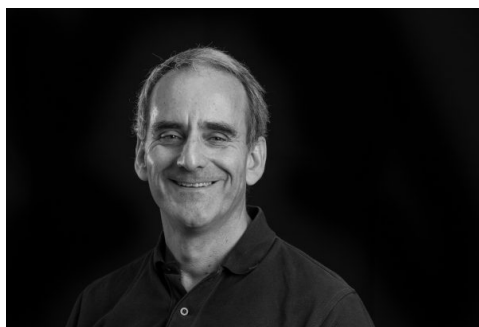
Research interests

SiGe thermoelectric far-infrared sensors integrated on silicon substrates. Tensile strained germanium on silicon substrates for monolithically integrated optoelectronics. SiGe nanowires for thermoelectric applications. Piezoresistivity in Si/Ge nanostructures and III-V heterostructures.

Selected publications

- **Vaccaro PO**, Alonso MI, Garriga M, Gutiérrez J, Peró D, Wagner MR, Reparaz JS, **Sotomayor-Torres CM**, Vidal X, Carter EA, Lay PA, Yoshimoto M & **Goñi AR** 2018, 'Localized Thinning for Strain Concentration in Suspended Germanium Membranes and Optical Method for Precise Thickness Measurement', *AIP Adv.* **8**, 115131/1-11.

ICREA MEMOIR 2018



Juan Valcárcel
Centre de Regulació Genòmica
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

- Horiuchi K, Perez-Cerezales S, Papasaikas P, Ramos-Ibeas P, Patricia Lopez-Cardona A, Laguna-Barraza R, Fonseca Balvis N, Pericuesta E, Fernandez-Gonzalez R, Planells B, Viera A, Angel Suja J, Juan Ross P, Alen F, Orio L, Rodriguez de Fonseca F, Pintado B, **Valcarcel J** & Gutierrez-Adan A 2018, 'Impaired Spermatogenesis, Muscle, and Erythrocyte Function in U12 Intron Splicing-Defective Zrsr1 Mutant Mice', *Cell Reports*, 23, 1, 143 - 155.

ICREA MEMOIR 2018



Alfonso Valencia

Barcelona Supercomputing Center - Centro Nacional de Supercomputación
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 Text Mining methodology to biomedical problems. 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, home of the MareNostrum Supercomputer. Head of the Spanish node of the European Infrastructure for Life-Science Information, ELIXIR. Founding member and President of the ISCB. Elected member of the European Molecular Biology Organization (EMBO). Exec. Editor of "Bioinformatics", OUP of FEBS Letters, Prof. Honoris Causa by the Danish Technical University and advisory board in several Institutions.

Research interests

*Personalized Medicine Initiative: Organize resources for the analysis of large scale genomics and phenotypic data and its translation to clinic.*NLP/text mining: Analyzing large biomedical corpora to detect bioentities relations and specific conditions, e.g. disease specific genes affected in particular contexts.*New approaches to predict protein structures and interactions: exploration of the sequence and structure spaces combined with simulations highly improve prediction methods, useful in applications such as drug design.*Network Biology: Investigation of AI approaches for the analysis of biological networks, ontology constructions and diseases comorbidity.*Evaluation of research and social projects: Analyzing large data sets to assess the impact of specific projects, monitoring, and planning. *Building a sustainable bioinformatic infrastructure: In collaboration with the INB and the EBI, systematically catalog, interoperate and benchmark methods and data resources.

Selected publications

- Bellido et al. 2018, 'Association Between Germline Mutations in *ITBRF1* and *IT*, a Subunit of the RNA Polymerase III Transcription Complex, and Hereditary Colorectal Cancer', *Gastroenterology*, 154, 1, 181.
- Rodriguez JM, Rodriguez-Rivas J, Di Domenico T, Vazquez J, **Valencia A** & Tress ML 2018, 'APPRIS 2017: principal isoforms for multiple gene sets', *Nucleic Acids Research*, 46, D1, D213 - D217.
- Ecker S, Pancaldi V, **Valencia A**, Beck S & Paul DS 2018, 'Epigenetic and Transcriptional Variability Shape Phenotypic Plasticity', *Bioessays*, 40, 2, 1700148.
- Grassi L et al. 2018, 'Dynamics of Transcription Regulation in Human Bone Marrow Myeloid Differentiation to Mature Blood Neutrophils', *Cell Reports*, 24, 10, 2784-2794.
- Mur P et al. 2018, 'Germline mutations in the spindle assembly checkpoint genes *BUB1* and *BUB3* are infrequent in familial colorectal cancer and polyposis', *Molecular Cancer*, 17:23.

ICREA MEMOIR 2018



Sergio O. Valenzuela

Institut Català de Nanociència i Nanotecnologia
Engineering Sciences

Sergio O. Valenzuela is an ICREA Prof. at the Catalan Institute of Nanoscience and Nanotechnology (ICN2), The Barcelona Institute of Science and Technology. He leads the Physics and Engineering of Nanodevices group, which focuses on quantum transport, spintronics, and thermoelectricity in materials such as graphene and topological insulators. He has pioneered the use of nonlocal devices to study the spin Hall effect, thermopiles to isolate the magnon drag in ferromagnetic materials, 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 prize, the IUPAP Young Scientist Prize and a ERC Consolidator Grant. 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, and quantum transport in particular in graphene and topological insulators. For more information see: <http://nanodevices.icn2.cat>.

Selected publications

- Sierra JF, Neumann i, Cuppens J, Raes B, Costache MV & **Valenzuela SO** 2018, 'Thermoelectric spin voltage in graphene', *Nature Nanotechnol.*, 13, 107-111.
- Benítez LA, Sierra JF, Saverio Torres W, Arrighi A, Bonell F, Costache MV & **Valenzuela SO** 2018, 'Strongly anisotropic spin relaxation in graphene-transition metal dichalcogenide heterostructures at room temperature', *Nature Physics*, 14, 303-308.
- Moreno C, Vilas-Varela M, Kretz B, García-Lekue A, Costache MV, Paradinas M, Panighel M, Ceballos G, **Valenzuela SO**, Peña D & **Mugarza A** 2018, 'Bottom-up synthesis of multifunctional nanoporous graphene', *Science*, 360, pp 199-203.
- **Valenzuela SO** & **Roche S** 2018, 'A barrier to spin filter', *Nature Electronics*, 1, pp 328-329.
- Gebeyehu ZM, Arrighi A, Costache MV, **Sotomayor-Torres CM**, Esplandiu MJ, **Valenzuela SO** 2018, 'Impact of the in situ rise in hydrogen partial pressure on graphene shape evolution during CVD growth of graphene', *RSC Advances*, 8, 15, 8234 - 8239.

Selected research activities

Selected Invited/Plenary Talks

- 3rd EU-Japan Flagship Workshop on Graphene and Related 2D Materials, Sendai, Japan. November 19-21, 2018.
- 103ª Reunión de la Asociación de Física Argentina, Plenary, Buenos Aires. September 17-21, 2018.
- Quantum Designer Physics, San Sebastian. July 15-19, 2018.
- XIV International Conference on Nanostructured Materials, Keynote, NANO2018, Hong Kong. June 24-29, 2018.
- SFB Kolloquium, Regensburg University, Germany. January 30, 2018.

