ICREA MEMOIR 2018

Eduard Alarcón
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2018

Eduard Alarcón is a professor and educator, research scientist and student mentor at UPC BarcelonaTech, his alma mater, where he graduated MSc -national award-, and PhD in 1999. He is faculty of Telecommunication Engineering at UPC, where he was Associate Dean of International Affairs and is CFIS adjunct. Invited professor at KTH and CU Boulder. His cooperative research has resulted in 500 co-authored scientific publications, 7 books, 8 book chapters and 12 patents, in the scientific fields of on-chip energy and RF management, nanosatellites and satellite architectures for Earth Observation, nanotechnology-enabled graphene wireless communications for distributed computing, molecular communications, and AI-defined networks, areas in which he has been participating in EU, DARPA, NSF, NASA and ESA projects and awards with companies as Intel, Samsung and Google. Service includes EiC of IEEE JETCAS, General Chair of IEEE ISCAS 2020, and Vice President IEEE CAS.

Research interests

The overarching research vision can be synthesized as “Designing Complexity in Systems Interplaying Communications and Computing”. The pursuit is to crystallize a design methodology for systems with extreme complexity, including communication and computing functions with limited energy resources, of large scale, distributed architectures, heterogeneous components and strict system-wide performance attributes, through emergent technologies of communications, computing and processing. The need of design methodologies for systems of increasing complexity requires implementation-aware resource-constrained vertical crosslayer model-based designs. The aim is to instantiate this methodology of complex system design with resilient, evolvable and robust attributes to both future spacecraft architectures, and to future domain-specific computing platforms with built-in advanced wireless communications, by interplaying AI co-processor architectures and cognitive model-prediction schemes.

Keywords

Nanosatellite design. Nanocommunications: biomolecular and nanotechnogy-enabled. Wireless on-chip. Artificial Intelligence co-processors chips. Energy-constrained design.

ICREA MEMOIR 2018

Carles Alemán Llansó
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2008 & 2015

Carles Alemán graduated in Chemistry from the University of Barcelona (Spain). He received his PhD from the Polytechnic University of Catalonia (UPC) in 1994, where he was promoted to Full Professor of Physical Chemistry. He was postdoctoral researcher at the ETH in Zürich (Switzerland) in the group headed by U.W. Suter and visiting professor at the Università di Napoli Federico II (Italy), University of Twente (Holland) and Universidade Federal do Rio Grande do Sul (Brazil). He is leader of the Innovation in Materials and Molecular Engineering (IMEM) group in Chemical Engineering Department, and co-leading the Nanochemistry group in the Centre of Research on Nano-Engineering. Among others awards, Carles received the Catalan Government Distinction Award for University research (2003), the I3 Research Intensification Distinction (2007) and the ICREA Academia (2008). He is co-author of around 550 scientific articles, reviews, book chapters and books, and of several patents.

Research interests

The research interests of Carles Alemán are focused on hybrid chemical systems derived from the combination of organic or inorganic biomaterials with conducting polymers for applications in the biomedical and energy storage fields. Within this context, he is particularly interested in the use of nanostructures for the fabrication of: biointerfaces for the detection of neurotransmitters, psychotropic drugs and glucose, multi-functional scaffolds for tissue engineering, protective coatings against environmental degradation, and all-organic batteries and supercapacitors. For such research, Carles Alemán uses both experimental approaches based on the synthesis, processing and characterization of (bio)materials, as well as computer simulation strategies for the understanding of chemical and physical phenomena at the microscopic level.

Keywords

Electroactive conducting polymers, Bioactive platforms, Biointerfaces, Detection, Energy, Biomineralization, Nanotechnology.

ICREA MEMOIR 2018

Cristina Andres-Lacueva
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2018

Cristina Andres-Lacueva is Associate Professor at the Nutrition, Food Science & Gastronomy Department of the Pharmacy and Food Science Faculty at the University of Barcelona (UB) and leader of the Biomarkers & Nutritional and Food Metabolomics research group. Posdoctoral Research at Tufts University/HNRCA (Boston). IP in CIBERFES-isciii, Biomedical Research Network on Frailty and Healthy Aging. Author of over 190 peer-reviewed papers. She is partner of an Innovation by Design project, CooK2Health and Coordinator of the *INJOY* Campus Activity both from EIT-Health/H2020**.** Active participation on the EU-*Joint Programming Initiative a Healthy Diet for a Healthy Life JPI-HDHL* Actions Biomarkers, Microbiomics, Nutrition and Cognition and INTIMIC. At National level, active leadership in grants with MINECO & Health Institute Carlos III, FIS as well as Tranfer Actions with Industry by CDTI funds.

Research interests

My scientific activity is mainly focused in dietary and nutritional assessment as the major determinants of human health. This activity has comprised the understanding of qualitative and quantitative links between dietary patterns, nutritional phenotype and risk factors for diet-related chronic diseases. The main goals of my research have been: i) Applying intensively LC-MS driven untargeted and targeted metabolomics analysis to understand how new dietary biomarkers identified modulate diet-disease risk associations using pathway and network approaches; ii) The identification of robust “metabolic signatures of eating habits” for a range of foods of high public health significance; iii) To define and develop new methodological strategies for the biomarker discovery; iv) The development of an in-house human metabolome database and bioinformatic and biostatistics tools for the interpretation and identification of new biomarkers.

Keywords

Nutrition, Biomarkers, Metabolomic, Dietary Assessment, Dietary Exposure, Dietary Pattern, Metabotype, Phytochemicals, Microbiome & health, Personalized Nutrition, Healthy Aging

ICREA MEMOIR 2018

Eva Anduiza Perea
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2015

I am professor of political science at the Universitat Autònoma de Barcelona. I direct the research group on Democracy, Elections and Citizenship and I have until recently also directed the Master in Political Science. I am currently 2018-19 fellow at the Center for Advanced Study in the Behavioural Sciences at Stanford University.

Before joining the UAB in 2003 I taught Political Science at the universities of Salamanca and Murcia. I hold a degree in Political Science and Sociology from the Universidad Complutense de Madrid, a postgraduate diploma in Social Science Data from the University of Essex, and a PhD in Political and Social Sciences from the European University Institute.

Research interests

My main areas of research deal with different aspects of citizens' involvement in politics in advanced democracies. I am interested in the individual dynamics of how discontent is mobilized and transformed into political change. This includes an interest in the causes and consequences of electoral turnout, political protest, digital media and political attitudes, with an emphasis on the analysis of political inequality. Recently my research has focused on the attitudinal consequences of the economic crisis, with a special focus on populist attitudes, but also political knowledge, satisfaction with democracy, and perceptions about corruption. In my next project I intend to explore how individuals' attitudes towards gender equality and feminism change along time.

Keywords

Political participation, attitude change, populism, corruption, gender, experiments, panel data

ICREA MEMOIR 2018

Josep Lluís Araus Ortega
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2013 & 2018

Full Professor of Plant Physiology, at the University of Barcelona (1993) and Professor ICREA Academia (in 2013 and 2018). Research stages at the University of Georgia (US), the International Center for Agricultural Research in the Dry Areas (Syria), the International Center for Biosaline Agriculture (UAE), the Smithsonian Tropical Research Institute (Panama), the International Maize and Wheat Improvement Center (CIMMYT, Mexico), etc. He was National Seconded Expert at the Directorate General for Research of the EU (Brussels), Principal Scientist at the Global Maize CIMMYT and currently coordinator for Agriculture, Research Evaluation Agency of the Andalusian Government (Spain). He is and has been PI of several international projects and co-author on near 250 publications in SCI and SSCI Journals, with h-index (Google Scholar) of 69, and recipient (2008) of the Friendship Award (China). Responsibilities in international and national research evaluation agencies.

Research interests

- Development of ecophysiological traits and tools to use in crop breeding and agronomy, with special emphasis in remote sensing and stable isotopes.
- Photosynthetic C and N metabolism, abiotic stresses and productivity in cereals
- Paleoreconstruction of the agricultural conditions in the antiquity

Keywords

Photosynthesis, crop breeding, ecophysiology, global change

ICREA MEMOIR 2018

Alex Arenas
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics
ICREA Academia 2011 & 2016

Alex Arenas (Barcelona, 1969) is Full Professor at the Departament d'Enginyeria Informàtica i Matemàtiques (DEIM) of the Universitat Rovira i Virgili. He obtained his PhD in Physics in 1996. In 1995, he got a tenure position at DEIM, and in 1997 he became associate professor at the same department. In 2000, he was visiting scholar at the Lawrence Berkeley Lab. (LBL) in the Applied Mathematics group of Prof. Alexandre Chorin (University of California, Berkeley). After this visit, he started a collaboration with Berkeley, and in 2007 he became visiting researcher of LBL. Arenas has written more than 200 interdisciplinary publications in major peer reviewed including Nature, Nature Physics, PNAS, Physics Reports and Physical Review Letters, which have received more than 12000 citations. He is one of the few Europeans serving as Associate Editors of one of the most important publication in physics worldwide, the American Physical Society journal, Physical Review E.

Research interests

His research interests are currently focused on the physics of networked multilevel complex systems. The comprehension of the interplay between the structure of the connectivity and the functionality of networked system is a major challenge for the physics of this era. Concepts that applied to the nowadays classical network theory, must be revisited in the framework of multilevel coupling scenarios, in what is being known as the physics of multilayer networks. The applicability of the understanding of the basic phenomena underlying these systems have direct applications in neuroscience, social sciences, systems biology, epidmics and computer science.

Keywords

Complex networks, multiplex networks, modular structure, synchronization, game theory, epidemic spreading

ICREA MEMOIR 2018

Irene Arias
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2016

After a BS/MS Civil Engineering studies at UPC, Irene Arias was granted a BSCH/Fulbright fellowship to pursue a doctoral degree with Prof. Achenbach at Northwestern University (USA) focusing on mathematical and computational modelling of nondestructive evaluation techniques. Right after graduation, she expanded her background in computational mechanics and materials modelling as a postdoctoral scholar in the group of Prof. Ortiz at Caltech. After joining the UPC faculty in 2004, she established a research program in modelling and simulation of active materials, funded by a Marie Curie International Reincorporation Grant and the Spanish Government. In 2015, she obtained a Starting Grant from the European Research Council devoted to enabling flexoelectric engineering through modelling and simulation.

Research interests

Her goal is to develop mathematical models and advanced simulation techniques to enable the conception and design of new materials and devices for electromechanical transduction. Recently, she became intrigued by a fairly unknown mechanism of electromechanical transduction at the nanoscale, namely flexoelectricity. This mechanism, quite different from piezoelectricity and far less understood, is responsible for the generation of electric fields in any dielectric upon bending. Contrary to piezoelectricity, it is not restricted to a particular class of materials. Thus it broadens the class of materials used for electro-mechanical transduction, which could enable affordable, biocompatible and self-powered small-scale electromechanical transducers. However, there are fundamental open questions in the field of flexoelectricity, some of which she is trying to address through modelling and simulation.

Keywords

Flexoelectricity, computational mechanics, mechanics of materials, multifunctional metamaterials, electromechanical modeling of solids, multiscale material modeling, ferroelectric materials, materials design, fracture mechanics

ICREA MEMOIR 2018

Guillem Aromí Bedmar
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2008, 2013 & 2018

Dr. Guillem Aromí graduated in Chemistry and Chemical Engineering at the University of Barcelona (UB) and EHICS (Strasbourg, France), respectively, in 1993. He earned his PhD in Chemistry at Indiana University (1999, USA) and completed posdoctoral stays at Leiden University (2002, Holland) with a Marie Curie Fellowship and at Manchester University (2003, UK). He became in 2003 a "Ramon y Cajal" Fellow at the UB where he became Associate Professor in 2007 and Full Professor in 2018. He received the three year distinction by the Generalitat de Catalunya for Incentivation of Research and the prize *ICREA Academia* 2008, 2013 and 2018. He received, in 2011, an ERC Starting Grant and in 2012 he chaired the Vth International Conference on Molecular Materials. In 2018 he became Director of the Institute of Nanoscience and Nanotechnology of the University of Barcelona (IN2UB).

Research interests

My main research lines are the following:
A) Design and preparation of molecules for Quantum Computing (QC) through the coherent manipulation of spins. This is pursued by preparing molecules that incorporate the spin carriers leading to the appropriate energy spectrum and quantum dynamic properties. The goal is to use them for the construction of hybrid quantum devices.
B) Preparation and study of switchable materials based on spin crossover (SCO). We develop new SCO materials for exploiting their potential in nanotechnology, by studying and enhancing their dynamic properties in relation to intermolecular interactions. The switching properties upon exchange of small molecules with the environment are studied.
C) Preparation of magnetic photoswitchable molecules. We design photomagnetic molecules by the synthesis of ligands with photoactive moieties and their magnetic complexes.

Keywords

Coordination Chemistry, Molecular Magnetism, Single Molecule Magnets, Quantum Computing, Functional Molecules

ICREA MEMOIR 2018

Marino Arroyo
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2008 & 2015

Marino Arroyo graduated in civil engineering at the UPC, and then obtained a PhD from Northwestern University in 2003. After a postdoctoral stay at Caltech, he joined the UPC in 2005, where he is full professor since June 2017. He was also a visitor at the Institute for the Mathematics and its applications in Minnesota in 2005. Since 2017, he is an Associated Researcher at the Institute of Bioengineering of Catalunya (IBEC). He has published over 65 original research articles in diverse fields including computational mechanics, solid mechanics, soft matter, biophysics or molecular simulation. He has received the ASME/BOEING Structures and Materials Award, the Zienkiewicz Young Scientist Award by ECCOMAS, was the Timoshenko Visiting Scholar at Stanford, and was a visiting professor at UPMC in Paris. He obtained an ERC Starting grant in 2009 and a Consolidator grant in 2016. He has advised 7 completed PhD theses and 10 postdoctoral researchers.

Research interests

His research goal is to develop theories and computational methods to understand the small-scale mechanics of materials and biological systems, with a recent emphasis on cell and tissue mechanobiology and bio-inspired materials. Together with an interdisciplinary group, he combines methods from mathematical and physical modeling, theoretical and applied mechanics, scientific computing, and computational mechanics to predict and quantify out-of-equilibrium chemo-mechanical phenomena associated with biological function, which control the mechanical functions of cells and tissues, including the way they organize in space and time, their motility, or the way they resist mechanical insults. He is also interested in distilling the engineering principles underlying biological system to conceive and build bio-inspired devices and materials. Past research includes meshfree methods for PDE and the mechanics of nanotubes and graphene.

Keywords

Computational mechanics, theoretical and applied mechanics, cell and tissue mechanobiology, biomembranes

ICREA MEMOIR 2018

Santiago Badia
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2014

Santiago Badia (Palma, 1978) is Full Professor of Computational Science and Engineering at UPC and leader of the “Large Scale Scientific Computing” Department at CIMNE. Since 2006, he has published 56 articles, 5 book chapters, and a monograph. He has been semi-plenary lecturer at the WCCM, and plenary lecturer at Coupled’15, HPCSE 2015, and YIC17. Prof. Badia has received the 2006 SEMNI and ECCOMAS awards for the best national and European thesis in computational mechanics, Outstanding PhD award at UPC 2005-2006, 2010 Juan Carlos Simo young researcher award in computational mechanics, 2012 Young Investigator Award in Applied Mathematics from the Spanish Society of Applied Mathematics, the 2016 Young Investigator award from the Royal Academy of Engineering of Spain, and Ramon y Cajal, Marie Curie, and UT Austin JT Oden fellowships. He obtained one Starting Grant and two Proof of Concept Grants from the European Research Council.

Research interests

His research focuses on the development, mathematical analysis, and application of numerical methods in engineering and sciences, and high performance scientific computing. He actively works on advanced discretization techniques, mainly finite elements, for the numerical approximation of complex multiphysics phenomena governed by partial differential equations, e.g., additive manufacturing and fusion reactor simulations. His research is also focused on massively parallel and optimal linear solvers for the (non)linear systems resulting from discretization. He is a main developer of FEMPAR, his team’s in-house code, a massively parallel finite element software distributed as free software that has been positioned as world’s most scalable domain decomposition solver, and has efficiently run at the whole JUQUEEN supercomputer (the largest supercomputer in Europe) on 458,672 processors. FEMPAR is now on the High-Q club of the most scalable European scientific computing codes.

Keywords

Finite element methods, numerical analysis, large scale computing, domain decomposition, multi-physics simulations

ICREA MEMOIR 2018

Juan A. Barceló
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2014

Juan A. Barceló obtained a PhD in History and Archaeology in 1989 at the Universitat Autonoma de Barcelona. After a 2 years Post-doctoral stage at the CNRS-Paris, collaborating with Jean Claude Gardin, he came back to the Department of Prehistory, Universitat Autonoma of Barcelona, where he has being teaching and doing research on statistical issues in archeology. He is the founder and director of the Laboratory for Quantitative Archaeology and Computer Applications, and co-founder of the Laboratory for the Computer Simulation of Social and Historical Dynamics. He has been named President of the Spanish Association of Computer Applications in Archaeology, and represents Spain at the International Association on Computer Applications and Quantitative Methods in Archaeology International Society, and Commission IV Data Management and Mathematics of the Union International for Prehistoric and Protohistoric sciences.

Research interests

Juan A. Barceló is interested in all questions related with the theoretical and methological development of Archaeology and the Historical sciences, notably on the domain of so-called Digital Humanities. He has investigated the suitability of modern statistical tools for the Spatial Analysis of archaeological data, and explored alternative methods for data mining, seriation and classification (neural networks, probabilistic graphical models, etc.). Currently, he is engaged in new artificial intelligence approaches to the analysis of social dynamics of past societies (computer simulation) and also in many projects related with Computer Assisted Visualization and Virtual Reality applied to Digital Heritage. As an archaeologist, he has participated in excavations in Spain, Portugal, Italy, Syria, Nicaragua and Argentina.