Other Activities

- Lecturer, ESONN'18 European School on Nanoscience & Nanotechnologies (Spintronics), Grenoble, France.
- Scientific Advisory Committee Member of the European School on Magnetism (ESM).
- Co-Editor Focus Issue on Tailoring Spin-Dependent Transport in 2D Materials (2D Materials Journal; <http://2dmaterials.org>).
- Organizing Committee Member of The Joint European Magnetic Symposia, JEMS (2018).

ICREA MEMOIR 2018



Jeroen van den Bergh
 Universitat Autònoma de Barcelona
 Social & Behavioural Sciences

ICREA Research Professor at Institute of Environmental Science & Technology, Univ. Autònoma de Barcelona. Also Honorary Professor of Environmental & Resource Economics in School of Economics & Business and Institute for Environmental Studies, VU University Amsterdam (VUA). Editor-in-chief of journal *Environmental Innovation & Societal Transitions*. Previously, full professor of Environmental Economics (1997-2007) at VUA and member of the Dutch Energy Council (2003-2007). Obtained Masters degree in Econometrics & Operations Research from Tilburg University, and PhD from VUA. His work is much cited (e.g. >18 000 Google Scholar citations). He received Royal Shell Prize 2002, IEC's Environmental Prize 2011, several awards for publications, and an ERC Advanced Grant. His latest book is *Human Evolution Beyond Biology and Culture: Evolutionary Social, Environmental and Policy Sciences* (Cambridge University Press, Oct. 2018).

Research interests

The intersection of economics, environmental/climate science and innovation studies. Work in recent years focuses on the design of effective climate policy (notably carbon pricing) and carbon/energy rebound, particularly under bounded rationality. Research involves application of methods and insights of behavioural and evolutionary economics. Past studies covered integrated environmental-economic modelling, contributions to the growth-versus-environment debate, economic policy analysis of dematerialization and recycling, and spatial/international aspects of environmental policy.

Selected publications

- **van den Bergh JCJM** 2018, *Human Evolution beyond Biology and Culture: Evolutionary Social, Environmental and Policy Sciences*, Cambridge University Press, Cambridge, UK, 551 pages.
- King LC & **van den Bergh JCJM** 2018, 'Implications of net energy-return-on-investment for a low-carbon energy transition', *Nature Energy*, 3(4): 334-340.
- Botzen W, **van den Bergh JCJM** & Chichilnisky G 2018, 'Climate policy without intertemporal dictatorship: Chichilnisky criterion versus classical utilitarianism in DICE', *Climate Change Economics*, 9(2), 1850002.
- Safarzyńska K & **van den Bergh JCJM** 2018, 'A higher rebound effect under bounded rationality: Interactions between car mobility and electricity generation', *Energy Economics*, 74, 179-196.
- **van den Bergh JCJM** & Botzen WJW 2018, 'Impact of a climate treaty if HDI replaces GDP as welfare proxy', *Climate Policy*, Volume 18 (1): 76-85.
- Gazheli A & **van den Bergh J** 2018, 'Real options analysis of investment in solar vs. wind energy: Diversification strategies under uncertain prices and costs', *Renewable and Sustainable Energy Reviews*, 82(3): 2693-2704.

ICREA MEMOIR 2018



Niek F. van Hulst
 Institut de Ciències Fotòniques
 Engineering Sciences

Following study in Astronomy and Physics, I obtained my PhD (1986) in Molecular & Laser-Physics at the University of Nijmegen (the Netherlands), 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, University of Twente (the Netherlands) 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; also I am Head Academic Programs and NanoFabrication Lab at ICFO. Recipient of 2003 Körber European Science Award, 2010 City of Barcelona Prize; ERC Advanced Grants in 2010 and 2015, PoC in 2017; 2017 European Physical Society Prize.

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 long-lived coherences in single light-harvesting antenna complexes at native conditions, to unravel the remarkably high efficiency 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 recharge, I like to touch ground in the Massis del Garraf or to stroll around the coast, inspired by the ancient Mediterranean waters.

Selected publications

- Singh A, de Roque PM, Calbris G, Hugall JT & **van Hulst NF** 2018, ‘Nanoscale mapping & control of antenna-coupling strength for bright single photon sources’, *NanoLett* **18**, 2538–2544.
- Hugall JT, Singh A & **van Hulst NF** 2018, ‘Plasmonic Cavity Coupling’, *ACSPhot* **5**, 43-53.
- Sanz-Paz M, Ernaendes C, Esparza JU, Burr GW, **van Hulst NF** et al. 2018, ‘Enhancing Magnetic Light Emission with All-Dielectric Optical Nanoantennas’, *NanoLett.* **18**, 3481–3487.
- Caycedo-Soler F, Lim J, Oviedo-Casado S, **van Hulst NF**, Huelga SF & Plenio MB 2018, ‘On the Theory of Excitonic Delocalization for Robust Vibronic Dynamics in LH2’, *J. Phys. Chem. Lett.* **9**, 3446–3453.
- Remesh V, Stührenberg M, Saemisch L, Accanto N & **van Hulst NF** 2018, ‘Phase Control of Plasmon Enhanced TPPL in Resonant Gold Nanoantennas’, *Appl Phys Lett* **113**, 211101.
- Stockman MI et al. 2018, ‘Roadmap on Plasmonics’, *J Opt* **20**, 043001.
- Liebel M, Toninelli C & **van Hulst NF** 2018, ‘Room-temperature ultrafast nonlinear spectroscopy of a single molecule’, *Nature Phot* **12**, 45-49.

Selected research activities

Selected invited talks

- MRS – Materials Research Society, Boston, USA
- Colloquium, Univ. Birmingham, UK
- GRC Single-Molecule Approaches to Biology, Mount Snow, VT, USA
- ECONOS2018, Milano, Italy
- NFO15 – Near Field Optics and Related Techniques, Troyes, France
- XXV Int. School Nicolás Cabrera, Miraflores de la Sierra, Madrid
- Enrico Fermi Int. School of Physics, “Nanoscale Quantum Optics”, Varenna, Italy
- Plasmonica2018, Cetraro, Italy
- NanoLight2018, Benasque, Aragon
- Quenthrel, ERC-workshop, Padova, Italy
- X-CIE: Iberian Conf Spectroscopy, Lisbon, Portugal
- J2IFAM2018, Conf of Young Scientists in Atomic & Molecular Physics, Barcelona
- La Nit dels Investigadors, CCCB Barcelona

Organization

- CLEO/Europe 2019, München, Germany: Chair EQEC Symposium E
- EOSAM2018, Delft, Netherlands, program committee TOM
- NanoLight 2018, Benasque, Spain, organizer with L.Martin-Moreno
- TU/Eindhoven, Netherlands, International Science Review Panel
- ICFO: Head Academic Programs, Head NanoFabrication Lab.

ICREA MEMOIR 2018



Licia Verde

Universitat de Barcelona

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.

Research interests

I am interested in Cosmology, which is the study of the origin, evolution and composition of the universe. One of the recent discoveries in cosmology is that more than 70% of what makes up the universe is not even matter, but something that suggests that some energy is associated with the nothingness of vacuum. This component has been dubbed “dark energy”. Dark energy may as well be one of the major problems in physics today and is motivating a host of future and planned experiments. I study the “large-scale distribution of galaxies” and the statistical properties of the heat left over from the big bang to shed light on the universe composition, including the dark energy component, and its history.

Selected publications

- Scelfo G, Bellomo N, Raccanelli A, Matarrese S & **Verde L** 2018, ‘GW x LSS: chasing the progenitors of merging binary black holes’, *Journal Of Cosmology And Astroparticle Physics*, 9, 039.
- **Jimenez R**, Raccanelli A, **Verde L** & Matarrese S 2018, ‘Peering beyond the horizon with standard sirens and redshift drift’, *Journal Of Cosmology And Astroparticle Physics*, 4, 002.
- Tanabashi M, Hagiwara K, Hikasa K, Nakamura K, Sumino Y, Takahashi F, Tanaka J, Agashe K, Aielli G, AMSLER C & 222 coauthors incl. **Verde L** 2018, ‘**Review of Particle Physics**’, *Physical Review D*, Volume 98, Issue 3, id.030001
- Bellomo N, Bernal JL, Raccanelli A & **Verde L** 2018, ‘Primordial black holes as dark matter: converting constraints from monochromatic to extended mass distributions’, *Journal Of Cosmology And Astroparticle Physics*, 1, 004.

Selected research activities

- Chair of the arXiv Science Advisory Board

ICREA MEMOIR 2018



Isabelle Vernos
 Centre de Regulació Genòmica
 Life & Medical Sciences

Isabelle Vernos obtained a PhD in Biology from the University Autònoma of Madrid in 1989. As a postdoc she moved to Cambridge (UK) and then to EMBL (Heidelberg) in 1992, becoming staff scientist in 1996. In 1999 and 2005 respectively, she obtained competitive positions as junior and senior scientist of the Spanish Research Council (CSIC). In 2001, she established her first independent research group as team leader at EMBL. In 2005, she obtained an ICREA Research Professor position and moved to the CRG in Barcelona as senior researcher. She has published more than 85 research papers and reviews in high impact international journals. She is EMBO member since 2005. In 2011 she integrated the ERC Scientific Council and since 2013 she chairs its Gender Balance working group. From 2012 to 2015, she was a member of the Advisory Board for Science, Technology and Innovation for the Spanish Ministry of Economy and Competitiveness.

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 the intra-cellular components. We are currently trying to understand the mechanism and regulatory signalling pathways involved in the transient formation of the mitotic spindle, the microtubule based molecular machine that segregates the chromosomes during cell division.

Selected publications

- Rosas-Salvans M, Cavazza T, Espadas G, Sabido E & **Vernos I** 2018, 'Proteomic profiling of microtubule self-organization in M-phase', *Mol Cell Proteomics*. 17(10):1991-2004.
- Eibes S, Gallisà-Suñé N, Rosas-Salvans M, Martínez-Delgado P, **Vernos I** & Roig J 2018, 'Nek9 phosphorylation defines a new role for TPX2 in Eg5- dependent centrosome separation before nuclear envelope breakdown', *Current Biology*, 28(1):121-129.
- Amargant F, García D, Barragán M, Vassena R & **Vernos I** 2018, 'Functional Analysis of Human Pathological Semen Samples in an Oocyte Cytoplasmic Ex Vivo System', *Sci Rep*. 8(1):15348.

Selected research activities

- Coordinator of the EU funded ITN, DiviDE (<https://divide-eunetwork.org/>).
- Involved in several activities for the promotion of women in science: as chair of the Gender Balance Committee of the CRG (<http://www.crg.eu/en/content/about-us/women-science>) and the Gender Balance working group of the ERC and as coordinator of the EU funded project LIBRA (<http://www.eu-libra.eu>; <https://cordis.europa.eu/project/rcn/197300/factsheet/en>).
- Since 2016, member of the FEBS/EMBO Women in Science Award Committee and of the governing of the program 'Ellas investigan' of the foundation Mujeres por Africa (www.mujaresporafrika.es/) that provides opportunities for training and scientific cooperation to top African women scientists.
- Inaugural conference of 'FÒRUM de Joves Talents de Catalunya 2018'. Berga June 2018.

ICREA MEMOIR 2018



Paul Verschure

Institut de Bioenginyeria de Catalunya
Engineering Sciences

Dr. Paul Verschure leads the Synthetic Perceptive, Emotive and Cognitive Systems Laboratory, hosted by the Institute for Bioengineering of Catalunya. Paul has received his MA and Ph.D. in Psychology and pursued his research at different leading institutes in Europe and the USA and manages a team of over 30 researchers and technicians with whom he has published over 350 articles in leading journals and conferences in a range of disciplines. Paul is regularly invited as a speaker at relevant scientific conferences and international policy events, a consultant for the European Commission, board member of three journals and reviews for a number of relevant journals and conferences. Paul is founder/CEO of Eodyne Systems S.L, which is commercializing neurorehabilitation, education and cultural heritage technologies, founder/Chairman of the Future Memory Foundation and founder/Chairman of the Convergent Science Network Foundation.

Research interests

Paul's scientific goal is to generate a unified theory of mind and brain relying on synthetic methods and delivering science grounded technologies that support and advance the human condition. Activities of my lab SPECS are organized along seven dimensions: 1) Architectures of mind and brain; 2) Computational neuroscience; 3) Robotics; 4) Neuroinformatics; 5) Human neuro-physiology; 6) Neurorehabilitation; 7) Education. The unique synergy this renders between basic and applied science has generated new insights into the organization of mind and brain and provided solutions in neurorehabilitation, education and cultural heritage used by thousands of people.

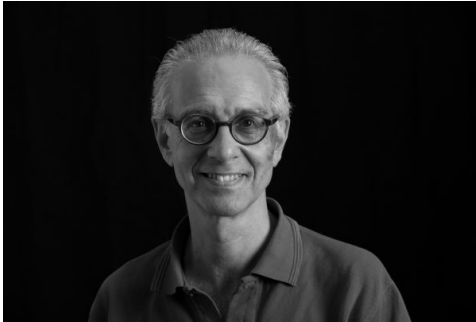
Selected publications

- Moulin-Frier C, ... & **Verschure P** 2018, 'DAC-h3: A proactive robot cognitive architecture to acquire and express knowledge about the world and the self', *IEEE Tr. Cogn. Dev. Sys.*, 10(4), 1005-22.
- Pacheco D & **Verschure PF**, 2018, 'Long-term spatial clustering in free recall', *Memory*, 26(6), 798-806.
- Puigbò JY, Maffei G, Herreros I, Ceresa M, Ballester MG & **Verschure PFMJ** 2018, 'Cholinergic Behavior State-Dependent Mechanisms of Neocortical Gain Control: a Neurocomputational Study', *Molecular neurobiology*, 55(1), 249-257.
- Fischer T, ... & **Verschure PF** 2018, 'iCub-HRI: A Software Framework for Complex Human-Robot Interaction Scenarios on the iCub Humanoid Robot', *Frontiers in Robotics and AI*, 5, Article 22.
- Arsiwalla XD & **Verschure P** 2018, 'Measuring the complexity of consciousness', *Frontiers in Neuroscience*, 12 (424).
- Prescott T, Lepora N & **Verschure P** 2018, 'Living machines: A handbook of research in biomimetics and biohybrid systems', *Oxford University Press, Oxford, UK*.

Selected research activities

Co-chair of annual Living Machines conference (7 editions, <http://livingmachinesconference.eu>),
Barcelona Cognition, Brain and Technology summer school (10 editions, <https://specs.ibebarcelona.eu/bcibt2018/>), hosts of BCBT podcast (80 episodes) accompanying the 100+ video lectures (csnetwork.eu).
Co-Chair 26th Int. Conf. Artif. Neur. Netw.
Board member of St Rafaele Cognitive Neuroscience Graduate School (Milano), Advanced Biosystems, Cognitive Systems Research, Connection Science, Nature Science Reports, Frontiers in Bioengineering.
Member Faculty of 1000.
Coordinator international Sapiens5.0 network promoting a new science and technology for the sustainable development goals of the UN (sapiens5.net).