Keywords

Archaeology, Computer Simulation, Computational Intelligence, Prehistory, Data Mining

ICREA MEMOIR 2018

Joan Benach de Rovira
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2018

Director of the Health Inequalities Research Group/Employment Conditions Network (GREDS-EMCONET, UPF), Co-Director of the Johns Hopkins-Pompeu Fabra Public Policy Center, Senior Researcher and Full Professor at the Department of Political and Social Sciences at Pompeu Fabra University (UPF) in Barcelona. My academic background includes a MD, a MPH, a degree in Preventive Medicine & Public Health, a PhD in Public Health (Johns Hopkins University) and a wide-ranging background in social sciences (studies of History, and
Methodology of Social Sciences). My main scientific contributions include a large number of papers and publications with original analyses on the Social Determinants of Health and Health Inequalities.

Research interests

I substantially have contributed to Social Determinants of Health and Health Inequalities scholarship in research/health policy and knowledge transfer. In the last five years, my *main scientific contributions include papers* (n=28), and *books, reports, and other publications* (n=73), with *original analyses, reviews and commentaries* on employment conditions and precarious employment, the health intersections among social class, geography, migration, and gender, health policy analyses, and critical complex systems reviews. I've shown my research leadership in *many international projects and collaborations linked to scientists from all over the world* (e.g., Argentina, Australia, Belgium, Canada, Chile, Colombia, India, Mozambique, Puerto Rico, Spain, Sweden, Turkey, UK, U.S.), giving many presentations, conferences, and workshops on the aforementioned subjects. ....

Keywords

Social Determinants of Health, Health Inequalities, Employment Precariousness

ICREA MEMOIR 2018

Esperança Bielsa
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2018

Esperança Bielsa is Associate Professor at the Department of Sociology of the Universitat Autònoma de Barcelona. She holds a PhD and an MA from Glasgow University. Before joining the UAB with a Ramón y Cajal Fellowship in 2010, she was Lecturer in Sociology at the University of Leicester. She has also held positions as Research Fellow at Warwick University, and as Research Fellow and Sociology Tutor at Glasgow University. She is author of *The Latin American Urban Crónica* (Lexington Books 2006) and of *Cosmopolitanism and Translation* (Routledge 2016), co-author of *Translation in Global News* (Routledge 2009), and co-editor of *Globalisation, Political Violence and Translation* (Palgrave Macmillan 2009).

Research interests

Esperança Bielsa's interdisciplinary research draws upon sociology, critical theory and translation studies. Recent work has aimed to reveal the central importance of translation for an understanding of contemporary cosmopolitanism, focusing on the development of theoretical and methodological issues as well as on empirical research on the translation of literature, social theory and foreign news. Current research investigates the cultural and political significance of authenticity in relation to strangeness as a fundamental characteristic of contemporary globalisation. This research explores different, usually unconnected domains, from the performance of authenticity in different forms of contemporary political discourse, to notions of linguistic authenticity and identity in contexts of multilingualism and superdiversity.

Keywords

authenticity, cosmopolitanism, identity, sociology of culture, sociology of translation, stranger, translation

ICREA MEMOIR 2018

Marián Boguñá Espinal
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2010 & 2015

Marián Boguñá (Barcelona, 1967) is an associate professor at the Universitat de Barcelona. He graduated in Physics in 1994 and obtained his PhD in Physics in 1998. In 1999, he moved to the USA to do a postdoctoral stay with Prof. George H. Weiss at the National Institutes of Health, USA. After this period, he moved back to Barcelona where, in 2003, he was awarded a Ramón y Cajal fellowship. He got the tenure position at the end of 2008. He has also spent several months in the USA as invited guest scientist at Indiana University. M. Boguñá has written over 70 publications in major peer reviewed international scientific journals, book chapters, and conference proceedings. Among those, Nature, Nature Physics, Nature Communications, PNAS, Physical Review Letters, and Physical Review X. In January 2008, he obtained the Outstanding Referee award of the American Physical Society. Since January 2013 he serves as an editorial board member for Scientific Reports.

Research interests

His research interests are focused on the study of complex systems. In particular, those systems made up of a large number of units that interact through complex topologies and, therefore, are suitable to be studied using statistical physics tools. Such systems are ubiquitous and can be found in very diverse fields: societies at the large scale, cellular networks, or communication networks like the Internet, to name just a few. One of the major challenges in this field is the understanding of the coupling between the complex topologies shown by these type of systems and the functions they perform.

Keywords

Complex Systems, Complex Networks, Statistical Physics.

ICREA MEMOIR 2018

Elena Bosch
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2015

Elena Bosch (Barcelona, 1972) graduated in Biology at the Universitat de Barcelona in 1995 and, after pursuing her doctoral research on population genomics of the North African populations, obtained her PhD at the Universitat Pompeu Fabra. In February 2000, she moved to the UK, where she was appointed Research Assistant at the University of Leicester to work on the human Y chromosome diversity and dynamics, in the laboratory of Dr. Mark Jobling. In 2004, thanks to a “Ramón y Cajal” contract, she established her own research group on Evolutionary Population Genetics at the Universitat Pompeu Fabra. In December 2008, she was awarded tenure with an Associate Professor (“professor agregat”) position that changed to Assistant Professor (“professor titular”) in February 2012. In 2013, she was awarded with the Prize for Outstanding Teaching by the Social Council of the UPF. From June 2017 she is Deputy Director of the Institute of Evolutionary Biology, IBE (CSIC-UPF).

Research interests

My research group focuses on investigating different aspects of human genetic diversity. In particular, we are interested in adaptive traits that have undergone positive selection during human evolution and in the architecture of the genetic predisposition to complex disease. The search for genetic signatures of selection is pursued at different levels using comparative data and exploring intraspecific diversity patterns mainly within human populations but also in chimpanzees. Once these signals have been identified, we then aim to elucidate the genetic variants and molecular phenotypes underlying the genetic basis of adaptations by using *in silico* functional predictions and relevant molecular biology techniques. As for complex disease, we believe that the application of population genetic models can help in unraveling the genetic contribution to them as well as in understanding the differences in penetrance, age of onset, and risk allele frequencies between genetic disorders.

Keywords

Population genetics, evolution, human adaptation, evolutionary medicine and genetic epidemiology.

ICREA MEMOIR 2018

Fàtima Bosch
Universitat Autònoma de Barcelona (UAB)
Life & Medical Sciences
ICREA Academia 2012

Fàtima Bosch is a Pharmacist (1980) and PhD in Biochemistry (1985) by the University of Barcelona. She conducted post-doctoral studies at Vanderbilt University (1985), Case Western Reserve University (1988-1990), and NCI-Frederick Cancer Research and Development Center (1991). She is currently Full Professor of Biochemistry and Molecular Biology (1999) and Director of the Center of Animal Biotechnology and Gene Therapy (2003) at the Universitat Autònoma Barcelona (UAB). She has been granted the Rey Juan Carlos I (1985), Francisco Grande Covián (1998), Narcís Monturiol (2002), Sant Jordi Cross (2005), Alberto Sols (2006) and ICREA Academia (2013-2017) awards. She has been Founding member of the European Society of Gene and Cell Therapy (1992), President of the Spanish Society of Gene and Cell Therapy (2007-2009), Vice-President of the European Association for the Study of Diabetes (2009-2012), member of the Gene Doping Expert Group of the World Anti-Doping Agency (2013-present).

Research interests

Prof. Bosch research focuses on studying the pathophysiological causes of diabetes mellitus using transgenic animal models and in developing gene therapy approaches for this disease by in vivo genetic manipulation of tissues using viral vectors. In recent years, she has also applied her know-how on gene transfer technologies to the development of gene therapies for severe inherited metabolic disorders such as Mucopolysaccharidosis (MPS). Since 2009, she is leading the UAB activities in the public-private partnership with the pharmaceutical company ESTEVE, established to develop gene therapies for the treatment of MPS. Presently, three gene therapy medicinal products have received the orphan drug designation by the European and North American authorities. The first clinical trial started in the first quarter of 2018, with a gene therapy for the treatment of MPSIIIA patients.

Keywords

Gene Therapy, Diabetes, Mucopolysaccharidosis, Transgenic Animals

ICREA MEMOIR 2018

Ramon Brugada I Terradellas

Universitat de Girona (UdG)
Life & Medical Sciences
ICREA Academia 2015

Ramon Brugada (1966, Banyoles) obtained his MD in 1990 at the Universitat Autònoma de Barcelona. He specialized in Internal Medicine at Emory University, Atlanta, and in Cardiology at Baylor College of Medicine, Houston. After 16 years, he returned home in 2008 to launch the new Medical School at the University of Girona. He presently works at the three main pillars of the academic project in Girona: i) TEACHING: He was the first Dean of Medicine. He led an innovative problem-based-learning teaching proposal. The first class, 2014, ranked number 1, among 37 medical schools in Spain, in the MIR exam. Since 2015 then he remains Professor of Medicine. ii) CLINICAL CARE: Chief of Cardiology at the Hospitals Dr Trueta and Santa Caterina. Director of the Cardiovascular Genetics Unit, specialized center for cardiac inherited diseases. iii) RESEARCH: Director of GenCardio at the Institut d'Investigació Biomèdica de Girona (IDIBGI).

Research interests

GenCardio investigates the mechanisms associated with sudden cardiac death in the young from different aspects of biomedicine: genetics, epigenetics, molecular biology, basic electrophysiology, bioinformatics and clinical cardiology. The group has published extensively in the field and has made seminal contributions, like the publication of the first genes for Brugada syndrome and short QT syndrome. Among the ongoing research projects stand the Moscat project (Sudden Cardiac Death in Catalonia) as well as the Girona Vital project, the largest public access defibrillation program in Europe. GenCardio actively participates in translational research and development of diagnostic tools. Thus, in the last years it has developed genetic panels for sudden cardiac death, sudden unexpected death in epilepsy and congenital cardiac diseases. In 2011 GenCardio launched the Diagnostic laboratory, a referral laboratory for genetic diagnosis of inherited cardiac diseases.

Keywords

Sudden death, genetics.

ICREA MEMOIR 2018

Albert Cabellos
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2016

Albert Cabellos (PhD 2008) became an associate professor in 2015 at the Computer Architecture Department (Universitat Politècnica de Catalunya). He is the co-founder and scientific director of the NaNoNetworking Center in Catalunya. He has also founded the Open Overlay Router (http://openoverlayrouter.org) along with Cisco. He has been a visiting researcher at Cisco Systems and Agilent Technologies and a visiting professor at the Royal Institute of Technology (KTH), the Massachusetts Institute of Technology (MIT) and UC Berkeley. He is also editor of two Elsevier Journals and co-founder of the ACM NANOCOM conference. He has participated in several national (Cicyt), EU (FP7 and H2020), USA (NSF) and industrial projects. He has given more than 15 invited talks, participated in several IETF RFCs, co-authored more than 40 journal and over 100 conference papers. His main research interests are nano-scale communications and software-based and knowledge-based computer networks.

Research interests

Albert's main research interests are in the field of Computer Networks. Currently networks are evolving from a hardware-centric industry, where networks are fast but static and inefficient, to a software-centric field where networks will become flexible and programmable. Taking advantage of this ongoing evolution, Albert's main research goal is to bring Artificial Intelligence (AI) techniques to computer networks. By means of AI algorithms networks will be able to be deployed, operated and maintained truly autonomously. Such 'intelligent' networks will allow an unprecedented level of security and efficiency. This new paradigm is referred as 'Knowledge-Defined Networking'.

Keywords

Computer Networks, Software-Defined Networking, Knowledge-Defined Networking, Artificial Intelligence, Machine Learning

ICREA MEMOIR 2018

Luisa F. Cabeza
Universitat de Lleida (UdL)
Engineering Sciences
ICREA Academia 2012 & 2018

Luisa F. Cabeza (Barcelona, 1967) is Full Professor of the program Serra Húnter at the University of Lleida. She graduated at Institut Químic de Sarrià (Universitat Ramon Llull, Barcelona) on Chemical Engineering in 1992 and on Industrial Engineering in 1993, obtained the Master on Industrial Management in 1995, and her PhD on Industrial Engineering in 1996. She was a post-doctoral researcher at the USDA, ERRC in Philadelphia from 1996 to 1998, and in 1999 she joined the University of Lleida were she created the research group GREA. She has authored more than 290 peer reviewed publications and several book chapters. She is very active in different international forums such as the International Energy Agency (IEA), the Intergovernmental Panel on Climate Change (IPCC), the RHC Renewable Heating & Cooling – European Technology Platform, and the PPP SPIRE.

Research interests

The period 2013-2017 I enjoyed an ICREA Academia grant, giving me more time to devote to research and supervising researchers (master students, PhD students and post-doctoral fellows). Following my research plans, I started to work on thermochemical energy storage, not leaving at all also the research with sensible heat storage and latent heat storage. In the area of thermochemical energy storage, I have worked on the development of the technology of sorption for heating and cooling of buildings. In this area, I have co-authored different journal papers, I am co-supervising a PhD student, and I participate in three H2020 projects, showing the success in being recognized as expert on the topic already today.

....

Keywords

energy, heat transfer, solar energy, thermodynamics, thermal energy storage, energy efficiency

ICREA MEMOIR 2018

Isabel Cacho
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2012 & 2018

Isabel Cacho is Associated Professor at the University of Barcelona since 2008. She graduated in Geology in 1992 and earned her PhD in 2000 at the UB. She was affiliated to the Godwin Laboratory from the University of Cambridge as a post-doctoral researcher from 2000 to 2003 and a fellow of the US-COMER Foundation during 2003-2004, associated to Columbia University. She has published over 80 research papers with more than 4500 citations. She has also been member of several national and international research committees. In 2016 she was granted with a prestigious ERC-consolidator grant. In 2018 she implemented in the UB a new and unique infrastructure in the state for the analysis of radiogenic and other rare isotopes, currently it is open to several scientific applications.

Research interests

She is specialist in the reconstruction of past oceanic and climatic changes in base to the application of different geochemical tools on deep marine sediments and cave speleothems. She has a strong background studding the impact of past rapid climate variability in the Mediterranean region. But she has also studied past oceanic changes in the Eastern Equatorial Pacific and Atlantic Ocean, associated to climate variability in time-scales from few millennial to few million years. Currently, she is very much focussed in analysing Mediterranean thermohaline circulation sensitivity to different climate forcings with a particular focus in past hydrographical changes from the Western Mediterranean basin. Her research has implemented the application of Nd and other isotopic families as tracers of different oceanographic and climatic processes.

Keywords

Paleoclimatology, paleoceanography, deep sea sediments, speleothems, global change, radiogenic isotopes

ICREA MEMOIR 2018

Elías Campo
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2012 & 2018

Dr Campo received his MD,PhD from the University of Barcelona. He trained in Pathology at Hospital of Bellvitge and was a post-doctoral researcher at the Laboratory of Pathology, National Cancer Institute, Bethesda, MD. He is currently Professor of Pathology at the Hospital Clinic of Barcelona, University of Barcelona, IDIBAPS. He is Editor of the WHO classification of Hematological neoplasms since 2006 and has Co-directed the Chronic Lymphocytic Leukemia Genome Project in the International Consortium of the Cancer Genome. He is considered a Highly Cited Researcher by Clarivate Analytics since 2015 and has received numerous awards including the Catalan National Research Award and Premio Rey Jaime I of Clinical Medicine. He is member of several academic institutions including the Reial Academia de Medicina de Catalunya and the National Academy of Medicine, USA.

Research interests

Our research focuses on the pathological characterization of lymphoid neoplasms and the understanding of the molecular and genetic mechanisms underlying the pathogenesis of these tumors. The main goal is to translate into the clinical practice the knowledge that may improve the diagnosis, prognosis and therapeutic intervention in these patients. In the last years we have made seminal contributions in elucidating the genomic/epigenomic alterations in chronic lymphocytic leukemia, mantle cell lymphoma and other aggressive lymphomas. We have identified new disease subtypes, novel biomarkers and therapeutic targets. Our studies have shown that this new multidisciplinary approach to study cancer genomes in the clinical context opens new dimensions in understanding the disease and the clinical management of the patients.

Keywords

Molecular Pathology, Lymphoid Neoplasms, Lymphoma, Tumor Progression, Genomic Alterations

ICREA MEMOIR 2018

Adriano Camps Carmona

Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2008 & 2014

Adriano Camps is a Telecommunications Engineer and PhD from the Universitat Politècnica de Catalunya (UPC), Barcelona, Spain, in 1992 and 1996. In 1991-1992 he was at the ENS Télécommunications de Bretagne, France, and in 1999 at the Microwave Remote Sensing Laboratory at UMass-Amherst. He has published +193 papers, +410 conference presentations, holds 10 patents, and has supervised 24 PhD theses, and +120 Bachelor and Master Eng. theses. According to Google Scholar his work has received +8548 citations, and his h-index is 46. He is co-founder of BALAMIS SL and MITICS SL, two UPC spin-off companies that manufacture remote sensors and RFI cancellation systems. He co-leads the UPC NanoSat Lab and is the Scientific Coordinator of the CommSensLab – Unidad de Excelencia María de Maeztu. In 2004 he received one of the European Young Investigator Awards, and in 2011 he became Fellow of the IEEE. He was the President of the IEEE Geoscience and Remote Sensing Society in 2017 and 2018.