ICREA MEMOIR 2018



Fernando Vidal
 Universitat Rovira i Virgili
 Humanities

Born in Buenos Aires, I received a BA from Harvard University, graduate degrees in psychology and the history and philosophy of science from the Universities of Geneva and Paris, and a Habilitation from the École des Hautes Études en Sciences Sociales, Paris. I have long worked on the history of the human sciences and the mind/brain sciences from the Renaissance to the present, and more recently in bioethics and medical anthropology and phenomenology. I have been Guggenheim Fellow, Athena Fellow of the Swiss National Science Foundation, Visiting Scholar at the American Academy in Rome and Harvard University (History of Science), Fellow at the Brocher Foundation, and Visiting Professor in Buenos Aires, Paris, Rio de Janeiro, Mexico DF and Kyoto. I was until 2012 a permanent Research Scholar at the Max Planck Institute for the History of Science, Berlin. In 2016 I was elected Associate Member of the Centre Alexandre Koyré (Paris) and in 2017 Member of the Academia Europaea.

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 being? 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 working in those areas (see Lines of Research), but now also explore that question in the framework of biomedical ethics and 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 individual and collective experience of neurological conditions articulates 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 publications

- Vidal F 2018, ‘Hacia una fenomenología del síndrome de cautiverio’, *Revista de la Asociación Española de Neuropsiquiatría*, 38(133), 45-73.
- Vidal F 2018, ‘Accuracy, Authenticity, Fidelity: Aesthetic Realism, the “Deficit Model,” and the Public Understanding of Science.’, *Science in Context*, 31(1), pp 129-153.
- Vidal F & Ortega F 2018, ‘On the Neurodisciplines of Culture’, In M. Meloni et al., eds., *The Palgrave Handbook of Biology and Society* (New York, Palgrave Macmillan), 371-390.
- Vidal F 2018, ‘From “The Popularization of Science through Film” to “The Public Understanding of Science”’, *Science In Context*, 31(1), 1-14.
- Vidal F 2018, ‘Le “neuro” à toutes les sauces: une cuisine autodestructrice,’ *Sensibilités. Histoire, critique & sciences sociales*, 5, pp. 59-69.

Selected research activities

In 2018 I was Visiting Scholar, Max Planck Institute for the History of Science (Berlin). Among other events and invitations, I organized in Barcelona the public lecture series *Frankenstein: 200 Years in the History of Science*; gave invited lectures at El Escorial Summer School *Fear: Approaches from Medicine, History and Politics*, and at the McGill University Division of Social & Transcultural Psychiatry *Culture, Mind and Brain Series*; was invited expert in the international “deliberative workshop” *Brain-Computer Interfaces and Personhood* (Pragmatic Health Ethics Research Unit, Institut de recherches cliniques de Montréal), and speaker at the event *Frankenstein and the Anthropocene* (CCCB-Centre de Cultura Contemporània de Barcelona); and was discussant in the debate organized by the Centre Alexandre Koyré (Paris) on my book *Being Brains: Making the Cerebral Subject*, which received the 2018 Outstanding Book Award of International Society for the History of the Neurosciences. I also joined by invitation the Editorial Board of the new *Journal for the History of Knowledge*.

ICREA MEMOIR 2018



Anton Vidal-Ferran

Institut Català d'Investigació Química
Experimental Sciences & Mathematics

Anton Vidal graduated in Chemical Engineering at the "Institut Químic de Sarrià" in 1987 and completed his PhD on the synthesis of new heterocycles at the same institution in 1992 with Prof. P. Victory. Throughout the two post-doctoral appointments that followed (at the University of Cambridge 1993-1994 with Prof. J.K.M. Sanders and the University of Barcelona 1995-1999 with Prof. M.A. Pericàs) he studied topical and diverse areas of chemistry such as Molecular Recognition, 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 1999 – 2003). 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.

Research interests

Our past and current objectives encompass the Design of Efficient Enantioselective Catalysts for Transformations of Interest, and the study of their use to prepare products with relevance in the life-science sector. We are working in an area of research in which cutting-edge chemistry combines concepts from supramolecular and physical organic chemistry with traditional approaches from enantioselective catalysis. Crucial aspects of this work include modular design of the catalysts; use of versatile synthetic procedures; incorporation of regulation mechanisms to optimize the geometry of the catalyst's active-site; and computational study of their catalytic cycles (through collaborations).

Selected publications

- Carreras L, Serrano-Torné M, van Leeuwen PWNM & **Vidal-Ferran A** 2018, 'XBphos-Rh: A Halogen-bond Assembled Supramolecular Catalyst', *Chem. Sci.*, 9, 15, 3644-3648.
- Llorente N, Fernández-Pérez H, Bauzá A, Frontera A & **Vidal-Ferran A** 2018, 'Ni-Catalysed Intramolecular [4+4]-Cycloadditions of Bis-dienes towards Eight-membered Fused Bicyclic Systems: A Combined Experimental and Computational Study', *Cat. Sci. Technol.*, 8, 5251-5258.
- Fernández-Pérez H, Balakrishna B & **Vidal-Ferran A** 2018, 'Structural Investigations on Enantiopure P-OP Ligands: A High-Performing P-OP Ligand for Rhodium-Catalysed Hydrogenations', *Eur. J. Org. Chem.*, 13, 1525-1532.
- Rodríguez-Seco C, Cabau L, **Vidal-Ferran, A** & Palomares E 2018, 'Advances in the Synthesis of Small Molecules as Hole Transport Materials for Lead Halide Perovskite Solar Cells', *Acc. Chem. Res.*, 51, 869-880.
- Rodríguez-Seco C, Biswas S, Sharma GD, **Vidal-Ferran A** & Palomares E 2018, 'Benzothiadiazole Substituted Semiconductor Molecules for Organic Solar Cells: The Effect of the Solvent Annealing over the Thin Film Hole Mobility Values', *J. Phys. Chem. C*, 122, 13782-13789.

Selected research activities

Eight invited talks in international Conferences and University Departments. Selection:

- Plenary lecture at the 22nd International Conference on Phosphorus Chemistry, "Efficient ligands for the stereoselective formation of C-H, C-B and C-C bonds", Budapest, July 2018.
- Speaker at the Chemistry Department of the Seoul National University, "Supramolecularly regulated catalysts", April 2018.

Principal investigator on a collaborative project with COVESTRO AG on developing new catalysts for transformations of interest.

Publication of one patent (WO 2018 210711 A1) and filing of another one (EP 18 164 463.4).

Evaluator of projects for national and international chemistry panels and reviewer of articles for a number of editorial boards (e.g., Springer Nature Publishing AG, ACS, Wiley, RSC).

Student promotion: Alba Martínez (Master; URV). Supervision of 7 PhD students.