Research interests

His research interests are focused in microwave remote sensing, with special emphasis in microwave radiometry by aperture synthesis techniques (e.g. ESA SMOS mission), in remote sensing using signals of opportunity (GNSS-R), and nanosatellites as test beds of new instruments. He is the coPI of the first UPC nano-satellite 3Cat-1, a 1U CubeSat with 7 small technology demonstrators and scientific payloads, and the PI of 3Cat-2, a 6U CubeSat with the first dual-frequency dual-polarization GNSS-R payload. In May 2017, ESA selected 3Cat-4 within the Fly your satellite program for a launch from the International Space Station. 3Cat-4 is a 1U CubeSat for GNSS-R and microwave radiometry technology demonstration, and in November 2017 he and Prof. Golkar won the ESA Sentinel Small Satellite Challenge and the overall Copernicus Masters competition with the FSSCAT mission, to be launched in late 2019. This 2x6U cubesats will be the first cubesat mission contributing to the Copernicus system.

Keywords

(interferometric) microwave radiometry, GNSS-R, radio frequency interference, Earth Observation, nano-satellites

ICREA MEMOIR 2018

David Carrera
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2015

David Carrera received the MS degree at the Technical University of Catalonia (UPC) in 2002 and his PhD from the same university in 2008. He is an associate professor at the Computer Aachitecture Department of the UPC. He is also the Head of the "Data-Centric Computing" group at the Barcelona Supercomputing Center (BSC). In 2015 he was granted an ERC Starting Grant for the project HiEST ('Holistic Integration of Emerging Supercomputing Technologies', 1.5M€, 2015-2020). In 2017 he was awarded an ERC Proof of Concept project for the project Hi-OMICS. He is the PI for several industrial projects and collaborations with IBM, Microsoft and Cisco among others. He was a summer intern in 2006 and a Visiting Scientist in 2012 at IBM Watson. He has been involved in several EU and industrial research projects. He received an IBM Faculty Award in 2010. He is an IEEE member.

Research interests

His current research work focuses on the several topics: Data Center Optimization: providing holistic optimization solutions for the optimization of Data Centers, including the use of Active Storage technologies. Big Data Frameworks: development of technologies for developing mechanisms for an automated characterization of Big Data deployments to explore how runtime performance is affected by software and hardware configuration choices. Internet of Things and Stream Processing: Explore novel architectures of the emerging IoT stream processing platforms, that provide the capabilities of data stream composition, transformation and filtering in real time. Applied Learning Methods: leverage learning Algorithms for guiding task and data placement algorithms for Data Center optimization. Data-Centric Architectures: Build hardware prototypes for accelerating data-centric workloads, leveraging NVMs, GPUs, and FGPAs.

Keywords

Cloud Computing, Big Data, Performance Modeling, Workload Characterization, Active Storage

ICREA MEMOIR 2018

Marta Cascante
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2010 & 2015

Marta Cascante is Full Professor at the Department of Biochemistry and Molecular Biology at University of Barcelona (UB) and leader of the Integrative Systems Biology, Metabolomics and Cancer team. She holds a degree in chemistry and a PhD in biochemistry from UB, where she was distinguished with the Outstanding Graduate and Thesis Awards. She has authored over 200 publications, two of them cited in “Stryer” biochemistry textbook. She is partner of three European translational research projects (H2020) in the field of systems medicine and metabolomics and coordinator of several Spanish funded research projects. She is member of the editorial advisory boards of Metabolomics and BMC systems Biology. She also served in the scientific committee of numerous international conferences. Marta Cascante has been distinguished with Icrea Academia Prize 2010 & 2015, the Narcís Monturiol Medal 2015 and the Antoni Caparros Prize 2016 for scientific and knowledge transfer merits.

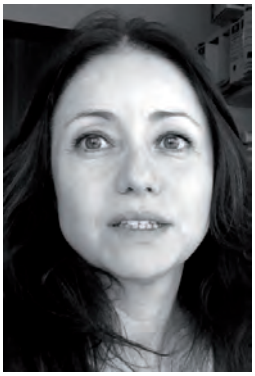
Research interests

My research focuses on cancer and metabolic diseases with the goal of elucidating the networks and pathways that are fundamental in their development and progression. More specifically, our team uses a Systems Medicine approach to identify key proteins in the metabolic reprogramming underlying multifactorial diseases, including cancer, to be used as biomarkers or drug targets. In the coming years we plan to follow a multi-omic approach to construct genome-scale metabolic networks that accurately reflect short-term and long-term metabolic adaptations associated with metastasis and acquired therapeutic resistance. We expect to identify new biomarkers and drug targets at the metabolic level to overcome drug resistance and metastasis. Furthermore, we plan to develop and deploy an e-infrastructure that makes it feasible for healthcare researchers to process analyse and mine molecular phenotyping data, to facilitate large-scale data analysis in the coming age of Precision Medicine.

Keywords

Metabolic modelling, Metabolomics, Fluxomics, Systems Biology, Systems Medicine

ICREA MEMOIR 2018



Laura Chaqués Bonafont
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2014

Laura Chaqués Bonafont is Professor of Political Science (UB) and research fellow at the IBEI. BA in Economics (UB), MA in Political Science (New School for Social Research, New York), Phd in Political Economy (UB), and visiting professor at the University of Washington, and the University of North Carolina at Chapel Hill among others. She is the author of three books, and a large number of articles published in top academic journals. She is the director of the Spanish Policy Agendas Project per Quality of Democracy (www.q-dem.org) a research project aimed to analyze policy dynamics across time, issues, countries and levels of government. The project establishes a link between policy dynamics research and other areas of concern within political science, mainly media studies, political representation and the quality of democracy in multilevel systems of governance. It also provides new tools for the development of quantitative measurement of policy dynamics.

Research interests

My main research interests are (1) the analysis of agenda dynamics in a comparative perspective paying especial attention to the role of the media, and interest groups, and (2) the analysis of the quality of democracy in multilevel systems of governance. This means to explain to what extend Europeanization and increasing regionalism affects the capacity or/and willingness of policy makers to respond to electoral promises and citizen priorities; to analyze interest groups access to the policymaking process, and their mobilization strategies in a multilevel system of governance; and to analyze how the media affects the pattern of issue prioritization of political elites. To do that, I collaborate actively with an international network of scholars –the comparative agendas project—, aimed to provide new tools for the quantitative analysis of agenda dynamics across time, countries, policy issues and levels of governance.

Keywords

policy dynamics, media agenda setting, political representation, interest organisations

ICREA MEMOIR 2018

Daniel Chemisana Villegas
Universitat de Lleida (UdL)
Engineering Sciences
ICREA Academia 2018

Daniel Chemisana Villegas (Estadilla -Huesca-, 1982) is Full Professor of Applied Physics at the Escola Politècnica Superior of the Universitat de Lleida, where he leads the Dynamic Systems Applied to Solar Energy SGR research group. In 2009 he received a PhD degree in the field of Building Integrated Concentrating Photovoltaics from the Applied Physics Section of the Environmental Science Department of the Universitat de Lleida. Since 2009, he has published 68 JCR papers and 9 book chapters. In addition, he holds 3 patents and has advised/is advising 11 PhD theses and 3 postdoctoral researchers.

Research interests

My research focuses on the combination of optics and photovoltaics to obtain more efficient ways of solar energy conversion in buildings. The cross-cutting goal is to promote nearly-zero energy buildings enhancing the utilization of solar energy by maximizing generation and/or illumination control of the interior spaces depending on building energetic and architectural requirements. To achieve this combined goal, and taking into consideration building integration issues, a trade-off methodology to figure the optimum global solutions out becomes essential.

Keywords

Renewable Energies, Solar Energy, Concentrating Optics, Concentrating Photovoltaics, Building Integrated Photovoltaics, Hybrid Photovoltaic-Thermal Solar Collectors

ICREA MEMOIR 2018

Ramon Codina Rovira
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2011 & 2016

Ramon Codina Rovira (Terrassa, 1965) is professor of Structural and Continuum Mechanics at the Universitat Politècnica de Catalunya (UPC). In 1989 he graduated in civil engineering from the same university and in mathematics from the Universitat Autònoma de Barcelona. He got his doctoral degree from the UPC in 1992. He is author of over 130 papers in first rank research journals dealing with the analysis and application of numerical methods. He is also recipient of several awards, among which the Distinció de la Generalitat de Catalunya per a la promoció de la recerca universitària (2000), the J.L. Lions Award to Young Scientists in Computational Mathematics, from the European Community on Computational Methods in Applied Sciences (2000) and the Young Investigator Award from the International Association for Computational Mechanics (2004). He has participated in several research projects, including 22 projects from different calls of the European Commission (7 of them as PI).

Research interests

The research of Ramon Codina is concerned with the development and mathematical analysis of numerical methods in engineering and applied sciences, with emphasis on finite element methods in fluid mechanics. From the analysis point of view, he has significant contributions in areas such as stabilized finite element methods, fractional step techniques or moving domain problems. In the application of numerical formulations to flow problems, he has highly cited works in the field of turbulence (with an original purely numerical approach), free boundary problems, thermally coupled flows, magneto-hydrodynamics, fluid-structure interaction problems or aero-acoustics. This research has been often motivated by research projects funded by the European Commission.

Keywords

Incompressible flows, finite element methods, stabilization, fractional step schemes, multi-physics problems.

ICREA MEMOIR 2018

David Comas
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2011 & 2016

He obtained his B.Sc. in Biology at the University of Barcelona where he also obtained his PhD (awarded with the “Premi Claustre de Doctors de la UB”) at the Animal Biology Department (Anthropology Unit) in 1997. He performed predoctoral and postdoctoral stays at the Zoologisches Institut (LMU, Munich), the Anthony Nolan Trust-Royal Free Hospital (London), and the Department of Forensic Medicine (University of Helsinki), studying human population genetics. He obtained a “Ramon y Cajal” position in 2001 at the Department of Experimental and Health Sciences (DCEXS) at the UPF where he is now Full Professor. In 2007 he received the Prize for Outstanding Teaching by the UPF Social Council. From 2007 to 2016 he has been the director of the UPF PhD program in Biomedicine, and from 2014 to 2016 the Vicedirector of the Institute of Evolutionary Biology (IBE) in Barcelona. He is the Director of the DCEXS and the Scientific Director of the Maria de Maeztu Excellent Unit awarded to the DCEXS.

Research interests

His research is focused on the causes and consequences of the genetic diversity in human populations. He aims to understand the genomic (such as mutation, recombination) and demographic (such as migrations, admixture) evolutionary mechanisms that have modeled the human genome in order to unravel the population and epidemiological consequences of the human genetic diversity.

Keywords

Genome diversity, population genetics, human genome.

ICREA MEMOIR 2018

Montserrat Corominas i Guiu

Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2015

Montserrat Corominas i Guiu graduated in Biological Sciences at the University of Barcelona (UB) in 1981. She next worked at the Department of Physiology of the UB Medical School on the role of ADP-ribosylation in differentiation of the spermatogenic germ line and received her PhD in Biology in 1986. Sponsored by a fellowship from the Spanish Ministry of Education and Science she joined the Department of Pathology at NYU Medical Center in New York in 1987 as a post-doctoral fellow to work on *ras* mutations in cancer. Later, she moved to the Division of Toxicology at MIT in Boston to study the role of *fos* and *trk* oncogenes. She returned to Barcelona in 1992 with a position as Associate Professor in the Department of Genetics at the UB. Her research of the last years has focused on the cellular and molecular mechanisms underlying development and regeneration in Drosophila. She teaches undergraduate and master courses and has directed 10 PhD theses.

Research interests

Successful development and regeneration processes demand a hierarchal and well- controlled balance between proliferation, differentiation and metabolic functions, which are mostly orchestrated by signaling molecules and transcriptional regulation. Although similar gene networks participate in both, development and regeneration, there are important differences in the intensity of the signals or the levels of transcription. The ultimate goal of our research group is to understand how transcription is regulated during development and regeneration using Drosophila larval imaginal discs, epithelia that generate adult structures, as a model system. In particular, we want to elucidate how transcription factors drive gene expression programs through interaction with genomic elements, such as enhancers, and how chromatin modifications (mainly histone modifications) contribute to gene expression changes during development and regeneration.

Keywords

Development, regeneration, transcription, chromatin,

ICREA MEMOIR 2018

Miquel Costas Salgueiro
Universitat de Girona (UdG)
Experimental Sciences & Mathematics
ICREA Academia 2008, 2013 & 2018

I graduated in Chemistry at the University of Girona (UdG) in 1994, where I also pursued PhD studies in the group of Professor Llobet with a PhD grant from the Generalitat de Catalunya. Research work during my PhD involved scientific stays at Texas A&M under the supervision of late Prof D. Barton (June-December 1996), and in Basel at the group of Prof. A. Zuberbüehler (April-May 1998). After defending my PhD dissertation in February 1999, I moved to the group of Prof. L. Que, Jr, at the University of Minnesota. My work in Minneapolis was funded by a Postdoctoral Grant from Fundació La Caixa. In 2002 I returned to Girona with a Ramon I Cajal Fellowship, and become Professor of Inorganic Chemistry in April 2003.

I became an independent group leader in January 2005. Since then, I started to set up my own research group (Bioinorganic and Supramolecular Chemistry Group, QBIS, www.udg.edu/qbis).

Research interests

My research interest aims at the study of new molecules that have relevance in the fields of Bionorganic and/or Supramolecular Chemistry, to explore the chemistry of these molecules in challenging reactions, and to convert some of these molecules in useful tools for technological applications. Specifically, in first place I sought to obtain fundamental understanding of the mechanisms of O2 activation and/or substrate oxidation taking place at the enzyme active site of non heme metalloproteins. My approach involves preparation, characterization and study of the chemistry associated to structural and/or functional model compounds of these enzymes.

Keywords

Bioinorganic Chemistry, Catalysis, Oxidation, Supramolecular Chemistry, Inorganic Chemistry

ICREA MEMOIR 2018

Rocío Da Riva
Universitat de Barcelona (UB)
Humanities
ICREA Academia 2008 & 2014

Rocio Da Riva (Madrid 1972). I got my PhD in Assyriology at the University of Würzburg, Germany (2002). I have been conducting research in First Millennium BCE Babylonia (studying cuneiform texts in museums in Europe, America and the Middle East) and archaeological field-work in the Middle East. I have published several monographs and articles on topics related to the political and social history of Babylonia. I have edited the corpus of the Neo-Babylonian royal inscriptions, opening up a new line of investigation in Assyriology. I have conducted research in European, North American and Middle Eastern institutions. I have been visiting researcher in Austria and Germany and have given lectures and seminars in several universities and research centres worldwide. I am currently visiting professor in Italy (Venice International University) and Jordan (Yarmouk University). I am member of international scientific societies as well as advisor in several international projects.

Research interests

My main research activity is in the fields of Assyriology and Ancient Near Eastern history and archaeology, and my research interest is First Millennium BCE Near East. I am preparing an edition of ritual texts from the British Museum dealing with Babylonian temples. I am also preparing a study of the “Divine Love Lyrics”, erotic poetry of the Late Babylonian period related to public religious festivals. I am the director of the archaeological expedition at the site of Sela (Jordan), in collaboration with the Directorate of Antiquities of Jordan, and I am currently carrying out research on the archaeology and history of ancient Edom. I am the author of several publications on topics related to historiography, Babylonian rituals and literature, and history of emotions. I am currently preparing electronic editions of the Neo-Babylonian Royal Inscriptions and of Late Babylonian religious texts. I am interested in historiography of the Archaeology during the I World War in the Middle East.

Keywords

Assyriology, Archaeology, Ancient Near East, Mesopotamia, Babylonia, Cuneiform, Edom, Iron Age period

ICREA MEMOIR 2018

Manel del Valle

Universitat Autònoma de Barcelona (UAB)
Engineering Sciences
ICREA Academia 2010 & 2015

Manel del Valle (Terrassa, 1963) received a degree in Chemistry from the Universitat Autònoma de Barcelona (UAB), and completed a Ph.D. in Analytical Chemistry from the same university in 1992. He is full professor of Analytical Chemistry at UAB (2018), where he had been previously associate professor. He completed postdoctoral stages in Newcastle (UK), Porto (Portugal), Graz (Austria) and Mexico. He was awarded the Young Researcher prize in Analytical Chemistry (SEQA, 1992), the prestigious Young Researcher Distinction for the Promotion of University Research (2001-2004) from the Generalitat de Catalunya, and an ICREA Academia (2010 and 2015). He is member of Editorial Board of the journals Talanta, Journal of Sensors and Bionics and Biomimetics. He has (co)supervised 21 PhD theses, and accounts for more than 200 publications and ca. 5000 citations in ISI journals. He holds a h index of 38 (ISI), 39 (SCOPUS) or 46 (Google Scholar).

Research interests

Manel del Valle is a founding and active member of the Sensors & Biosensors Group at the Autonomous University of Barcelona, where he leads lines of research on biosensors using electrochemical impedance transduction (genosensors and aptamer based) and electronic tongues employing potentiometric, voltammetric and impedimetric sensors. The latter are the paradigm in chemical sensing, that entails the use of sensor arrays with cross-response features plus advanced computer data processing, in a bioinspired manner. Late research has clearly reached the convergence of technologies: nanotechnology, biotechnology, information science and cogno systems; this corresponds to the incorporation of nanotechnology ideas to the development of biosensor array systems or bioelectronic tongues.