ICREA MEMOIR 2018



Miquel Vila

Vall d'Hebron Institut de Recerca
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

- Alarcón-Arís D, Recasens A, Galofré M, Carballo-Carbajal I, Zacchi N, Ruiz-Bronchal E, Pavia-Collado R, Chica R, Ferrés-Coy A, Santos M, Revilla R, Montefeltro A, Fariñas I, Artigas F, **Vila M*** & Bortolozzi A* 2018, '**Selective alpha-Synuclein Knockdown in Monoamine Neurons by Intranasal Oligonucleotide Delivery: Potential Therapy for Parkinson's Disease**, *Molecular Therapy*, 26(2):550-567.
- Recasens A, Carballo-Carbajal I, Parent A, Bove J, Gelpi E, Tolosa E & **Vila M** 2018, 'Lack of pathogenic potential of peripheral alpha-synuclein aggregates from Parkinson's disease patients', *Acta Neuropathologica Communications*, 6, 8.
- Torra A, Parent A, Cuadros T, Rodríguez-Galván B, Ruiz-Bronchal E, Ballabio A, Bortolozzi A, **Vila M*** & Bové J* 2018, 'Overexpression of TFEB drives a pleiotropic neurotrophic effect and prevents Parkinson's disease-related neurodegeneration', *Molecular Therapy*, 26(6):1552-1567.

Selected research activities

Research grants obtained in 2018:

- Modulation of age-dependent neuromelanin accumulation as a novel therapeutic strategy for Parkinson's disease and brain aging; PI: M. Vila; "la Caixa" Banking Foundation Health Research (Spain); 466,004 €; 2018-21
- Focused ultrasound modulation of neuromelanin accumulation in a humanized rat model of Parkinson's disease; PI: M. Vila; Network of Centres of Excellence in Neurodegeneration (CoEN); 456,488 €; 2018-19
- Pathogenic Role of Neuromelanin in Parkinson's disease and Brain Aging: Molecular Mechanisms in a Novel Humanized Pre-clinical in Vivo Model; PI: M. Vila; Michael J. Fox Foundation (USA); \$98,450; 2018-19
- Therapeutic target of GCase enzyme in Parkinson's disease with novel pharmacological chaperones; PI: M. Martinez-Vicente (from M. Vila group); Michael J Fox Foundation & Silverstein Foundation (USA); \$498,698.18; 2019-20

ICREA MEMOIR 2018



Josep Vilardell

Institut de Biologia Molecular de Barcelona
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). (1990) PhD in Biochemistry by the Universitat Autònoma de Barcelona (UAB), with research on the regulation of gene expression by the plant hormone abscisic 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 since Nov 2018.

Research interests

Living systems carry on the information to reproduce ("Genetic" Information). As the rest of features of life, this is subjected to Natural Selection and there are many examples of strategies to optimize the storage of genetic information. However, apparently this does not hold in multicellular organisms, including us. Most our genes are repeatedly interrupted by many comparatively large, apparently meaningless, segments, that are neatly removed before decoding the gene. This removal is done by the spliceosome, a machine akin to a genome's ghostwriter and possibly the most complex enzyme in a eukaryotic cell. Our research aims at what controls the spliceosome and how this is achieved. For this we follow a reductionist scheme with the yeast model, using molecular and computational approaches. We study the initial steps in the recognition of "meaningless" segments and their regulation. In addition, taking advantage of large datasets publicly available, we investigate how the spliceosome responds to aging, mutations, or disease, both in yeast and human cells.

ICREA MEMOIR 2018



Alexander Voityuk

Universitat de Girona

Experimental Sciences & Mathematics

Dr. Alexander Voityuk joined the Institut de Química Computacional at the Universidad de Girona as an ICREA research professor in May 2004. 1973-1978 Master degree with honor NSU, Russia. Speciality: Chemistry, Specialization: Physical and Inorganic chemistry. 1979-1983 PhD in Physical Chemistry (Institute of Inorganic Chemistry, Academy of Sciences, USSR). 1985-1992 Associate Professor in Physical Chemistry and Quantum Chemistry group leader at the Institute of Bioorganic Chemistry (Novosibirsk, Russia). Before obtaining his ICREA position in 2004, he was a senior research associate at the University of Zurich, Switzerland (1992-1995), Technical University of Munich (1995-2000) and Max-Planck-Institute of Quantum Optics, Garching, Germany (2000-2004). He has published >170 articles with more than 3500 total citations in the field of quantum chemistry and computational modeling of charge transfer in biomolecules and organic materials.

Research interests

Electron transfer (ET) and excitation energy transfer (EET) are important processes in biochemistry and material science. The main area of my research is the development of theoretical and computational tools to explore ET and EET in molecular systems and their application to biomolecules and organic materials to understand underlying mechanisms that control the charge and exciton migration in the systems. Semiempirical methods, the development of computer codes and simulation of ET and EET in DNA and related systems are of special interest.

Selected publications

- L. Blancafort & **A. A. Voityuk**, 'Thermally Induced Hopping Model for Long-Range Triplet Excitation Energy Transfer in DNA', *Physical Chemistry Chemical Physics*, 2018, 20, 4997-5000
- M. Corbella, **A. A. Voityuk**, C. Curutchet. How abasic sites impact hole transfer dynamics in GC-rich DNA sequences. *Physical Chemistry Chemical Physics* 2018, 20, 23123 - 23131.
- **A. A. Voityuk**, A. J. Stasyuk & S. F. Vyboishchikov, 'A simple model for calculating atomic charges in molecules', *Physical Chemistry Chemical Physics* 2018, 20, 36, 23328 - 23337.
- A. J. Stasyuk, M. Solà & **A. A. Voityuk**, 'Reliable charge assessment on encapsulated fragment for endohedral systems', *Scientific Reports*, 2018, 8, 2882.
- A. J. Stasyuk, O. A. Stasyuk, S. Filippone, N. Martin, M. Solà & **A. A. Voityuk**, 'Stereocontrolled photoinduced electron transfer in metal-fullerene hybrids', *Chemistry: A European Journal*, 2018, 24, 13020 - 13025.

ICREA MEMOIR 2018



Peter Wagner

Universitat de Barcelona
Social & Behavioural Sciences

Educated in economics, political science and sociology in Hamburg, London and Berlin, Peter Wagner has been academically active in various European countries, including Germany, the United Kingdom, France, Italy and Norway, as well as in the USA and South Africa, before coming to Barcelona in 2010. He was Research Fellow at the Wissenschaftszentrum Berlin für Sozialforschung, Professor of Sociology at the U of Warwick and the U of Trento as well as Professor of Social and Political Theory at the European University Institute in Florence. Furthermore, he held visiting positions at Université de Paris 8 (2011); U catholique de Louvain-la-neuve (2009-10); U of Cape Town (2009-10); U of Bergen (2001); Ecole des Hautes Études en Sciences Sociales, Paris (1998; 2001); U of California at Berkeley (1996; 1997); Swedish Collegium for Advanced Study, Uppsala; Institute for Advanced Study, Princeton (1990-91); Centre National de la Recherche Scientifique, Paris (1994), among others.

Research interests

Peter Wagner's research is based in comparative historical and political sociology, social and political theory, and sociology of the social sciences. It focuses on the identification and comparative analysis of different forms of social and political modernity and of the historical trajectories of modern societies. In this perspective, the term "modernity" does not signal a single and unique model of social organization, but rather variable interpretations of basic human problématiques in the light of specific historical experiences. It was initially applied to a comparative political sociology of European societies, and subsequently to transformations in the self-understanding of Europe. Over the past few years, it was elaborated further towards a "world-sociology", focusing on the tensions between struggles for autonomy and persisting forms of domination and exploring current possibilities of progress in the light of historical experiences in different world-regions.