Keywords

Biosensor arrays, electronic tongues, nanotechnology, genosensors, aptasensors, artificial neural networks, convergence of technologies

ICREA MEMOIR 2018

Montserrat Diéguez
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics
ICREA Academia 2009 & 2015

Prof. Montserrat Diéguez studied chemistry at the Rovira i Virgili University (URV) in Tarragona, where she received her Ph.D. in 1997. After she moved to the Yale University with Prof. R.H. Crabtree (USA). She returned to Tarragona and becoming part of the permanent staff of the URV in 2002. In 2011 she was promoted to full Professor in Inorganic Chemistry. She is the chair of InnCat research group at URV, succeeding the former chair, Prof. Claver. She has been involved in 60 research projects in the field of organometallic chemistry, steroselective synthesis, asymmetric catalysis and metalloenzymes. She is author of 145 articles and 13 books/book chapters with an H index of 40. She obtained the Distinction from the Generalitat de Catalunya for the promotion of University Research in 2004 and the Grant for Research Intensification from URV in 2008. She has received an ICREA Academia in 2009 and 2015 from the Catalan Institution for Research and Advanced Studies.

Research interests

My main research interests are focused on the sustainable design, synthesis and screening of highly active and selective chiral catalysts for reactions of interest in the biological, pharmaceutical and organic nanotechnological industry. Her areas of interest include organometallic chemistry, steroselective synthesis and asymmetric catalysis using combinatorial and biotechnological approaches.

Keywords

Organometallics, Asymmetric Catalysis, Molecular, nano- and biocatalysis, combinatorial chemistry, Activation of small molecules

ICREA MEMOIR 2018

Juana Díez Antón
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2016

Juana Díez is an Associate Professor at the University Pompeu Fabra. After obtaining her PhD in Biology from the University Autónoma de Madrid, she made a postdoctoral stay at the Institute of Virology (Madison, USA) where she was subsequently hired as Research Associate. Since 2001 she leads the Molecular Virology group at the Department of Experimental and Health Sciences, UPF. She has received two prizes for innovation in teaching by the Social Council of the UPF. From 2017 she is the coordinator of the Human Biology Studies at the UPF.

Research interests

New and Emerging viruses such as Denguevirus, Chikungunya virus or Zika virus are a major threat to human health. Because of their simplicity, they completely depend on the infected cell to multiply. The main research interest of our group is to decipher key aspects of this intimate interaction and to identify novel broad-spectrum antiviral strategies that interfere with them. For this we combine cellular and molecular technologies with cutting-edge –omics and systems biology approaches.

Keywords

emerging viruses, virus-cell interactions, broad-spectrum antivirals

ICREA MEMOIR 2018

Josep Domingo-Ferrer
Universitat Rovira i Virgili (URV)
Engineering Sciences
ICREA Academia 2008, 2013 & 2018

Josep Domingo-Ferrer is a Distinguished Professor of Computer Science at Universitat Rovira i Virgili, Tarragona. UNESCO Chair in Data Privacy. M. Sc. (1988) and Ph. D. (1991) in Computer Science from the Autonomous University of Barcelona. M. Sc. in Mathematics.

In 2018 he founded CYBERCAT-Center for Cybersecurity Research of Catalonia. ICREA Acadèmia Prize (2008, 2013 and 2018). ACM Distinguished Scientist (2016). Fellow, Institut d'Estudis Catalans (2016). Google Faculty Research Award (2014). "Narcís Monturiol" Medal (2012). Elected Member, Academia Europaea (2012) and International Statistical Institute (2012). Fellow of IEEE (2012).

Full CV at http://crises-deim.urv.cat/jdomingo

Research interests

His research interests are in information security and privacy-enhancing technologies, in particular anonymization and statistical disclosure control. Furthermore, he also works on value-centric cybersecurity and on explainable artificial intelligence. His work revolves around reconciling security, privacy, transparency and efficiency in the information society.

He has co-authored 5 patents and over 419 publications (H-index=55, Feb. 17, 2019). He has chaired 18 international conferences. He is a co-editor-in chief of "Transactions on Data Privacy" and an associate editor in several journals. He has co-ordinated the H2020 project "CLARUS", the CONSOLIDER "ARES team on security and privacy, the EU FP5 project "CO-ORTHOGONAL", the "CO-UTILITY" project (Templeton Foundation), as well as several Spanish funded and U.S. funded research projects. He regularly engages in technology transfer to the IT industry.

Keywords

Data security, Data privacy, Cryptography, Official statistics

ICREA MEMOIR 2018

Mireia Duñach
Universitat Autònoma de Barcelona (UAB)
Life & Medical Sciences
ICREA Academia 2014

Mireia Duñach is Full Professor at the Universitat Autònoma de Barcelona (UAB) since 2006. After obtaining her PhD in Biochemistry at the UAB in 1986, she moved for a first a postdoctoral stay at the Commissariat à l'Energie Atomique (Paris). Later in 1989 she did a second post-doc in a collaborative project between Boston University and Massachusetts Institute of Technology. Back in Barcelona in 1991, she strarted her own research group at the Department of Biochemistry and Molecular Biology of the UAB, where she has worked since then. She teaches Biophysics to Medicine and Biomedical Sciences pregraduate students. The research in her group has been focused towards the regulation of cellular contacts in epithelial cells and the involvement of adhesion proteins in gene expression. She has published more than 60 research articles in peer-reviewed international journals, and has been member of several scientific advisory committees at different institutions.

Research interests

The current research of the group is oriented towards the study of the signaling pathways triggered by extracellular Wnt factors, both canonical and non-canonical, activating signaling cascades involved in epithelial tumorigenesis. Canonical Wnt signals require the action of two proteins associated with E-cadherin at cel·lular contacts, β-catenin and p120-catenin. Although both, canonical and non-canonical pathways, share some common elements they differ in the final output. The group is investigating these common and divergent events and their involvement in pathological processes such as the invasion of epithelial cells.

Keywords

Cell-to-cell contacts, Wnt signaling, beta-catenin, p120-catenin, E-cadherin

ICREA MEMOIR 2018

Sergio Escalera Guerrero
Universitat de Barcelona (UB)
Engineering Sciences
ICREA Academia 2018

Sergio Escalera obtained the P.h.D. degree on Multi-class visual categorization systems at Computer Vision Center, UAB. He obtained the 2008 best Thesis award. He leads the Human Pose Recovery and Behavior Analysis Group. He is an associate professor at the Dept. of Mathematics and Informatics, Universitat de Barcelona. He is an adjunct professor at UOC, Aalborg, and Dalhousie universities. He has been visiting professor at TU Delft and Aalborg Univ. He is member of the Computer Vision Center. He is series editor of Springer Series on Challenges in Machine Learning. He is vice-president of ChaLearn Challenges in Machine Learning, leading Looking at People events. He is co-founder of Care Respite company. He is member of AERFAI Association on Pattern Recognition, ACIA Catalan Association of Artificial Intelligence, INNS, and Chair of IAPR TC-12: Multimedia and visual information systems.

Research interests

Affective computing, computer vision, and machine learning, with special interest in characterizing people: personality and psychological profile computing. The main objective of his research is to reproduce from a computational perspective the human visual system so that intelligent systems can, ethically, provide with automatic interpretations of human behaviour from visual data coming from non-invasive environments/setups. This research is grounded on multi-disciplinarity, combining knowledge from computing, mathematics, artificial intelligence (computer vision and machine learning) and psychology to translate psychological theories into computational models. As a result he created pioneer models, mainly based on deep learning, that allow to detect and analyse people in visual data: from human posture estimation, facial expression analysis, action/gesture/interaction recognition, to the automatic detection of feelings and personality profiles.

Keywords

Computer Vision, Machine Learning, Human Posture Analysis, Human behavior Analysis, Action and Gesture Recognition, Convolutional Neural Networks, Emotion Recognition, Affective Computing, Personality Computing

ICREA MEMOIR 2018

Carles Escera
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2010 & 2015

Carles Escera graduated in Psychology at University of Barcelona (UB) in 1987, and after his PhD in 1993, he gained postdoctoral experience at the University of Helsinki (Finland) in 1993, 1994, 1996, 1999. He became Associate Professor in 1997, and Full Professor of Cognitive Neuroscience in 2010. He was visiting professor at the University of Bremen (Germany) and Fellow of the Hanse Wissenschaftskolleg in Delmenhorst (Germany) in 2004 and 2005. He has published over 120 papers in major journals in Psychology and Neurosciences (over 5500 citation; h index = 40). He has been the principal investigator of more than 30 research projects, including one from the *Consolider-Ingenio 2010* program, and several from the FP4, FP5 and FP7. Recently, he coordinated an *ERANET.NEURON* project from EU and a *Marie Slodowska-Curie action* of FP7. Currently, he is involved in an ERC *Advanced-Grant* in Archaeology (ARTSOUNDSCAPES) as the leader of two workpackages (psychoacoustics and neuroscience).

Research interests

His research group, the Brainlab at UB is interested in understanding the mysteries of the mind by deciphering the mechanisms of brain function, including those of attention, auditory perception, musical processing, and emotion, and how these mechanisms are disrupted in disorders such as autism, dyslexia, schizophrenia or attention deficit disorder. The approach in Brainlab is based on the recording of the human electroencephalogram (EEG) to analyze event-related brain potentials and oscillatory activity. This approach is complemented with magnetoencephalography (MEG), functional magnetic resonance (fMRI) and genetic analysis. At present, the Brainlab research is driven by the idea that even deep structures within the brain, such as the auditory brainstem, play a critical role in auditory cognition, contributing to speech, music and rhythm perception.

Keywords

Psychology, cognitive neuroscience, attention, auditory perception

ICREA MEMOIR 2018

M. Teresa Espinal
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2009 & 2015

I have a bachelor's degree in Hispanic Philology (Universitat Autònoma de Barcelona – UAB, 1978), a Master of Arts in Linguistics (University of London, 1981), and a PhD in Theoretical Linguistics (UAB, 1985). Postdoctoral research stays at the University of California at Berkeley, Stanford University, University of Utrecht, and Université Paris 7-CNRS, and visiting professor at UNICAMP. I am Professor of Linguistics at the UAB (since 1999) and a member of the Center for Theoretical Linguistics (CLT). I have published five books, and edited two special issues of journals. I am the author of a number of articles in specialized journals (Language, Journal of Linguistics, Natural Language and Linguistic Theory, Frontiers in Psychology. Language Sciences, Journal of Pragmatics, The Linguistic Review, Linguistics, International Journal of Lexicography, Linguisticae Investigationes, Probus, Glossa, Annual Review of Linguistics, Lingua, among others), and in edited volumes.

Research interests

My main research interest is the theory of language. The most recent research focuses on the structure and meaning of negation in natural languages (single negation, expletive negation and double negation readings at the syntax-semantics interface and at the syntax-prosody-gesture interface), rejecting responses to negative assertions and questions, reference to kinds and to other generic expressions, the structure and meaning of bare nominals in Romance, weak referentiality and event modification, expletive determiners, the structure of vocatives, and the semantics of number, among other topics. Previous research dealt with different adverbial expressions and the adjunct / disjunct asymmetry, and the syntax and semantics of idioms. While the final goal of this theoretical research is to understand the structure of language, on a more applied level I am developing experimental research on how speakers assign specific readings to linguistic expressions.

Keywords

Linguistic theory, syntax, semantics, pragmatics, experimental linguistics

ICREA MEMOIR 2018

Raúl Estévez
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2009 & 2014

Raúl Estévez studied Biochemistry (1994) at the University of Barcelona, where he also obtained his PhD in Biochemistry (2000, under the supervision of Dr. Manuel Palacín), finishing both studies with extraordinary honours. He also possesses an Interuniversitary Master of Business and Administration from 1999. Following three years of postdoctoral research at the Center for Molecular Neurobiology under the supervision of Dr. Thomas Jenstch and four years as a Ramón y Cajal researcher, he started to work at the University of Barcelona as Professor of Physiology in the Faculty of Medicine in 2007. Dr. Estévez is member of CIBERER. His research is now focused on rare genetic diseases related to movement of chloride across membranes.

Research interests

Chloride is the most abundant anion in organisms. Plasma membrane chloride channels from the CLC and LRRC8 family are important for several physiological functions such as regulation of excitability in nerve cells and muscle, for cell volume regulation as well as for transepithelial transport. The physiological roles of several chloride channels are illustrated by human inherited diseases caused by mutations in their genes or in auxiliary subunits that regulate their functions. Thus, defects in CLC and LRRC8 proteins have been related with hyper excitability of skeletal muscle, salt loss in the kidney and deafness (Bartter's syndrome), leukodystrophy (myelin alteration) with edema in the white matter or agammaglobulinemia. Our aim is try to understand chloride channel regulation in order to provide therapeutical solutions to affected patients. We use a multidisciplinary approach by applying imaging, electrophysiology and biochemistry methods.

Keywords

Myelin, Cell volume, ion channels, membrane proteins, astrocyte

ICREA MEMOIR 2018

Carles Feixa Pàmpols
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2016

Carles Feixa (Lleida, 1962) is professor of social anthropology at the Universitat Pompeu Fabra (Barcelona). He has a PhD from the University of Barcelona and an Honoris Causa from the University of Manizales (Colombia). Former professor at the University of Lleida, he has been visiting scholar in Rome, Mexico City, Paris, Berkeley, Buenos Aires, Santiago de Chile, Newcastle and Lima. He has specialized in the study of youth cultures, conducting fieldwork research in Catalonia and Mexico. He is author or coauthor of 50 books, including *De jovenes, bandas y tribus* (Barcelona, 1998, 5th ed. 2012), *Youth, Space and Time* (Boston & Leiden, Brill, 2016) and *La imaginación autobiográfica* (Barcelona, Gedisa, 2018). He has been a consultant on youth policies for the United Nations and VP for Europe of the research committee "Sociology of Youth" of the International Sociological Association. In 2017 he obtained the ICREA Academia and the Advanced Grant of the European Research Council.

Research interests

The ERC-AdG Project (TRANSGANG), to be done during my ICREA Academia period, will focus on experiences of intervention by youth gangs of two transnational communities (Latinos and Arabs) in cities within three geographical and cultural regions -Southern Europe, North Africa and the Americas. The novelty of the project is two-sided. Firstly, it focuses on inclusive and positive aspects of gang membership and the positivation of their marginalized position within the social structure. Secondly, it uses a transnational comparative methodology, focused on a group rarely included in gang studies –Young Arabs- along with another over-studied group –Young Latinos. The ultimate goal is to develop a renewed transnational, inter-generational, intergeneric and transmedia approach to Twenty-Firs--century gangs, very different from the local, coeval, male and face-to-face model used for understanding gangs in the Twentieth century.

Keywords

Youth, Social change, Gangs, Migration, Violence, Mediation

ICREA MEMOIR 2018

Joaquim Fort
Universitat de Girona (UdG)
Humanities
ICREA Academia 2014

Joaquim Fort (1966) graduated in Physics in the Universitat de Barcelona (1989). Master in Cosmology in Tufts University (USA, 1991) with a Fulbright fellowship. Master in Physics (1993) and PhD in Physics (1997) in the Universitat Autònoma de Barcelona. Associate professor (since 1999) and full professor (since 2009) of Physics at the University of Girona. Author of over 100 research papers in scientific journals, including Proceedings of the Academy of Sciences of the U.S. (PNAS) and Physical Review Letters. He has directed large research projects on prehistorical simulation, funded by the European Commission and the Spanish Consolider program.

Research interests

Although initially trained as a physicist, Fort has applied his background to the Humanities during the last two decades. His main contribution has been a new mathematical theory that quantifies the relative importance of the diffusion of populations and the diffusion of ideas in the spread of the Neolithic in Europe (PNAS 2012). Previously he worked on a time-delayed theory of the Neolithic transition (since 1999), palaeolithic waves of advance (2004), cohabitation models (since 2007) and age-dependent effects (2010). His present research interests include cultural evolution (since 2011) and linguistic dynamics (since 2012). These works have been featured by the American Association for the Advancement of Science, the Society for American Archaeology, the American Physical Society, the UK Institute of Physics, etc.

Keywords

Neolithic transition, cultural evolution,linguistic dynamics

ICREA MEMOIR 2018

Josep M. Fradera
Universitat Pompeu Fabra (UPF)
Humanities
ICREA Academia 2009 & 2015

Full Professor at the Universitat Pompeu Fabra. He graduated in the Universitat Autònoma of Barcelona in 1976 and PhD in Modern History in 1983. Researcher at the IAS (Princeton) in 1987-1988 and visiting scholar at Harvard (1997, 2000, 2012 and 2013) and NYU (2004) and Princeton (2006) and Chicago as Tinker Fellowship (2009). He has published several books as sole author and has contributed to many other edited books and journals. In the last period: *Endless Empire. Spain's Retreat, Europe's Eclipse, America's Decline*, Madison, 2012 (edited with McCoy and Jacobson) and *Slavery and Antislavery in Spain's Atlantic Empire*, NY, 2013 (edited with Schmidt-Nowara). *La nación imperial. Derechos, representación y ciudadanía en los imperios de Gran Bretaña, Francia, España y los Estados Unidos (1750-1918)*, Barcelona, Edhasa, 2 vols., 1376 pp.; *The Imperial Nation*, Princeton University Press (2018).

Research interests

He works on two different research fields. One of them concerns to the Catalan and Spanish history of the Nineteenth and Twentieth-Centuries. Nonetheless, he is working and writing on the Spanish and European Empires of Modern World. He had published extensively on the political economy, politics and culture of the Spanish Empire, specifically on the Spanish Caribbean and the Philippines. He published a complete comparative history of political inequality (forms or representation; exclusion and segregation; unequal juridical régimes) in four Liberal empires (Spanish, French, British and the US) since 1750 up to 1918. In all four cases these aspects are placed in the political history of both, colonies and metropolis. Next project is considering to go back to a more precise explanation of how political responses and the expansion of social reform in the metropolitan and colonies as well settings influenced the general development of imperial policies all over the world.

Keywords

Empires, colonies, identity, institutions, labor

ICREA MEMOIR 2018

Giancarlo Franzese
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2016

Giancarlo Franzese leads the Statistical Physics of Complex Matter group at UB. PhD in Physics with honors (Naples 1998), Associate Researcher at Roma 3 University, Boston University, Naples SUN, La Sapienza University Rome, Ramón y Cajal at UB 2003, since 2002 Visiting Professor at Universities of Boston, Cambridge, UC-Dublin, Beijing, Porto Alegre, he is UB Tenured Professor since 2008; Guarantor and Member of the Steering Committee of the Institute for Nanoscience and Nanotechnology of UB (IN2UB); Member of the International Advisory Board of the European Molecular Liquids Group. He won the Young CNR Research Abroad prize 2000, the UB Incentive Program for Research 2012, the Royal Society of Chemistry-UK selection as Emerging investigator in Soft Matter 2012, the Campania-Felix prize for academic merits 2016. He ranks within the Top Scientists in Spain in Multidisciplinary Physics, the Top Italian Scientists in the World, with works among the Highly Cited Papers in Physics.

Research interests

The group develops a **multi-scale approach for hydrated NanoBioSystems under realistic conditions** (e.g., nanoparticles and protein solutions at physiological conditions over time-scales up to hours). We combine atomistic simulations of hydrated bio-interfaces (e.g., proteins or membranes), nano-interfaces (e.g., nanoparticles or graphene sheets) and coarse-grain models for protein folding and design. We focus on protein self-assembly and crystallization, in bulk or under confinement, and on the kinetics of proteins adsorption on nanoparticles, verifying our predictions in collaboration with several experimental groups. We try to find answers for fundamental questions (Why water is so important for life? Which properties make water unique for biological processes?) and applications (What makes a nanoparticle safe-by-design? Can we limit protein-aggregations causing Alzheimer? How to implement nanotheranostic? How to develop Cancer NanoMedicine?).

Keywords

Biological Physics. Biological Water. Bio-Nano Interactions. Protein Folding. Protein Design. Self-Assembly. Complex Liquids. Soft Matter.

ICREA MEMOIR 2018

Lluís Fuentemilla Garriga
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2018

Lluís Fuentemilla is an Associate Professor at the University of Barcelona (UB) where he leads the Dynamics of Memory Formation group. In 2007 he received the PhD in Psychology for his thesis of how neural oscillatory activity supports auditory sensory memory. He then moved to the Institute of Cognitive Neuroscience (University College London) as a postdoctoral researcher, a time that helped him crystallize his deep interest in the understanding of the brain underpinnings of human learning and memory. In 2010, he was awarded by a Ramon y Cajal programme to create and establish his own research group at the Bellvitge Biomedical Research Institute and at the UB. In 2015, he joined the UB as an Associate Professor, where he combines research and teaching as one at the group leaders of the Institute of Neuroscience (UB).

Research interests

My research focusses on the cognitive neuroscience of memory, a field that studies the neural mechanisms and cognitive processes that support human memory. I lead the Dynamics of Memory Formation group, who uses behavioural, neuroimaging and electrophysiological techniques that, combined with advanced analytical approaches, help us set out work emphasizing the critical role that neural replay exerts on memory. Our research covers studies on healthy population and neurological patients to guide and document the relevance of memory reactivation during working memory maintenance, memory recollection and sleep consolidation. Our findings have an impact on the field as they provide insights of the neural mechanisms that underlie fundamental memory processes, such as how experiences are integrated and transformed into long-term memory traces by the brain.

Keywords

Episodic memory, neuroimaging, cognitive neuroscience, neural replay

ICREA MEMOIR 2018

Ángel J. Gallego
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2015

Iobtained my PhD in Cognitive Science and Language at the Universitat Autònoma de Barcelona in 2007. I have made short-term visits to the University of Maryland, IKER / CNRS, the University of Cambridge, and the Universidad Complutense de Madrid, where I worked under the supervision of Juan Uriagereka, Ricardo Etxepare, Ian G. Roberts, and Ignacio Bosque respectively. I have been awarded different post-doctoral fellowships, including Ramón y Cajal in 2013. Currently, I am Prof. Agregat at the Dept. of Spanish Philology and the Secretary of the Centre de Lingüística Teòrica at UAB. I have published in journals like, i.a., Natural Language and Linguistic Theory, Theoretical Linguistics, and The Linguistic Review. Furthermore, I am the author of Phase Theory (John Benjamins, 2010) and have edited Phases. Developing the Framework (De Gruyter, 2012), 50 Years Later: Reflections on Chomsky's Aspects (with D. Ott, MIT WPL, 2015) and Perspectivas de sintaxis formal (Akal, 2015).

Research interests

I am primarily interested in the areas of theoretical syntax and linguistic variation. In my work, I study syntactic phenomena and properties (locality, phrase structure, transformations, etc.) with an eye on trying to understand what they tell us about broader questions concerning the Language Faculty. I have specialized in Romance languages (particularly Iberian varieties, with special attention to Spanish and its dialectal variation). Since 2014, I am the main coordinator of the Syntactic Atlas of Spanish/Atlas Sintáctico del Español (ASinEs, www.asines.org), an on-going project devoted to the study of the syntactic variation of Spanish dialects and developed in cooperation with different centers, including the Real Academia Española. Finally, since I also consider it the responsibility of researchers to contribute to society by offering their expertise, part of my outreach activities is focused on helping improve the way in which language is taught at Secondary Education.

Keywords

Syntax, linguistic variation, geolects, Spanish, Romance languages, atlas, database

ICREA MEMOIR 2018

Manuel García-Carpintero
Universitat de Barcelona (UB)
Humanities
ICREA Academia 2008, 2013 & 2018

Manuel García-Carpintero was born in Daimiel (Spain) in 1957. He got his "Licenciatura" (≈ BA) at the University of Barcelona (1979) and his PhD also at the University of Barcelona (1988), where he has taught since 1984, after teaching at secondary schools between 1979 and 1984. He visited the CSLI, Stanford University, for one academic year (1990-91), and for shorter periods the philosophy departments at MIT (1992), NYU (1997), Oxford (1998), and Lisbon (2011, 2012). He was a fellow at the Center for the Advanced Studies in the Humanities (Edinburgh, 2001), and he has been appointed Visiting Professor at the University of Lisbon (2013-2020). He was awarded a "Distinció de Recerca" for senior researchers by the Catalan Government between 2002 and 2008, and in 2008 (2009-2013), 2013 (2014-2018) and 2018 (2019-2023) the prize "ICREA Acadèmia" for excellence in research, also funded by the Generalitat de Catalunya.

Research interests

Manuel García-Carpintero is Professor at the University of Barcelona (http://www.ub.edu/grc_logos/manuel-garcia-carpintero). He works in philosophical logic, the philosophy of language, the philosophy of mind and related epistemological and metaphysical issues. He has a book on assertion forthcoming in OUP entitled *Tell Me What You Know*, and he is working on another two, one on indexicals under contract with Springer, *Indexicals and Reflexivity*, and another on the first person under contract with OUP, *Representing Oneself*.

Keywords

reference, presupposition, assertion, semantics/pragmatics, fiction

ICREA MEMOIR 2018

Jordi Garcia-Ojalvo
Universitat Pompeu Fabra (UPF)
Experimental Sciences & Mathematics
ICREA Academia UPC 2009 & UPF 2014

Jordi Garcia-Ojalvo obtained his PhD in statistical physics at the University of Barcelona in 1995. He did postdoctoral work at the Georgia Institute of Technology in Atlanta in 1996, working on laser dynamics, and at the Humboldt University of Berlin in 1998 as an Alexander von Humboldt Fellow, studying noise effects in excitable media. In 2003 he was IGERT Visiting Professor at Cornell University in Ithaca, New York, at which time he began working in the field of systems biology. In 2008 he became Full Professor at the Universitat Politecnica de Catalunya, where he had been teaching applied physics since 1991. He is Visiting Research Associate in Biology at the California Institute of Technology since 2006, and joined the Universitat Pompeu Fabra in October 2012.

Research interests

We are interested in the dynamics of living systems, from unicellular organisms to human beings. We use dynamical phenomena to identify the molecular mechanisms of cellular processes, such as bacterial stress responses, spatial self-organization in bacterial biofilms, cellular decision making, and the immune response to cytokine signaling. Using a combination of theoretical modeling and experimental tools such as time-lapse fluorescence microscopy and microfluidics, we investigate dynamical phenomena including biochemical pulses and oscillations, and study how multiple instances of these processes coexist inside the cell in a coordinated way. At a larger level of organization, we use conductance-based neural models to explain the emergence of collective rhythms in cortical networks. We also work on developing a global description of brain activity by means of mesoscopic neural-mass models, which allows us to link the structural properties of brain networks with their function.

Keywords

Nonlinear Science, Systems Biology, Systems Neuroscience, Statistical Physics, Complex Systems

ICREA MEMOIR 2018

Maria Pau Ginebra
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2008, 2013 & 2018

Maria Pau Ginebra is full professor at the Dept. of Materials Science and Metallurgy of UPC, as well as Director of the Biomaterials Biomechanics and Tissue Engineering Group. Since 2015, she is an Associated Researcher at the Institute of Bioengineering of Catalunya (IBEC). She has published more than 190 articles and 16 book chapters, and has edited 3 books. She has been visiting professor in several foreign Universities, such as Dankook University (Korea) and University of Minnesota (USA). She is involved in translational research to the clinics and industry, being the inventor of 10 patents. In 2013 she co-founded the spin-off company Mimetis Biomaterials, and in 2018 she was a finalist of the EU Prize for Women Innovators. She received the Narcís Monturiol Medal from the Generalitat de Catalunya in 2012 and the Racquel LeGeros Award by the International Society for Ceramics in Medicine in 2013, for her contribution to the research in calcium phosphates.

Research interests

Her research is focused on the development of new biomaterials for tissue engineering and controlled drug release, with special emphasis in the musculoskeletal system. Her main goal is to exploit biomimetic strategies for the design of biomaterials for bone tissue engineering, inspired in the features of both the inorganic and the organic components of bone extracellular matrix. Specifically, her main challenges include understanding the role of the different material features in the cellular events leading to bone regeneration, with the aim of developing synthetic biomaterials able to integrate and trigger the physiological bone remodelling process. Furthermore, she explores new strategies of biofabrication, including injectable cements and foams, surface biofunctionalisation with multifunctional peptides and protein fragments and 3D printing of scaffolds for tissue engineering and regenerative medicine.

Keywords

Biomaterials for tissue engineering, biofunctional materials, drug delivery, bone regeneration, biomimetic materials, 3D printing of biomaterials, bioprinting, cell-material interactions, preclinical studies of biomaterials

ICREA MEMOIR 2018

Pere Ginès Gibert
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2014

Pere Ginès is a physician scientist in the field of liver diseases. Currently he is chairman of the Liver Unit of the Hospital Clínic of Barcelona and Professor of Medicine at the University of Barcelona. He obtained his degree in Medicine from the University of Barcelona School of Medicine and did his training in Digestive and Liver diseases in the Hospital Clínic. He obtained his PhD from the same University. His scientific career has taken place in the Hospital Clinic, University of Barcelona, University of Colorado, and University of Calgary. He is currently the principal investigator of the IDIBAPS group “Mechanisms of liver diseases and complications of cirrhosis”.

Research interests

His research covers the whole spectrum of Chronic Liver Disease. In the laboratory, the research studies the mechanisms of liver cell injury in liver diseases and how liver injury progresses from an acute to a chronic condition. In recent years, the research has been focused on the role of a number of mediators of liver cell injury, including cytokines, chemokines and miRNAs, as well as the participation of liver stem cells, studying gene expression and molecular mechanisms in a number of human chronic liver diseases to identify potential targets of therapy to prevent disease progression.
The clinical research has been to predict clinical outcomes in cirrhosis using biomarkers and the screening for early stage liver disease in the general population with non invasive tests. Other important areas of clinical research are the pathogenesis and management of ACLF, the role of the microbiome in the complications of cirrhosis, and the pathogenesis and management of AKI, particularly HRS.

Keywords

Liver, Cirrhosis, Renal failure, Ascites, Fatty Liver Disease.

ICREA MEMOIR 2018

Emilia Gómez
Universitat Pompeu Fabra (UPF)
Engineering Sciences
ICREA Academia 2015

Emilia Gómez is an Associate Professor (Serra-Húnter Fellow) at the Department of Information and Communication Technologies, Universitat Pompeu Fabra, Barcelona, where she leads the Music Information Research Lab at the Music Technology Group. She graduated as a Telecommunication Engineer at Universidad de Sevilla (1999) and studied piano performance at Seville Conservatoire of Music. She then received a DEA in Acoustics, Signal Processing and Computer Science applied to Music at IRCAM, Paris (2000) and a PhD in Computer Science at the UPF (2006, awarded by EPSON foundation). She has been lecturer at the Escola Superior de Música de Catalunya and visiting researcher at the Royal Institute of Technology, Stockholm (Marie Curie Fellow), McGill University, Montreal, and Queen Mary University of London. She has co-authored more than a 100 peer-reviewed publications and software libraries, and contributed to more than 20 projects, mostly funded by the European Commission.

Research interests

Her research is motivated by her background in both engineering and music and is within the Music Information Retrieval (MIR) field. She tries to understand the way humans describe music and emulate these descriptions by computational models dealing with big music data. By integrating knowledge from signal processing, music theory, cognition and machine learning, she has developed methods to automatically describe music data (audio signals, scores and visual information) in terms of melody, tonality and rhythm; to measure similarity between pieces and automatically classify music according to style, emotion or culture. She is currently president-elect of the International Society for Music Information Retrieval and co-editor in chief of the open access journal Transactions of ISMIR.

Keywords

Music information retrieval, big data, machine learning, audio signal processing

ICREA MEMOIR 2018

Gabriel Gomila Lluch
Universitat de Barcelona (UB)
Engineering Sciences
ICREA Academia 2014

Gabriel Gomila (Ciutadella, 1970) is Full Professor at the Department of Electronics ajnd Biomedical Engineering of the University of Barcelona. He obtained his PhD in Physics in 1997. From 1999 to 2001 he was post-doctoral researcher at the Université de Montpellier, at the Università di Lecce and at the Universitat Politècnica de Catalunya. In 2001 he obtained a Ramon y Cajal Fellowship at the University of Barcelona, where he got the tenure position in 2005. Since 2007 he is Group Leader at the Institut de Bioenginyeria de Catalunya. Gomila has written over 80 publications in major international scientific journals including Science, Nature Materials, PNAS, Nano Letters or ACSNano. He has been Principal Investigator in 9 research projects and is External Evaluator of the Spanish Agencia Nacional de Evaluación y Prospectiva (ANEP), of the Austrian Research Promotion Agency (FFG) and of the European Research Council (ERC). He received the Grant for Research Intensification in 2008.

Research interests

His research interests are focused on the development of novel nanoscale electrical measuring techniques for Material Science and Biology, with an emphasis on scanning probe microscopy methods. The final objective of his research is to unravel the electrical properties of biological matter (biomolecules, biomembranes, viruses, bacterial cells, etc.) with nanoscale spatial resolution, and design, based on them, new label-free biological characterization methods and new electronic biosensors. Currently the main challenges faced include the development of an electric nanoscale tomographic system for sub-surface imaging and of a nano-electrophysiological system for electrical activity recording in small scale biological systems.

Keywords

Scanning Probe Microscopy, Dielectric Properties, Nanoscale materials, nanobiotechnology, nanomechanics

ICREA MEMOIR 2018

Antonio González
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2014

Antonio González (PhD 1989) joined the faculty of the Computer Architecture Department of Universitat Politècnica de Catalunya in 1986 and has been Full Professor since 2002. He was the founding director of the Intel Barcelona Research Center from 2002 to 2014. He has published over 370 papers, has given over 120 invited talks, holds 51 patents and has advised 33 PhD theses in the area of computer architecture. He has served as associate editor for five IEEE and ACM journals, and program chair and general chair for the most prestigious symposia in his area. He has a long track record of innovations through transfers of his research results to commercial products, especially microprocessors. Antonio's awards include the best student in computer engineering in Spain, the Rosina Ribalta award, the Duran Farell award, the Aritmel National Award of Informatics, the King Jaime I award, and the ICREA Academia award. He is an IEEE Fellow and recipient of an ERC Advanced Grant.

Research interests

Antonio's research has focused on computer architecture, compilers and parallel processing, with special emphasis on microarchitecture and code generation techniques for the design of power efficient and reliable computing systems. One of his main current focuses is on Cognitive Computing architectures, where the goal is to devise new "intelligent" devices that will help people in their daily routines at work, home or for entertainment. In particular, he is investigating novel architectures for computer vision and speech recognition, as well as novel microarchitectures for graphics processors. Another area of his research is the design of reliable and resilient computing systems that can efficiently deal with the increasing vulnerability and variations exhibited by transistors as their dimensions keep shrinking. Finally, he is working on the design of energy-efficient computing architectures taking into account both the characteristics of future technology and applications.

Keywords

Computer architecture, processor microarchitecture, power-efficiency, memory architecture, graphics processors

ICREA MEMOIR 2018

Libertad González
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2015

Born and raised in Dos Hermanas (Sevilla), she received her BA in Economics from the University of Seville, and her PhD in Economics from Northwestern University. She has been a professor at Universitat Pompeu Fabra since 2003. She is also an affiliated professor at the Barcelona Graduate School of Economics, and a research fellow at the Institute for the Study of Labor (IZA, Germany), and the Center for Research and Analysis of Migration (CreAM, UCL). She has been a visiting professor at Boston University, Columbia University (New York), UBC (Vancouver), and CREST (Paris). Her work has been published in journals such as the Journal of the European Economic Association, Journal of Public Economics, American Economic Journal, the Journal of Human Resources, and the Journal of Applied Econometrics. She is currently an editor of the popular economics blog Nada Es Gratis. She has two children.