Selected publications

- **Wagner P** 2018, 'Fortschritt. Zur Erneuerung einer Idee', *Frankfurt/M: Campus*.
- **Wagner P** 2018, 'Towards a conceptual history of the present: democracy, rights, and freedom in the recent Catalan conflict', *Social Science Information*, vol. 57, no. 4.
- **Wagner P** 2018, 'Social and political philosophy, historical-comparative sociology and the critical diagnosis of the present: a reply', *Social Imaginaries*, vol. 4, no. 2, 109-134.
- van der Linden M, Reis E, Livi Bacci M, **Wagner P** et al. 2018, 'Social trends and new geographies, in Rethinking Society for the 21st Century', *Report of the International Panel on Social Progress*, Cambridge: Cambridge University Press, 9-40.

Selected research activities

The year 2018 witnessed the concluding step of the research project "Trajectories of modernity" with the finalization of the book manuscript "Collective action and political transformations: the entangled experiences in Brazil, South Africa and Europe", jointly authored with Aurea Mota and to be published by Edinburgh UP in the spring of 2019. At the same time, a continuation project has been started under the title "Varieties of modernity in the current global context: the role of BRICS and the Global South". Based at Ural Federal University in Ekaterinburg and funded by the Russian Science Foundation, this project allows the extension of the historical-comparative perspective on modernity to include further world-regions and thus to take an important step in the envisaged elaboration of a world-sociology of modernity.

In parallel, 2018 was marked by intense research activity in the project "The debt: historicizing Europe's relations with the 'South'", funded by the consortium Humanities in the European Research Area. This project has a strong focus on inter-disciplinary conceptual elaboration, exploring varieties of social bonds such as debt, solidarity, recognition and responsibility. Beyond UB it involves the Frankfurt Institute for Social Research, U of Helsinki, and U of Eastern Piedmont.

ICREA MEMOIR 2018



Leo Wanner
 Universitat Pompeu Fabra
 Humanities

Leo Wanner earned his Diploma degree 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, the University of Stuttgart and the 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 a series of national and European research projects. He has published eight books and about 200 peer reviewed papers. He is Associate Editor of the Computational Intelligence Journal and serves as regular reviewer for a number of high profile conferences and journals in the areas of (Computational) Linguistics and Artificial Intelligence.

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 conversation agents that reveal social and cultural competence), automatic written and spoken graph transduction-based language generation, automatic summarization of written material, data-driven parsing, information extraction, and, more recently, profiling of authors of written material 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

- J. Soler-Company & L. Wanner 2018, 'On the Role of Syntactic Dependencies and Discourse Relations for Author and Gender Identification', *Pattern Recogn Lett*, 105, pp. 87-95.
- S. Vrochidis, A. Moumtzidou, I. Gialampoukidis, D. Liparas, G. Casamayor, L.Wanner, N. Heise, T.Wagner, A. Bilous, E. Jamin, B. Simeonov, V. Alexiev, R. Busch, I. Arapakis & Y. Kompatsiaris 2018, 'A multimodal analytics platform for journalists analysing large-scale, heterogeneous multilingual and multimedia content', *Frontiers in Robotics and AI*, 5.
- J. Soler-Company & L.Wanner 2018, 'Automatic Identification of Texts Written by Authors with Alzheimers Disease', in *Proceedings of the 40th Annual Cognitive Science Society Meeting*, Madison, WI.
- S. Mille, A. Belz, B. Bohnet & L. Wanner 2018, 'Underspecified Universal Dependency Structures as Inputs for Multilingual Surface Realisation' in *Proceedings of the 11th International Conference on Natural Language Generation*, Tilburg, The Netherlands.
- M. Domínguez Bajo, M. Farrús & L.Wanner 2018, 'Thematicity-based Prosody Enrichment for Text-to-Speech Applications' in *Proceedings of the 9th Speech Prosody Conference*, Poznan, Poland.
- L. Pérez Mayos, F. Sukno & L.Wanner 2018, 'Improving the Quality of Video-to-Language Models by Optimizing Annotation of the Training', in Schoeffmann K. et al. (eds) *MultiMedia Modeling. MMM 2018. Lecture Notes in Computer Science*, vol 10704. Springer, Cham.
- A. Shvets, S. Mille & L.Wanner 2018, 'Sentence Packaging in Text Generation from Semantic Graphs as a Community Detection Problem' in *Proceedings of the 11th International Conference on Natural Language Generation*, Tilburg, The Netherlands.

Selected research activities

- Co-organizer of three international workshops on Conversational Agents, Multilingual Language Generation and Multimodal Information Processing.
- PI of four European and several national projects.

ICREA MEMOIR 2018



Andrew Williams
 Universitat Pompeu Fabra
 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*, *Philosophical Quarterly*, *Philosophy & Public Affairs*, and *Utilitas*.

Research interests

My interests lie in moral and political philosophy and practical rationality, as well as intersecting areas in economics and political science. I am especially interested in issues of 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 current work focuses on how we should deal with the needs of the elderly and with variations in lifespan.

Selected research activities

* Editor-in-Chief, *Politics, Philosophy & Economics*.

* Coordinator of Marie Skłodowska-Curie Project by Professor Paul Bou-Habib on *Ethics and Aging*.

* Collaborator, Centre for Experimental Research on Fairness, Inequality and Rationality (*FAIR*), Norwegian School of Economics.

* Invited talks:

- "On 'Consent to Sexual Interactions'", Murphy Institute, Tulane University, February 23, 2018.

- "Comments on 'Global Taxes and Poverty Measurement'", Poverty Measurement Workshop, Escuela de Filosofía, Universidad de Costa Rica, April 30, 2018.

- "Demographic Change and Global Justice", Conference on Global Justice and Climate Change, Escuela de Filosofía, Universidad de Costa Rica, May 7, 2018.

- "Asymmetric Procreative Justice: A Defense" (co-presented with Paula Casal), Political Theory Workshop, Department of Political Science, Stanford University, May 11, 2018.

- Invited Participant in *The Impact of Technology on the World of Work*, Annual Chief Economists' Workshop, Bank of England, May 20-21, 2018.

- "Longevity and Liability: What Difference Does Variation in Lifespans Make to the Demands of Fairness?" (co-authored with Paul Bou-Habib), Inaugural Conference for *FAIR*, Norwegian School of Economics, Bergen, June 19, 2018.

- "Time, Age, and the Priority View", Workshop on Prioritarianism, 15th Conference of the International Society for Utilitarian Studies, Karlsruhe Institute of Technology, July 28, 2018, & Fundació Catalunya Europa Seminar Series on Inequality, Palau Macaya, November 20, 2018.

- "The External Effects of Reproduction", Princeton-UPF Political Theory Conference, Princeton University, October 12, 2018.

- "Why Inequality Matters" (co-presented with Paula Casal), Fundació Catalunya Europa Public Lecture Series on Inequality, Palau Macaya, November 19, 2018.

* Supervised two successful PhD dissertations and three successful Masters dissertations at Universitat Pompeu Fabra.