Research interests

Her research lies at the intersection of labor economics, public economics, and health economics. She usually exploits large micro-data sets, and uses applied econometrics techniques to uncover causal effects. She has studied the effects of taxes and subsidies on fertility and female labor supply, the economic impact of immigration, the effect of family law on divorce, labor supply, and savings, and recently the economic determinants of infant health.

Keywords

Labor economics, public economics, immigration, family policy, fertility, female labor supply, divorce, child development

ICREA MEMOIR 2018

Jacob González-Solís
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2018

I am full professor at the University of Barcelona (UB) and a researcher in the fields of evolutionary, population and environmental biology. I developed my PhD in a team led by Profs. Xavier Ruiz and Lluís Jover, on the interactions between two gull species. In 1996 I moved to a team led by Peter Becker in Wilhelmshaven (Germany) to investigate pairing systems. Then, in 1999, I moved to a team led by John P. Croxall at the British Antarctic Survey (UK) to investigate the movements and sexual segregation of seabirds using PTTs and GLSs devices. In 2000, I joined the UB as a "Ramón y Cajal" researcher. Since then I have formed my own team, mainly focused on seabird movement ecology, that is currently composed of 2 postdocs, 9 PhD students and a number of MSc and undergrad students. In 2008 I became professor at the Departament de Biología Evolutiva, Ecologia i Ciències Ambientals as well as the Institut de Recerca de la Biodiversitat (IRBio). In 2018 I became a full professor.

Research interests

We focus on movement ecology, symbiotic interactions and marine environmental chemistry, using seabirds as a main study model. We are concerned with biodiversity loss and all our research intends to contribute to the field of conservation biology. We develop observational and experimental field studies integrating multidisciplinary approaches and tools, such as molecular, stable isotope, physiological, microbiological and contamination analyses. We instrument seabirds with different devices, such as GPSs, GLSs and accelerometers, to track their foraging and migratory movements and behaviour. We work in Macaronesic archipelagos, particularly Cape Verde and Canary Islands, as well as in some Antarctic and subantarctic localities. Our tracking data contribute to assess mIBAs and MPAs in the Atlantic. Our activities also include building capacity in developing countries as well as increasing public awareness on anthropogenic threats to seabirds and the marine environment

Keywords

movement ecology, symbiotic interactions, marine environmental chemistry, conservation biology, seabird ecology

ICREA MEMOIR 2018

Marcel Guàrdia
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2018

Marcel Guàrdia (PhD in Applied Mathematics, Universitat Politècnica de Catalunya, 2010) is Associate Professor (Professor Agregat) at Universitat Politècnica de Catalunya. He has held postdoctoral positions in the Pennsylvania State University, the Fields Institute (Toronto), the University of Maryland, the Institute for Advanced Study (Princeton) and Université de Paris 7 – Denis Diderot.

Marcel Guàrdia has published 15 papers including articles at Inventiones Mathematicae, Journal of the European Mathematical Society, Advances in Mathematics and Communications in Mathematical Physics. In 2015, he received the first Barcelona Dynamical Systems Prize. In 2017 he obtained an ERC Starting grant.

Research interests

Marcel Guardia's research is focused on the dynamics of Hamiltonian systems focusing on the unstable and chaotic motions these systems may possess. He has worked in Celestial Mechanics, where he has studied different type of behaviors such oscillatory motions, drift along resonances, stochastic behavior, non-integrability, Smale horseshoes, etc.

He also works in Hamiltonian Partial Differential Equations (PDEs) such as the nonlinear Schrödinger equation, which can be seen as infinite dimensional Hamiltonian systems. In these models he studies transfer of energy behaviors and also different homoclinic phenomena (solitons, breathers).

Keywords

Hamiltonian Systems, Celestial Mechanics, Hamiltonian Partial Differential Equations, Arnol'd diffusion, Exponentially small phenomena

ICREA MEMOIR 2018

Montserrat Guillén i Estany
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2018

Full Professor of Quantitative Methods in Economics and Business at the University of Barcelona and Honorary Visiting Professor in the Faculty of Actuarial Science and Insurance at City, University of London. I received a MSc in Mathematics and a PhD in Economics at the UB. I studied Economics at the University of Cambridge and I got a MA in Data Analysis at the University of Essex. I was Visiting Research faculty at the University of Texas at Austin and Visiting Professor of Insurance Econometrics at the University of Paris II. I am member of the BGSMath, director of the research group Riskcenter in the global network of risk research units of the International Insurance Society and director of the Research Institute of Applied Economics. I have been research visitor of the Consortium for Data Analytics in Risk at the University of California, Berkeley.

Research interests

My research is on insurance and risk quantification. I have specialized in statistical methods for actuarial science. This requires unique interdisciplinary talent involving mathematics, economics and statistics. In risk analysis, I am currently developing new methods in telematics and digital analytics, with tools aimed at assessing risk from big data sources. I am working on extensions of predictive modelling that focuses on multidimenional risk measurement: accident severity, vehicle usage and customer lapse. I am also working on the UK Institute and Faculty of Actuaries funded project on saving/investment decisions for pre and post-retirement, with generalization of pooled annuity funds.

Keywords

Insurance, Risk management, Actuarial Science

ICREA MEMOIR 2018

Alfonso Herranz Loncán
Universitat de Barcelona (UB)
Humanities
ICREA Academia 2018

I am Associate Professor of Economic History at the University of Barcelona. I got BAs in Economics and History at the University of Zaragoza and a PhD in Economic History at the London School of Economics and Political Science. I have been invited professor at the University of the Republic (Uruguay) from 2004 to 2016. I am the Director of the “Antoni de Capmany” Economics and Economic History Research Centre of the University of Barcelona, and the Editor of Economic History of Developing Regions. I am also trustee of the European Historical Economics Society, member of the Barcelona Economic Analysis Team (BEAT) and research fellow of the Institutions and Political Economy Research Group (IPERG) and the Laureano Figuerola Institute. I have published two books and a number of articles on different Economic History topics.

Research interests

I am interested in the study of the history of transport and market integration in the 19th and early 20th centuries. More specifically, I have analysed the growth and distributional impact of railways in peripheral countries, and the mutual interaction between transport infrastructure investment, export expansion and the evolution of state capacity. I am particularly interested in: 1) the channels through which state capacity affected infrastructure investment; 2) the effects of the transport network structures on the spatial distribution of economic activity in peripheral economies; and 3) the main political factors behind the decisions on the political support to infrastructure and on the spatial structure of infrastructure networks. My final objective is to contribute to the debate on the links between the political decision-making process and the growth and distributional effects of infrastructure in developing countries.

Keywords

Transport History, Railways, State capacity, Latin America, Economic Geography, Economic Growth

ICREA MEMOIR 2018

Elena Hidalgo

Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2010 & 2015

Elena Hidalgo graduated in Pharmacy at the Universitat de Barcelona, where she obtained her PhD at the Biochemistry Department in 1991. She performed two postdoctoral stages during eight years in the labs of Bruce Demple (Harvard School of Public Health, Boston) and Nic Jones (Imperial Cancer Research Fund, London), studying how cells respond to oxidative stress. She was recruited by Universitat Pompeu Fabra (Barcelona) in 2000, where she is now full professor. As a University member, she is both teaching and working on research as the co-director of the Oxidative Stress and Cell Cycle Group.

Research interests

Oxidative stress constitutes the basis of physio-pathological situations such as neurodegenerative diseases and aging. However, reactive oxygen species such as hydrogen peroxide also exert signaling roles: they may activate antioxidant cascades, and endogenous increases of these species may even improve the overall fitness of the cell and trigger life span. Our lab uses the eukaryotic model system Schizosaccharomyces pombe to study the toxicity associated to oxygen-derived species, specifically protein oxidation and aggregation, and to describe the signaling processes controlled by oxidants.

Keywords

Oxidative stress – signaling cascades – gene regulation – protein homeostasis – thiol chemistry

ICREA MEMOIR 2018

Francesc Illas i Riera

Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2009 & 2015

Francesc Illas (1954) obtained his chemistry degree and Ph. D at the Universitat de Barcelona where he became Full Professor of Physical Chemistry in 1992. He visited different research centres (IBM Almaden Research Center and Los Alamos National Laboratory) and has been invited professor at Universita' della Calabria and Université Pierre et Marie Curie. He received the Distinguished Professor Mention for the Research Promotion awarded by the Generalitat de Catalunya in 2001, the Bruker Physical Chemistry Research Award of the Spanish Royal Society of Chemistry in 2004 and the ICREA Academia Award in 2009 and again in 2015. In 2009 was elected Fellow of the European Academy of Sciences. In 2012 he joined the Editorial Board of Surface Science and of Theoretical Chemistry Accounts. In 2017 he was elected member of Academia Europeae. He published over 600 papers which received more than 18000 citations (WoS h-index = 66; Google Scholar h-index = 73). He is now Director of XRQTC.

Research interests

In a broad sense, the research activities of Francesc Illas develop in the field of computational materials science where computers are used to investigate the properties of molecules, nanostructures and solids. The main goal of this scientific discipline is to make use of first principles methods based on quantum mechanics to provide information not easily accessible from experiments and, at the same time, to contribute to unbiased interpretation of observed phenomena. The research being now carried out has a strong focus on properties of materials governed by magnetic coupling, involves the study of the atomic and electronic structure and chemistry of isolated and supported nanoparticles and, encompass unraveling molecular mechanisms of heterogeneous catalysis in various technologically relevant processes. The ultimate main aim is to contribute to the design of new materials with tailored physical and chemical properties.

Keywords

Computational materials science, theory in catalysis and photocatalysis.

ICREA MEMOIR 2018

Antoni Ivorra
Universitat Pompeu Fabra (UPF)
Engineering Sciences
ICREA Academia 2018

Antoni Ivorra is an associate professor at Universitat Pompeu Fabra (UPF) in Barcelona, Spain, where he leads the Biomedical Electronics Research Group (BERG). Prior to joining the UPF in 2010, he enjoyed a four-year postdoctoral stay at the University of California at Berkeley (2005-2009) followed by an eight-month postdoctoral position at the CNRS- Institut Gustave Roussy (Villejuif, France). During 1998-2005, he was with the Biomedical Applications Group of the Centre Nacional de Microelectrònica, Bellaterra, Spain. He received a PhD in Electronics Engineering from the Universitat Politècnica de Catalunya, Barcelona, Spain, in 2005.

He is author or coauthor of 50 publications in peer-reviewed journals, 4 book chapters and more than 35 conference contributions. He has been inventor or co-inventor of 11 families of patent applications. In 2016 he was awarded an ERC Consolidator Grant for his research on microstimulators for neuroprosthetics.

Research interests

His research is focused on bioelectrical phenomena and, in particular, on exploring the use of these phenomena for implementing new methods and devices for biomedical applications. Specifically, his main research topics are electroporation, particularly for tissue ablation, electrical bioimpedance for diagnostic purposes and injectable electronics for neuroprosthetics.

Keywords

biomedical engineering; bioelectrical phenomena; neuroprosthetics; electroporation; electrical bioimpedance

ICREA MEMOIR 2018

Ignacio Lago
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2018

I am Professor of Political Science at Universitat Pompeu Fabra (Barcelona, Spain) and Doctor-Miembro at Juan March Institute (Madrid). I hold a degree in Political Science from the Universidade de Santiago de Compostela, a MA in Social Sciences (CEACS, Juan March Institute, Madrid) and a PhD in Political Science from the Universidad Autónoma de Madrid. I have been visiting professor at Griffith University (Brisbane, Australia), Instituto de Ciencias Sociais da Universidade de Lisboa (Portugal), Université de Montréal (Canada). Universidad Nacional de San Martín (Buenos Aires, Argentina), University of Sydney (Australia) and CIDE, División de Estudios Políticos (Mexico).

Research interests

My research agenda is focused on (i) the Political Consequences of Electoral Laws (ii) Political Behavior, (iii) Issues in Political Economy, (iv) the Nationalization of Electoral Politics and (v) the Convergence of Sports and Society.

Keywords

Decentralization, Elections, Electoral Systems, Institutions, Nationalization

ICREA MEMOIR 2018

Margarita León Borja
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2018

Margarita León is an Associate Professor in the politics department of the Universitat Autònoma Barcelona and a senior Research fellow at the Institute of Government and Public Policies (IGOP) of the same university. From 2003 until 2010 she was a lecturer in European social policy (SSPSSR, University of Kent). She was a Marie Curie fellow at the European University Institute in Florence, Italy. She holds a PhD from the London School of Economics (2000) and a MA in Sociological Research from the University of Essex (1995). She has co-edited with A.M. Guillén *The Spanish Welfare State in European Context* (2011 Ashgate) and edited *The Transformation of Care in European Societies* (2014, Palgrave). She has published in many international journals such as *Journal of European Social Policy*, *Comparative European Politics, South European Society and Politics, and European Journal of Women Studies*

Research interests

Over the past years I have carried out research in a number of interelated fields within comparative public policy. My main research interests are welfare state reform, changes in the Sourthern European welfare state, work-life balance and care policies. My most recent research evolves around the Social Investment paradigm for social policies. *investing in children: politics, policies and outcomes (*ECECWEL) is an ongoing research project funded by the Spanish Research & Development programme that looks at the political conditions under which the development of the Social Investment paradigm takes place unveiling tensions and contradictions among different political actors and the differing mobilization capacity and public opinion support.

Keywords

Comparative public policy, welfare state research, social policy, gender policy, political systems

ICREA MEMOIR 2018

Eduard Llobet Valero
Universitat Rovira i Virgili (URV)
Engineering Sciences
ICREA Academia 2012 & 2018

I got a PhD from the UPC (1997) and then completed a one-year postdoc at the University of Warwick (UK). Since 2006, I have been the Head of the MINOS Research Group at Universitat Rovira i Virgili, working on nanomaterials and microsystems for gas sensing. In 2009 I became full Professor. From 2010 to 2014 I was the Director of the Centre for Research in Materials Engineering and Micro / Nano Systems, a centre that brings together researchers in physics, chemistry, materials, nanoscience and microsystems. I am President of the Spanish Network of Microsystems and Nanotechnology (IBERNAM) and vice-president of the IEEE Spanish Sensor Chapter. I have co-authored 200 peer-reviewed journal papers, given 30 invited lectures at international conferences and lead over 30 regional, national and international projects. Have been invited regularly to conduct research in France and Japan. Founder of the spinoff Green Smart Data. In 2012 I received the URV's RQR and ICREA Academia awards.

Research interests

Growth of single crystalline metal oxide nanomaterials employing bottom-up approaches. Specifically, self-catalysed growth of n-type semiconductor nanowires or nanorods onto ceramic, silicon, silicon MEMS or polymeric substrates. Nanowires can be grown and loaded with p-type nanoparticles, achieving functional nanomaterials with heterojunctions at the nanoscale, with superior performance for gas sensing. Gaining insight in the surface chemistry, nature of defects and the specific mechanisms of interaction with target gases, unveiling gas-sensing mechanisms and structure-performance relationships. Functionalisation of carbon nanomaterials employing cold plasmas, for grafting metal nanoparticles or complex molecules, achieving highly sensitive and selective sensors. More recently, working towards the realization of nanomaterial-based flexible gas sensors and sensor systems with a performance that matches the one of conventional rigid devices.

Keywords

gas sensor microsystems; carbon nanomaterials, mwetal oxide naowires; nanoporous alumina; signal processing

ICREA MEMOIR 2018

Jordi Llorca
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2009 & 2014

Born in Barcelona in 1966, Jordi Llorca earned his PhD in Chemistry at the University of Barcelona, where he was later appointed Associate Professor and Ramón y Cajal Fellow. In 2005 he joined the Technical University of Catalonia (UPC) and in 2014 he became Full Professor as Serra Húnter Fellow. He has conducted research at the Univ. New Mexico (US) and CNRS and has been Invited Scholar at the Univ. Udine, Univ. Auckland and CONICET. He received the Distinction of Generalitat de Catalunya to the Promotion of the University Research in 2003, the Humbert Torres Prize in 2003 and the ICREA Academia in 2009 and in 2014. He has been Director of the Institute of Energy Technologies, Director of the Centre for Research in NanoEngineering and, now, he is Director of the Barcelona Research Center in Multiscale Science and Engineering. He has published over 300 scholarly articles and authored 12 patents. He is Academician of the Institute for Catalan Studies, Section of Science and Technology.

Research interests

Prof. Jordi Llorca is working on the design and manufacture of new devices at the nanoscale for conducting chemical reactions aimed at the generation, purification and separation of hydrogen for portable fuel cells as well as other processes related to energy and environmental applications. He is interested on the development of a new generation of highly efficient catalysts based on surface science studies as well as “in situ” and “operando” spectroscopy and microscopy at the atomic level addressed to unravel the catalytic active sites. He is involved in the design and manufacture of fuel reformers and catalytic membrane reactors for practical use and in the development of novel microreaction engineering concepts. Another research line conducted by Prof. Jordi Llorca is the direct production of hydrogen from water and sunlight at room temperature, which includes the synthesis and study of novel photocatalysts with semiconductors, metal nanoparticles and photonic crystals.

Keywords

Catalysis, Hydrogen, Microreactors, Fuel Cells

ICREA MEMOIR 2018

Antonio M. López Peña
Universitat Autònoma de Barcelona (UAB)
Engineering Sciences
ICREA Academia 2018

Antonio M. López Peña is Associate Professor (Tenure) at the *Computer Science Dpt.* of the *Universitat Autònoma de Barcelona* (UAB), where he teaches since 1992, and where he received his PhD degree in 2000. In 2003, Antonio founded the group on *Assisted/Autonomous Driving* at the *Computer Vision Center* (CVC) of the UAB, which is a SGR consolidated group with him as Principal Investigator. Antonio participated in the foundation of the CVC itself, where he has held different responsibilities.

Antonio has a long trajectory carrying research at the intersection of Computer Vision, Machine Learning, Simulation and Assisted/Autonomous Driving. Antonio has been deeply involved in the creation of the SYNTHIA dataset and the CARLA open-source simulator. He has lead numerous competitive and industry research projects for more than 20 years.

Research interests

In the context of ***deep learning for perception-based autonomous driving***, Antonio is focusing on several topics of high interest:

1. Modular and end-to-end paradigms for developing AI drivers.
2. Domain adaptation and augmented reality to develop AI drivers in simulation for their posterior deployment in the real world.
3. Anomaly detection, lifelong learning, and active learning for developing adaptable AI drivers.
4. Intention recognition of vulnerable road users (pedestrians and cyclists).
5. Multimodal perception for developing AI drivers.

Publications can be seen in my Google Scholar.

Keywords

Autonomous Driving, Simulation, Multimodal Perception, Domain Adaptation, Deep Learning.

ICREA MEMOIR 2018

Cristina López-Rodríguez
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2014

Cristina López-Rodríguez is Professor at Universitat Pompeu Fabra (UPF), where she directs her research group at the Immunology Unit (https://www.upf.edu/web/genimmune) and also coordinates the Master in Biomedical Research. Cristina obtained her PhD in Biochemistry and Molecular Biology at Universidad Autónoma de Madrid in 1996 with the distinction of the Extraordinary Thesis award. She did her postdoctoral training at Harvard Medical School, Boston, where she got the position of Instructor in the department of Pathology (2001), and received the Leukemia and Lymphoma Society Research Special Fellow recognition. In 2004 she obtained a Ramon y Cajal and a Group Leader position at the Center for Genomic Regulation in Barcelona, and in 2006 she transferred her group to the department of Experimental and Health Sciences (DCEXS) of UPF at the Barcelona Biomedical Research Park (PRBB).

Research interests

Our group is interested in the connection between inflammation and disease. Briefly, how pro- and anti-inflammatory immune responses are balanced to benefit the organism, and how disrupting this balance contributes to conditions such as loss of pathogen control, the progression of cancer, and transplant rejection. We approach this question by focusing on the identification of mechanisms regulating gene expression and chromatin configuration that now emerge as novel points of control of the inflammatory response.

Keywords

Immune responses, innate immunity, inflammation, mouse models of disease, gene expression, chromatin regulation, NFAT5

ICREA MEMOIR 2018

Angel Lozano
Universitat Pompeu Fabra (UPF)
Engineering Sciences
ICREA Academia 2010 & 2015

Angel Lozano received his Ph.D. from Stanford University (USA) in 1998 and was with Bell Labs (USA) between 1999 and 2008. From 2005 to 2008 he was also an Adj. Associate Professor at Columbia University (USA). Prof. Lozano is a Fellow of the IEEE. He holds 15 patents and his papers have received various awards including the Stephen O. Rice prize in 2008, the Fred W. Ellersick prize in 2016, and the IEEE Communications Society & Information Theory Society joint paper award also in 2016. He is the recepient of an ERC Advanced Grant for the period 2017-2021 and a 2017 Highly Cited author. He has held visiting appointments at the University of Texas at Austin (USA), Imperial College (UK), the Hebrew University of Jerusalem (Israel), the University of Minnesota (USA), Southeast University (China) the University of Edinburgh (UK), the University of Toronto (Canada), and New York University (USA).

Research interests

Prof. Lozano's research activity is broadly centered on the field of wireless communications, spanning disciplines such as information theory, digital data transmission, signal processing, stochastic geometry and estimation. The main objective of his work is to improve the performance of wireless networks so as to increase the quantity of information that can be communicated reliably while consuming the least amount of resources (chiefly bandwidth and power) and with the least amount of complexity, which is a proxy for cost. Currently, he is looking into designs for wireless networks beyond the 5th generation.

Keywords

Wireless Communications, Wireless Networks, Information Theory, Digital Communication

ICREA MEMOIR 2018

Rafael Maldonado
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2008 & 2015

Rafael Maldonado received his Medical Degree (1985) from the University of Cadiz (Spain), where he also obtained a PhD in Neuropsychopharmacology (1988) on the study of morphine dependence. He obtained a PhD in Molecular Pharmacochemistry (1990) at the INSERM U266-University René Descartes Paris V (France) on the study of the endogenous opioid system. He was a postdoctoral fellow (1990-1991) at the Scripps Research Institute (La Jolla, USA), directed by Prof. George F. Koob, where he studied opioid and cocaine dependence. He returned to the laboratory of Molecular Pharmacochemistry (INSERM U266), directed by Prof. Bernard P. Roques in Paris, and he obtained a permanent position as Scientific Researcher (CR-1) in the INSERM (1992) and lead a team devoted to the study of the cannabinoid and opioid systems. In 2000 he obtained a permanent position as Professor of Pharmacology at the University Pompeu Fabra (Barcelona), where he is director of the Laboratory of Neuropharmacology.

Research interests

Dr. Maldonado carried out research for eleven years in France and the USA and, since 2000, as Professor of Pharmacology at the University Pompeu Fabra (Barcelona, Spain), where he founded the Laboratory of Neuropharmacology, now with 38 people under his direction. His research is focused in the study of the neurochemical basis of drug dependence and related disorders, including affective, pain and eating disorders, aiming at the development of novel behavioural models. He has over 286 scientific articles in international journals (H-index 60) and has been Principal Investigator for 30 years of research grants funded by the main Spanish, European and USA agencies. He is also reviewer/member of the Editorial Board of several scientific journals, and has collaborated with public authorities and private companies in the research policy and pharmaceuticals development on novel treatments for drug abuse, metabolic disorders and pain. He is member of the French Academy of Pharmacy.

Keywords

Drug addiction, affective disorders, neuropathic pain, neuropharmacology and psychopharmacology

ICREA MEMOIR 2018

Josep Marco-Pallarés
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2018

I graduated in Physics (2000) and Psychology (2010) and obtained my PhD in Neurosciences from the University of Barcelona in 2005. After three years of post-doctoral stay in the Otto von Guericke Universität of Magdeburg (Germany), I was awarded with a “Ramón y Cajal” contract and joined first the Bellvitge Biomedial Institute (IDIBELL) and then the Department of Cognition, Development and Educational Psychology of the Faculty of Psychology at the University of Barcelona. From 2013 I am Associate Professor at this department and researcher at the Institute of Neurosciences of the UB. I have published over 70 manuscripts in international journals with more than 3500 citation and I have been the Principal Investigator of different research projects.

Research interests

My research work is aimed at achieving a better understanding of the human reward system. In concrete, I am interested in studying brain oscillations, as they are the key mechanism responsible for the coordination of the different areas of the fronto-striatal reward network. By combining functional Magnetic Resonance Magnetic Imaging, Electroencephalography and reinforcement learning computational models, our group has been able to describe the functional role of oscillatory mechanisms in reward processing, with special interest in the study of different types of pleasurable stimuli. In particular, I am interested in the study the neural mechanisms underlying musical pleasure and individual differences in musical reward processing, including the study of people with specific musical anhedonia.

Keywords

reward processing, oscillatory activity, music

ICREA MEMOIR 2018

Lluís Marsal
Universitat Rovira i Virgili (URV)
Engineering Sciences
ICREA Academia 2014

Lluís F. Marsal (Tarragona, 1968) is Full Professor at the Departament d'Enginyeria Electrònica of the Universitat Rovira I Virgili. He obtained his PhD degree in physics in 1997 from the Universitat Politècnica de Catalunya. Between 1998 and 1999, he was postdoctoral researcher at the University of Waterloo, Canada. He is a senior member of the IEEE and of the OSA. He is the chair of Spain Chapter of the IEEE Electron Devices Society (EDS) and a Distinguished Lecturer of the EDS-IEEE. In 2012, he received the URV's RQR Award for quality in research and he is a recipient of the 2014 UniSA Distinguished Researcher Award from the University of South Australia. In 2017, he was made a distinguished professor by Universitat Rovira i Virgili. He has been visiting professor at several research institutions. He has authored more than 220 publications in international refereed journals and conferences, 2 books, 5 book chapters and holds two patents.

Research interests

His current research interests mainly focus on technologies based on micro- and nanoporous silicon and nanoporous alumina for biomedical and green energy applications. The structural engineering of porous alumina and silicon and its surface and interface functionalization in the micro-nanoscale regime allow to development of ultrasensitive and selective optical biosensing platforms, novel engineered drug delivery systems and micro-nano-engineered cellular microenvironments for 3D cell cultures and tissue engineering. He is also interested in the fabrication, characterization, and modeling of organic and hybrid nanostructured materials to enhance light-matter interactions and electro-optical properties in photonic and optoelectronic devices such as photovoltaic solar cells, detectors, and sensors.

Keywords

Nanoporous, Biosensors, Nanotechnology, Nanophotonics, Energy

ICREA MEMOIR 2018

Tere M-Seara
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2018

Tere M-Seara (PhD. Mathematics, U. Barcelona, 1991) is full professor at the Dpt. de matemàtiques of the Universitat Politècnica de Catalunya. She is the leader of the UPC Dynamical Systems group, formed by more than 20 researchers (https://dynamicalsystems.upc.edu/en) working on theoretical and computer aspects of finite and infinite Dynamical Systems, with focus on Celestial Mechanics and mathematical Neuroscience. She has supervised 9 PhD. students. In 2015, she received the first Barcelona Dynamical Systems Prize and in the fall of 2018 she hold an Eisenbud Professorship (Simons Foundation) at MSRI (U. Berkeley).

She belongs to the editorial board of Nonlinearity, SIADS, NOdea; SEMA-SIMAI Springer series and has published about 60 papers including articles in the journals: Adv. Math., Comm. Math. Phys, Comm. Pure and Applied Math., Inventiones Mathematicae, J. of Differential Equations, J. of Nonlinear Science, Memoirs of the A.M.S.

Research interests

Tere M-Seara works in Dynamical Systems, in analytical tools to study their global dynamics. She has stability results: conditions to guarantee that the orbits remain in some compact set, but mainly instability ones also known as Arnold diffusion.

Her works developed two tools which have been widely used in the area of Arnold Diffusion: the study of normally hyperbolic invariant manifolds and the theory of the “scatering map”.

She also works in a rigourous approach to singular perturbation theory: developing methods which allow to measure exponentially small phenomena which are relevant in the study of the global dynamics of a system like the exponentially small splitting of separatrices, one of the main phenomena producing chaos.

She has one of the few results proving the existence of Oscillatory Motions in several models of Celestial Mechanics.

Keywords

Dynamical Systems, Singular Pertubation Theory, Exponentially Small Phenomena, Invariant Manifolds, Arnold diffusion, Celestial mechanics, Nonsmooth Systems

ICREA MEMOIR 2018

Jordi Martínez Vilalta
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics
ICREA Academia 2014

Jordi Martínez Vilalta is Senior Lecturer (Professor Agregat) at the Autonomous University of Barcelona (UAB) and researcher at the Center for Ecological Research and Forestry Applications (CREAF). He graduated in Environmental Sciences at UAB in 1997 and obtained his PhD (2001) at the same university. He moved to the University of Edinburgh (UK) as a postdoctoral researcher and became an Honorary Research Fellow at this university in 2005. He has coauthored more than 100 publications in peer reviewed international journals and two books ('Ecología con números' (2006), a textbook; and 'Un planeta a la deriva' (2011), a popular science book). He obtained a favorable assessment from the Program I3 (Spanish Ministry of Science and Education) in 2009 and received an ICREA Academia in 2014.

Research interests

His main area of research is forest functional ecology, at the interface between biology and Earth sciences. His work combines different approaches (observational, experimental, modelling) and scales (from individual organisms to global) to study forest function and dynamics in response to drought and other environmental stress factors. In particular, his current research aims at (1) understanding fundamental aspects of the water and carbon economy of plants; and (2) producing a set of usable criteria to determine what forests are more vulnerable under different climate change scenarios and how the ecosystem services they provide to society are likely to be impacted.

Keywords

Drought, forest ecology, functional traits, global change, long-distance transport in plants

ICREA MEMOIR 2018

Ferran Martín
Universitat Autònoma de Barcelona (UAB)
Engineering Sciences
ICREA Academia 2008, 2013 & 2018

Ferran Martín received the B.S. Degree in Physics from the Universitat Autònoma de Barcelona (UAB) in 1988 and the PhD degree in 1992. Since 2007 he is Full Professor of Electronics. He is the head of the Microwave Engineering, Metamaterials and Antennas Group at UAB, and Director of CIMITEC, a research Center ascribed to UAB and focused on Technology transfer to Industry on the basis of Metamaterials and related concepts. He has authored and co-authored over 550 technical conference, letter and journal papers, and he is author or co-author of three books for John Wiley. He has generated 19 PhDs, among them 10 awarded the Extraordinary PhD Prize. Among his honors, he has been the recipient of the 2006 Duran Farell Prize for Technological Research, a Parc de Recerca UAB/Santander Technology Transfer Chair (2009), and the Icrea Academia Prize in 3 occasions (calls 2008, 2013 and 2018). He is Fellow of the IEEE since 2012 and Fellow of the IET since 2016.

Research interests

The research activity is focused on three main areas: (i) the application of metamaterials and related concepts to the optimization and miniaturization of RF/microwave components and communication systems; (ii) the design and implementation of novel sensors based on symmetry properties for motion control, dielectric characterization and biosensors; and (iii) the design of chipless radiofrequency identification (chipless-RFID) systems and sensors with unprecedented data capacity. This research activity has impact in several fields within Information and Communication Technologies (ICT), Internet of things (IoT), Security, Space, industry 4.0, etc.

Keywords

Metamaterials, Microwave Engineering, Wireless Communications, Radiofrequency Identification (RFID), Microwave Sensors

ICREA MEMOIR 2018

Jordi Martorell
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2016

Jordi Martorell received a PhD degree in Physics from Brown University (USA) in 1990 and he performed postdoctoral studies at New York University. He became a UPC professor in 1999 and since 2005 he is also head of the organic nano-structured photovoltaics group at ICFO. Jordi Martorell has mainly focused his research into the experimental study of new photonic concepts to shape the properties of optical materials, a field where he has made several key contributions: To control spontaneous emission in photonic crystals, to demonstrate phase matched non-linear light generation in centro-symmetric materials, and more recently to achieve second harmonic light generation from an extremely low number of molecules. In 2011 Jordi Martorell took a major turn in his research activities and focused the core of his activity to study fundamental aspects of photonics applied to thin film photovoltaics.

Research interests

Current research considers light management for an optimal solar energy harvesting, storage and use. Among the different areas being covered are: semi-transparent single junction solar cells using photonic strucutres to achieve world record performances, the study of alterantive trapping configurations by designing new cavity concepts capable to confine electromagnetic energy, as for instance, in non-harmonic but resonant cavity modes or in chaotic whispering gallery modes, the study of fundamental aspects in light-matter interaction as controlling the radiative recombination by the solar cell architecture to push the limits of photovoltaic efficiency, and the use of graphene for a direct storage of hydrogen atoms obtained from water splitting.

Keywords

photonics, organic, photovoltaic, solar, nanotechnology, nanophotonics

ICREA MEMOIR 2018

Cristina Masoller
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2009 & 2015

Cristina Masoller (1963, Montevideo, Uruguay) is Associated Professor in the group of Nonlinear Dynamics, Nonlinear Optics and Lasers at Universitat Politecnica de Catalunya. She received the bachelor and MSc degrees in physics from Universidad de la República, Uruguay and the PhD degree in physics (1999) from Bryn Mawr College, USA. She has more than 20 years of research and teaching experience. She has published more than 130 articles and has supervised 7 PhD thesis. In 2015 Dr. Masoller was elected Fellow of the Optical Society (OSA), the leading professional society in optics and photonics. She was recognized for contributions in the area of nonlinear dynamics of optical systems.

Research interests

Dr. Masoller's research is focused in dynamical complex systems. A main research line is in nonlinear photonics, in particular, in the dynamics of semiconductor lasers (delay-induced phenomena, extreme optical pulses, optical rogues, photonic neurons). She is also interested in big data analysis tools for the study of complex systems (symbolic analysis, complex networks). Specific interests include novel methods for the analysis of climatological data (climate networks) and complexity measures for the classification and characterization of complex images.

Keywords

Nonlinear photonics, semiconductor lasers, complex systems, nonlinear dynamics, data analysis, nonlinear time-series analysis, complex networks, extreme events

ICREA MEMOIR 2018

Maria Mataró Serrat
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2018

Maria Mataro is a professor at the department of Clinical Psychology and Psychobiology at the University of Barcelona. She obtained her PhD in Psychology in 1995 at the University of Barcelona. After some years of clinical and research work as a postdoctoral researcher in Neuropsychology, she got a tenure position at the faculty of Psychology at the University of Barcelona in 2005. She was a visiting professor at the New York University Langone Medical Center in 2013 and at the University of Pittsburgh in 2015 and in 2017 as a Fulbright visiting scholar. She has published 3 books and over 50 manuscripts in International journals. She has been principal investigator of 4 consecutive projects funded by the National plan and participated in 2 European projects.

Research interests

Her research interest focus in healthy aging and cerebrovascular disease. Her study of the neurobiological bases of the cognitive deficits associated with vascular risk factors has contributed to the identification of cognitive-related cerebrovascular markers that might be critical in the early detection of individuals at high risk of cognitive decline. These include neuroimaging, sonographic and blood markers.