ICREA MEMOIR 2018



Andreas Winter

Universitat Autònoma de Barcelona
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

- Li K & **Winter A** 2018, 'Squashed entanglement, k-extendibility, quantum Markov chains, and recovery maps', *Found. Physics*, vol. 48, no. 8, pp. 910-924.
- Junge M, Renner R, Sutter D, Wilde MM & **Winter A** 2018, 'Universal Recovery Maps and Approximate Sufficiency of Quantum Relative Entropy', *Ann. Henri Poincaré*, vol. 19, no. 10, pp. 2955-2978.
- Lami L, Regula B, Wang X, Nichols R, **Winter A** & Adesso G 2018, 'Gaussian quantum resource theories', *Phys. Rev. A*, vol. 98, 022335.
- Lami L, Palazuelos C & **Winter A** 2018, 'Ultimate Data Hiding in Quantum Mechanics and Beyond', *Commun. Math. Phys.*, vol. 361, no. 2, pp. 661-708.
- Popescu S, Sainz AB, Short AJ & **Winter A** 2018, 'Quantum reference frames and their applications to thermodynamics', *Phil. Trans. Royal Society A*, vol. 376, no. 2123, 20180111.
- García Díaz M, Fang K, Wang X, Rosati M, Skotiniotis M, Calsamiglia C & **Winter A** 2018, 'Using and reusing coherence to realize quantum processes', *Quantum*, vol. 2, 100.
- Boche H, Deppe C, Nötzel, J & **Winter A** 2018, 'Fully Quantum Arbitrarily Varying Channels: Random Coding Capacity and Capacity Dichotomy', in: *Proc. 2018 IEEE Int. Symp. Inf. Theory (ISIT)*, pp. 2012-2016.
- Boche H, Deppe C & **Winter A** 2018, 'Secure and Robust Identification via Classical-Quantum Channels', in: *Proc. 2018 IEEE Int. Symp. Inf. Theory (ISIT)*, pp. 2674-2678.
- García-Patrón R, Matthews W & **Winter A** 2018, 'Quantum Enhancement of Randomness Distribution', *IEEE Trans. Inf. Theory*, vol. 64, no. 6, pp. 4664-4673.
- Lami L, Sabapathy KK & **Winter A** 2018, 'All phase-space linear bosonic channels are approximately Gaussian dilatable', *New J. Phys.*, vol. 20, 113012.

Selected research activities

Once more, I helped co-organise a *Beyond IID in Information Theory* (6th edition) workshop, at the Isaac Newton Institute Cambridge, 23-27 July, with Nilanjana Datta & Jossy Sayir. It brought together ca. 70 participants, a growing community of information scientists at the cutting edge of Shannon theory: www.newton.ac.uk/event/mqiw05

ICREA MEMOIR 2018



Andriy Yaroshchuk
 Universitat Politècnica de Catalunya
 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 122 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 nanoporous 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.

Selected publications

- Fernández de Labastida M, **Yaroshchuk A**, Licon Bernal EE & Bondarenko M 2018, 'Rotating disk-like membrane cell for pressure-driven measurements with equally-accessible membrane surface: numerical simulation and experimental validation', *J.Membr.Sci.*, 550, 492-501.
- López J, Reig M, **Yaroshchuk A**, Licon Bernal EE, Gibert O & Cortina JL 2018, 'Experimental and theoretical study of nanofiltration of weak electrolytes: SO₄²⁻/HSO₄⁻/H⁺ system', *J.Membr.Sci.*, 550, 389-398.
- **Yaroshchuk A** & Bondarenko MP 2018, 'Current-induced concentration polarization of nano-porous media: role of electroosmosis', *Small*, 1703723.
- Yang L, Tang C, Ahmad M, **Yaroshchuk A** & Bruening ML 2018, 'High Selectivities among Monovalent Cations in Dialysis through Cation-Exchange Membranes Coated with Polyelectrolyte Multilayers', *ACS Appl. Materials & Interfaces*, 10 (50), 44134-44143.

Selected research activities

- Co-organizer of session "Electro-membrane Processes" of 2018 Annual Meeting of North American Membrane Society (NAMS), June 10-13, 2018, Lexington, KY, USA
- Visiting professor at Department of Chemical and Biomolecular Engineering, University of Notre Dame, USA, May-June 2018

ICREA MEMOIR 2018



Santiago Zabala
 Universitat Pompeu Fabra
 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 spending the spring semester of 2010 as a visiting scholar at Johns Hopkins University, I was appointed ICREA Research Professor first at the University of Barcelona and then at the 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. In addition to an extensive speaking schedule at conferences, seminars, and art festivals, I often write for the *New York Times*, the *Guardian*, *Al-Jazeera*, and other newspapers.

Research interests

My research focuses in three areas each of which has generated several authored and edited books and journals special issues. These areas are political, social, and aesthetic Continental philosophy. I study each of these following the hermeneutic principle according to which Being is not an objective entity that philosophy must describe but rather the effect of interpretations. Following the work of Hans-Georg Gadamer, Gianni Vattimo, and Richard Rorty, I emphasize the ontological and political nature of hermeneutics in order to demonstrate the danger of dogmatic beliefs for religious and political practices. The problems of education and emergency have been at the center of my research these past years in relation to politics, society, and art. My next books and essays will explore "fake news" and "post-truth" in this so-called age of alternative facts to argue, as Bruno Latour said, that "facts remain robust only when they are supported by a common culture, by institutions that can be trusted, by a more or less decent public life, by more or less reliable media."

Selected publications

- **Zabala S** & Vattimo G 2018, 'Non siamo comunisti, siamo comunisti ermeneutici', translated by Pegoraro L, in *Materialismo Storico*, Nº1, 348-353.
- Vattimo G 2018, 'Essere e dintorni', edited by Iannantuono G, Martinengo A & **Zabala S** (Milan: La Nave di Teseo).
- **Zabala S** 2018, 'L'Anarchia dell'Ermeneutica' translated by Agnese Fortuna, in *Ermeneutica, Cristianesimo Politica*, edited by P. Nouzille and S. Rindone (Roma, Aracne): pp 199-214.
- **Zabala S** 2018, Series Editor: 'La Belleza Multiple' by Alvarez L & López Farjeat LX (Bellaterra).

Selected research activities

Research Group: As the founding director of the UPF Center for Vattimo's Archives and Philosophy my responsibility is to promote researchers, translators, and scholars interested in Gianni Vattimo's philosophy as well as in Italian philosophy. The impact of the group is evident not only in the publications that have emerged from the group's activities but also in the various articles written on these activities over past two years in the *Los Angeles Review of Books*, *El País*, and *La Stampa*.

Series Editor: I am the coeditor, along with Adrian Parr, of a new book series for McGill-Queen's University Press titled *Outspoken*, which will release two volumes a year starting in 2019. I also continue to edit for the Spanish publisher Bellaterra Publishers the series *Political Philosophy*, which has released so far a total of eleven titles since 2010.

Media Outreach: My opinion articles in media outlets and journals such as the *Guardian*, the *New York Times*, *La Stampa*, *El País*, *Al-Jazeera*, the *Los Angeles Review of Books*, *Aeon*, *La Maleta de Portbou* are meant not only to communicate my philosophical findings to a wider audience but also to stir political and cultural debates. This activity also takes place through my collaboration with cultural centers, such as Escola Europea d'Humanitats and the CCCB, where I participate in seminars and recommend guest speakers.

ICREA MEMOIR 2018



João Zilhão
Universitat de Barcelona
Humanities

Prior to current appointment, taught at the Universities of Bristol and Lisbon, as well as, on a temporary basis, Paris and Bordeaux. Appointed January 1996 by the Portuguese government to set up the Côa Valley Archeological Park, coordinate scientific research to establish the age of its Paleolithic rock art, and prepare the nomination of the site for World Heritage status (listing date, December 1998). Created and directed the Instituto Português de Arqueologia (IPA), a department of the Ministry of Culture for the supervision of archaeological activity in the country (May 1997-2002). Member of the Executive Board of the European Association of Archeologists (2003-06). Humboldt Foundation Research Awardee (2003-04, University of Cologne) for "past achievements in teaching and research". Recipient of the London Prehistoric Society's Europa Prize (2005), for "significant and enduring contribution to the study of European prehistory". In 2012 profiled in "Science".

Research interests

The Middle-to-Upper Paleolithic transition has been the focus of my research for the last 20 years, leading to fieldwork at several sites: (a) the Lagar Velho rock-shelter (Portugal) and its burial of an early modern human child with diagnostic Neandertal features (evidence for interbreeding at the time of Neandertal/modern contact); (b) the Almonda karst system (Portugal), whose archeology spans half-million years and includes such important fossils as the 400,000 year-old Aroeira 3 cranium; (c) the Pestera cu Oase (Romania), site of Europe's oldest modern humans; (d) Cueva Antón and Cueva de los Aviones (Murcia, Spain), with the earliest known use of personal ornaments, 115,000 years ago; (e) several caves in Iberia, France and Italy where U-Th dating of associated speleothems showed rock art to be >65,000 years old. These early artists were Neandertals, whose behavioral modernity and late persistence to the south of the Ebro drainage remain my main areas of interest.

Selected publications

- Angelucci DE, Anesin D, Susini D, Villaverde V, Zabata J & **Zilhão J** 2018, 'A tale of two gorges: Late Quaternary site formation and surface dynamics in the Mula basin (Murcia, Spain)', *Quaternary International*, 485, p. 4-22.
- Teyssandier N & **Zilhão J** 2018, 'On the Entity and Antiquity of the Aurignacian at Willendorf (Austria): Implications for Modern Human Emergence in Europe', *Journal of Paleolithic Archeology*, Volume 1, Issue 2, pp 107-138.
- Deschamps M & **Zilhão J** 2018, 'Assessing site formation and assemblage integrity through stone tool refitting at Gruta da Oliveira (Almonda karst system, Torres Novas, Portugal): A Middle Paleolithic case study', *PLoS ONE*, 13 (2), e0192423.
- Hoffmann DL, Angelucci DE, Villaverde V, Zapata J & **Zilhão J** 2018, 'Symbolic use of marine shells and mineral pigments by Iberian Neandertals 115,000 years ago', *Science Advances*, 4, eaar5255.
- Hoffmann DL, Standish CD, García-Diez M, Pettitt PB, Milton JA, **Zilhão J**, Alcolea-González JJ, Cantalejo-Duarte P, Collado H, de Balbín R, Lorblanchet M, Ramos-Muñoz J, Weniger GCh & Pike AWG 2018, 'U-Th dating of carbonate crusts reveals Neandertal origin of Iberian cave art', *Science*, 359, p. 912-915.

Selected research activities

- Three months of excavation at sites in Murcia (La Boja) and the Almonda karst.
- Thirteen peer-reviewed articles and two book chapters published.
- Three grants, awarded by MICINN in Spain and FCT in Portugal, begun: two as Principal Investigator (total, 317 425 euro) and one as Investigator (228 862 euro).
- Invited lectures at the Universities of Cantabria and Valencia (Spain), Berlin (Germany), Coimbra and Lisbon (Portugal).
- Presentations to the UISPP (Paris, France), EAA (Barcelona, Spain) and ESHE (Faro, Portugal) conferences.
- Member of the HCERES panel appointed to assess UMR7194 (MNHN) of the French CNRS and of the Advisory Committee of the University of Bordeaux's Archeology Labex (LaScArBx)

ICREA MEMOIR 2018



Patrizia Ziveri

Universitat Autònoma de Barcelona
Experimental Sciences & Mathematics

Patrizia Ziveri is ICREA Research Professor and Scientific Director of the Institute of Environmental Science and Technology (ICTA) Unit of Excellence 'María de Maeztu', Univ. Autònoma de Barcelona (UAB). She started to work on marine global change in the 1990's during her PhD dissertation at the Univ. of Padua (Italy), and Univ. of South Carolina (USA), focusing on the impacts of El Niño climate oscillations on calcareous phytoplankton in the Eastern Pacific. After a postdoc at USC, she moved to the Vrije Univ. Amsterdam, The Netherlands, first as a researcher then as associate professor/senior scientist. She was awarded with a Spanish 'Ramón y Cajal' fellowship at the UAB before joining ICREA in 2014. She coordinates the Marine and Environmental Biogeosciences Research Group (MERS) that catalyzes research on the natural and human-driven marine processes addressing major marine global change and sustainability challenges.

Research interests

Global environmental change on marine ecosystems, ecology, and biogeochemistry at various time scales and complexity is a key theme of her research group, focusing on multidisciplinary investigation of marine calcifying organisms at the base of the food web. With her work on the ocean in a high CO₂ world, she is linking the CO₂ dynamics, climate change and marine organisms in target regions. Interest on pressing threats to marine systems has led to developing research on ocean acidification (OA) in Africa, and in the North Pacific on both climate change and the cycle of microplastics. The study of marine litter and microplastics in Mediterranean island coastlines is an emerging topic in her research group and a new clean laboratory for microplastic studies opened recently at ICTA-UAB. These global change processes can disturb the capacity of marine systems to provide ecosystem services, thereby affecting economic activities and human welfare.

Selected publications

- Rosas-Navarro A, Langer G, **Ziveri P** 2018, **Temperature affects the morphology and calcification of *Emiliana huxleyi* strains**, *PLoS ONE*, vol.13, no.3, e0194386.
- Taylor BJ, Rae JWB, Gray WR, Darling K, Burke A, Gersonde R, Abelman A, Maier E, Esper O, **Ziveri P** 2018, **Distribution and ecology of planktic foraminifera in the North Pacific: Implications for paleo-reconstructions**, *Quaternary Science Reviews*, vol. 191, no. 1, pp 256-274.
- D'Amario B, **Ziveri P**, Grelaud M, Oviedo A 2018, ***Emiliana huxleyi* coccolith calcite mass modulation by morphological changes and ecology in the Mediterranean Sea**. *PLoS ONE*, vol. 13, no. 7, e0201161.
- Subhasa AV, Rollins NE, Berelson WM, Erez J, **Ziveri P**, Langer G, Adkins JF 2018, **The Dissolution Behavior of Biogenic Calcites in Seawater and a Possible Role for Magnesium and Organic Carbon**, *Marine Chemistry*, vol. 205, pp 100-112.
- Schlitzer R, Anderson RF, Masferrer Dodas E, Lohan M, Geiberta W, Tagliabue A, ... **Ziveri P**, Zunino P, Zurbrück C 2018, **'The GEOTRACES Intermediate Data Product 2017'**, *Chemical Geology*, vol. 493, pp 210-223.

Selected research activities

- 'The present impacts and the future risks for the Mediterranean Sea ecosystems' keynote lecture at the 3rd International Symposium of Ocean Governance and Sustainability- Working Group Ocean Acidification and Climate Change (OACC). Invited lectures and discussion panel member at conferences, workshops and EU Parliament event on microplastics, marine litter and sustainable tourism.
- Scientific member of the SOLAS/IMBER Carbon Working Group, Subgroup on Ocean Acidification (SIOA); Advisory Board member of the IAEA project "Ocean Acidification International Coordination Centre" (OA-ICC).
- Director of Ph.D. thesis (UAB) of Anaid Rosas-Navarro "Impact of climate warming and acidification on coccolithophore ecology and calcification" (July/2018) and of four master theses.
- Scientific Director of ICTA-UAB 'unit of excellence'.