The need for prevention and treatment of brain and cognitive decline associated with normal aging and disease led to the development of her current research projects. They aim to provide new evidence of the impact and effectiveness of neuroprotective non-pharmacological interventions -physical exercise, cognitive training and mindfulness-, to understand their molecular and neural mechanisms and to promote the development of novel strategies in the field of neurorehabilitation.

Keywords

Neuropsychology, neuroimaging, neuroplasticity, aging, cerebrovascular disease, physical activity

ICREA MEMOIR 2018

Joaquim Matias Espona
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics
ICREA Academia 2018

Joaquim Matias Espona (Barcelona,1967) is Full Professor at Universitat Autònoma de Barcelona since 2018. He is currently the Head of the TH-Division at UAB and IFAE. He obtained his PhD in Theoretical Physics in 1995 at UB. He spent five years as postdoctoral researcher at Dipartimento di Fisica Galileo Galilei di Padova (1995-1997), SISSA (1997), TH-Division at CERN (1997-1999) under a Marie Curie fellowship and ITP (Aachen) under a BatIIa (2000). He was also awarded a Ramón y Cajal, an I3 and an Explora Project. He has been appointed by EC as an Expert for the Research European Agency since +10 years (from 7th Framework to Horizon 2020) and also by SNSF (Switzerland), UK Research Council, ANR (France), FWF (Austria) and ANEP. He is Scientific Guarantor of IFAE's Severo Ochoa, author of 84 publications with h=36 and an average of +150 citations/published paper since 2013. He gave +100 talks, organized 8 conferences and published outreach at IyC and Inference Magazine.

Research interests

Uncovering the first properties of the fundamental theory that will supersede the SM of particles constitutes the main goal of his research. He has been a main contributor to the highly successful Flavour Physics program, a field at the forefront of particle physics in the search for New Physics. He is interested in testing the Flavour Precision Frontier that gives us access to energy scales not accessible to direct probes. His research on rare B meson decays is contributing to an exceptionally exciting period concerning what is called "flavor anomalies". The outcome of his work has pointed out some of the most promising evidences of New Physics found at LHC up to now. Intensive theoretical and experimental work is ongoing to confirm/disprove these indications. He is focused on exploring the limits of the SM to answer the questions left open by this theory using the forthcoming results of the LHCb and Belle II experiments and those of the high-luminosity phase at LHC.

Keywords

Theoretical Particle Physics, Flavour Physics, Rare B decays, New Physics.

ICREA MEMOIR 2018

Louise McNally
Universitat Pompeu Fabra (UPF)
Humanities
ICREA Academia 2008, 2013 & 2018

Louise McNally holds a BA in Modern Languages and Linguistics from the University of Delaware (1987) and a PhD in Linguistics (1992) from the University of California, Santa Cruz. She taught at Indiana University, The Ohio State University and the University of California, San Diego before joining Universitat Pompeu Fabra (Barcelona) in 1995, where she is currently Professor of Linguistics in the Department of Translation and Language Sciences and a member of the Formal Linguistics Group (GLiF). She was awarded an Alexander von Humboldt-J.C. Mutis Research Award in 2017. She is associate editor of the journal 'Semantics and Pragmatics', co-editor of Springer's 'Studies in Linguistics and Philosophy' series and on the Advisory Board for the Oxford Research Encyclopedia of Linguistics. She has served on the Electorate Nominating Committee for the Linguistics and Language Science Section of the AAAS (2016-2019) and on European Research Council Starting Grant and Synergy panels.

Research interests

My research is concerned with how we convey meaning through language. A successful theory of meaning should account for our ability to construct and interpret an infinite variety of complex utterances; it should also explain how we integrate general conceptual knowledge, information related to the specific individuals and situations we refer to, and information about the structure of the discourses in which we participate. My goal is to develop a general theory of meaning that makes testable predictions about the similarities and differences between languages, about human language processing and acquisition, and about language change; one that, eventually, might be computationally implemented. Traditionally, theories of meaning have differed according to whether they take language to signify something to the world, versus some sort of conceptual representation. The model I am developing differs from previous models its explicit integration of these two approaches to meaning.

Keywords

linguistics, semantics, pragmatics, computational semantics

ICREA MEMOIR 2018

Eva Miranda
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2016

Eva Miranda (Ph.D. in Mathematics, UB, 2003) is a Full professor at Universitat Politècnica de Catalunya, chercheur afflilié at Observatoire de Paris, Doctor vinculado at ICMAT-CSIC and member of the BGSMath. As a postdoc, she was a recipient of a Marie Curie EIF contract (U- de Toulouse) and a Juan de la Cierva contract (UAB). She has been invited professor at U. de Toulouse, MIT, U. de Paris 6 and 7, Observatoire de Paris and MSRI. She is the director of the Lab of Geometry and Dynamical Systems. Miranda has published over 40 papers including articles at Annales Scientifiques de l'École Normale Supérieure, Advances in Mathematics, Journal de Mathématiques Pures et Appliquées, Communications in Mathematical Physics and IMRN. She has supervised several Ph.D. theses and postdocs and has been plenary speaker in the top workshops in her field. In 2017 she was awarded a Chaire d'Excellence of the Fondation Sciences Mathématiques de Paris. She has been selected as speaker for the 8ECM.

Research interests

Miranda's research is at the crossroads of Differential Geometry, Mathematical Physics and Dynamical Systems focusing in Symplectic and Poisson Geometry. She works with objects appearing on the interface of Geometry and Physics such as integrable systems and group actions acquainting for symmetries of the systems. She is particularly interested in building bridges between different areas such as Geometry, Dynamical Systems, Mathematical Physics and, more recently, Fluid Dynamics.

In 2009 together with Guillemin (MIT) she started the study of a class of Poisson manifolds called "b-Poisson" which model some classical problems in Celestial Mechanics such as the 3-body problem. Miranda aims at contributing to long-standing problems for these classical systems by combining techniques from different sources such as Symplectic Topology, Dynamics and Poisson Geometry.

Keywords

Differential Geometry, Symplectic Geometry, Poisson Geometry, Hamiltonian Dynamics, integrable systems, moment maps, singularities, normal forms

ICREA MEMOIR 2018

Rubén Moreno Bote
Universitat Pompeu Fabra (UPF)
Humanities
ICREA Academia 2016

Dr Rubén Moreno-Bote is one of the leading scientists in population coding and neuronal dynamics approaches to brain functions. His theoretical and experimental work investigating the neural basis of decision making during ambiguous conditions.

In 2010, he obtained a Ramon y Cajal Award in Psychology to become a scientific independent leader at the Foundation Sant Joan de Deu, where in 2011 he became the head of the Theoretical and Cognitive Neuroscience group. Currently, Dr Moreno-Bote is a Serra Hunter Professor at the Center for Brain and Cognition (CBC) and the Dept. of Communication and Information Technologies in the University Pompeu Fabra in Barcelona.

The laboratory of Dr Moreno-Bote has very recently published in the two top journals of neuroscience, namely, Nature Neuroscience (2014) and Neuron (2016), in the topic of decoding large neuronal populations.

Research interests

The brain consists of 100 billion neurons that work together within intricate networks. The coordination of these neuronal networks ultimately leads to our perception of the world, reasoning and consciousness. Despite great progress, our current understanding of the brain is still very primitive. For instance, it is not well understood how information is represented in sensory cortex, and how this information is read out to form decisions, arguably the most basic brain computations.

In the Theoretical and Cognitive Neuroscience group, we study the link between neuronal activity and perception. How is sensory information represented in neuronal activity? How is this information read out by downstream neurons to form a perceptual decision or make a choice?

Keywords

cognition, visual perception, decision-making, neuroscience, neuronal networks, behavior

ICREA MEMOIR 2018

Rosina Moreno Serrano
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2014

Rosina Moreno is Professor of Applied Economics at the University of Barcelona. She was a visiting professor at the Regional Research Institute at West Virginia University, the Bruton Center for Development Studies at the University of Texas at Dallas as well as at the research center CRENOS in Sardinia. Her teaching areas are Econometrics and her current research interests focus on the main determinants of economic growth at the regional level. The results of her research have been published in both national and international journals as well as books and book chapters in prestigious publishers. She has also participated in several projects funded by the R&D National Plan continuously since 1999 and in three European projects (a H2020 project, two Framework Programmes and an ESPON), in most cases as leader of a workpackage. She has given seminars in many Spanish and foreign universities as well as several Masters and PhD courses on the topic of Spatial Econometrics.

Research interests

Rosina Moreno has developed her scientific career in the field of spatial economics and more specifically, regional economics. From an empirical perspective, she has essentially made contributions in the field of regional economic growth and development. Within this field, she has paid attention to the study of regional disparities in key economic variables (such as productivity and innovation) and the role played by public, human and technological capital, the latter being the main research line at present. She has also made contributions to the study of the inter-regional and external impact of these effects through the use of the techniques given by Spatial Econometrics. She has combined the evidence obtained through empirical exercises exploiting the information in the regional aggregate data with that obtained through microdata at the firm level.

Keywords

Regional Economics, Applied Economics, Knowledge, Externalities, Spatial Econometrics

ICREA MEMOIR 2018

Sergi Munné-Bosch
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2008 & 2014

Sergi Munné-Bosch (ICREA Academia Prize 2008 and 2014) was born in Barcelona, Spain, 1974. He received the Biology and PhD degrees at the University of Barcelona, during 1996 and 1999, respectively. He has performed several stays abroad, including the University of Hannover and University of Kiel (Germany), University of Fukuyama (Japan), Montana State University and University of Virginia (USA). Since 2003, he is a Professor of Plant Physiology at the University of Barcelona. During 2000 and 2003, he was a recipient of the Plant Water Relations and Plant Physiology Awards, respectively, given by the Spanish Society of Plant Physiologists. He is an author of more than 170 articles in scientific journals, 16 book chapters and has edited 2 books. He is currently editor-in-chief of the journal Environmental and Experimental Botany (Elsevier) and is leading several research projects, including both basic and applied aspects of plant biology.

Research interests

We are mainly interested in the study of the function of tocopherols and tocotrienols (vitamin E) in plants, including studies on the role of these compounds in plant stress tolerance, leaf and flower senescence, whole-plant senescence and seed aging. We are also interested in the study of other low-molecular-weight antioxidants, including ascorbic acid (vitamin C), carotenoids, flavonoids and phenolic diterpenes. Also, we aim at better understanding plant responses to water and oxidative stresses, as well as the mechanisms underlying stress memory in plants. Furthermore, we investigate the physiological consequences of sexual dimorphism in plants, and the photoprotective and antioxidant capacity of invasive plants relative to native ones in Mediterranean-type ecosystems. Finally, we study hormonal, redox and stress signaling, with an emphasis on linking vitamin E with ethylene and jasmonate signaling.

Keywords

Antioxidants, Mediterranean plants, redox regulation, senescence, stress responses

ICREA MEMOIR 2018

Roser Nadal Alemany
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2014

Roser Nadal is an Associate Professor at the Department of Psychobiology at the Univ. Autònoma de Barcelona. She obtained her PhD in Psychology in 1992 at the UAB, completed postdoctoral stays in 1996-1997 at Wake Forest University (NC, USA) and got a tenure position in 1998. In 2000 she was Visiting Scholar at the University of California in San Francisco, in 2010 at the University of Colorado at Boulder and in 2013 at the British Columbia University. She has coauthored more than 70 publications. She was Vicedirector of the "Institut de Neurociències" of the UAB between 2010-16. She has been involved in a large number of outreach projects to disseminate public knowledge of Behavioral Neuroscience. She has been collaborating with several national and international funding agencies and scientific journals. She has contributed to the formation of several researchers, supervising 11 PhD theses, and without those students and other collaborators this award would not be possible.

Research interests

She has been studying in animal models: (1) the effects of acute and chronic exposure to stressors as putative animal models of post-traumatic stress disorders, and (2) the long-term effects of early stress (infantile and adolescent) on vulnerability to psychophatology (depression, anxiety, impulsivity and drug addiction) and their intergenerational transmission. The ultimate goal of her research is to understand the factors that confer resilience or vulnerability to stress and the gender-related differences in those factors. Once identified individual differences related to resilience to the negative effects of stress it will be possible to find markers that may be used to identify populations at risk or "protected populations".

Keywords

Animal behaviour, stress, individual differences, anxiety, early experiences

ICREA MEMOIR 2018

Susana Narotzky
Universitat de Barcelona (UB)
Humanities
ICREA Academia 2010 & 2016

Professor of Social Anthropology at the University of Barcelona (UB). She studied at the UB and at the New School for Social Research in New York, and obtained a MA degree in 1984 and a PhD in 1989. She has received among others a Woodrow Wilson Foundation Fellowship and the Rockefeller Foundation Fellowship for Collaborative Research. She was a member of the Advisory Council of the Wenner-Gren Foundation for Anthropological Research (New York) and is past President of the European Association of Social Anthropology (EASA) and past Secretary and Officer of the American Association of Anthropology. She has been invited as Fellow to the Insitute for Advanced Studies, Princeton (2019-2020). She was a Fellow of the Amsterdam Institute for Social Science Research (2014-2016) and was invited professor at the Labex TransferS, Paris, and Hallsworth Visiting Professor, at the University of Manchester (2016). She is co-editor of the European Journal of Sociology.

Research interests

Her most recent project “Grassroots Economics: Meaning, Project and practice in the pursuit of livelihood” [GRECO] was awarded a European Research Council Advanced Grant to study the effects of austerity on Southern European livelihoods (2013-2018). A previous project “Addressing the Multiple Aspects of Sustainability: Policy Programs and Livelihood Projects”, funded by the Ministerio de Economía y Competitividad (2012-15), addressed conflicts emerging around economic, social and environmental crises. As scientific coordinator of a 7FP EU project “Models and their Effects on Development paths” [MEDEA] (2009-12) she explored the impact on ordinary livelihoods of industrial restructuring resulting in two edited volumes published by Routledge. Her present project addresses valuations of life in the globalized economy paying attention to aspects such as taxation worth. Her work is inspired by theories of critical political economy, moral economies, feminist economics, and value regimes.

Keywords

Economic Anthropology, Informal Economy, Gender relations, Social Reproduction, Crisis

ICREA MEMOIR 2018

Sergio Nasarre Aznar
Universitat Rovira i Virgili (URV)
Social & Behavioural Sciences
ICREA Academia 2015

Full Professor of Civil Law and Director of the UNESCO Housing Chair at the University Rovira i Virgili (Spain). European Doctor in Law and M.Phil. in Land Economy of the University of Cambridge. ICREA Fellowship to excellence of research 2016-2020. Consultant of the EU Commission, the Catalan Parliament and Government, Amnesty International, FAO and the Association of German Pfandbrief Banks and since 2018, advisor to the German Ministry of the Interior, Construction and Community for the implementation of housing policies in Europe in its European Presidency in 2020. He has been Deputy Judge in the Court of Appeal of Tarragona for 15 years (2004-2018). He is the author of four books and has edited nine more. He has published 95 research papers and book chapters and has delivered over 170 invited speeches in 15 countries. He has taken part in drafting five laws related to housing. He has been main researcher or taken part in more than 40 national and international research projects.

Research interests

My main field of interest is the analysis of housing as a complex and multidisciplinary field of research, covering its whole spectrum, from homelessness until mortgages. Taking as central problem the access to housing, I address several factors that affect it, such as the types of tenures (full ownership, tenancies, intermediate tenures, collaborative), their funding (mortgage lending, eurohypothec, consumer protection against reckless lending and complex financial products), lenders' refinancing mechanisms (covered bonds and securitization), housing and technology, cross-border acquisition of land and housing loss and its consequences (evictions and homelessness). To get the full picture, I have started up the first international and interdisciplinary UNESCO Housing Chair in the world. This holistic approach to housing has facilitated my engagement in the elaboration of several pieces of legislation and my participation in and leadership of several international research projects.

Keywords

housing, mortgage, tenancies, intermediate tenures, evictions, collaborative housing, blockchain

ICREA MEMOIR 2018

Agustí Nieto-Galan
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2009 & 2018

Agustí Nieto-Galan is Full Professor of History of Science at the Universitat Autònoma de Barcelona (UAB), and ICREA Acadèmia Fellow (2009 & 2018). Following degrees in both chemistry (URL) and history (UB), he took his PhD in the History of Science at the Universitat de Barcelona (UB) and held postdoctoral positions in the Modern History Faculty, University of Oxford, and the Centre de Recherche en Histoire des Sciences et des Techniques at the Cité des Sciences et de l'Industrie/ CNRS, Paris. He has written widely on the history of chemistry and natural dyestuffs, and the history of the popularization of science (18th-20th centuries). He is a founding member of the international research group "Science and Technology in the European Periphery" (STEP), and former Director of the Centre d'Història de la Ciència (CEHIC) at the UAB

Research interests

Dr. Nieto-Galan focuses now on urban history of science, as a way to explore the complex interactions between science and the city in several cultural contexts. In that "urban" context, he also develops the "hunger artists' project", as a new research field on cultural history of science at a European level.

He also works on a new history of chemistry in twentieth-century Spain, with a particular emphasis on professional chemists' role during Franco's dictatorship and the coproduction of science and power in different political regimes.

In his new project, "Chemopolis" he plans to develop a new environmental history of chemistry in the twentieth century, which embraces the construction of risk, toxicity, and pollution, and the perception of technological progress in the public sphere.

Keywords

History of Science, Cultural History of Chemistry, Science Popularization, Urban History of Science, Science and Power

ICREA MEMOIR 2018

Modesto Orozco
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2011 & 2018

Graduate (M.Sc.) in Chemistry from the Universitat Autònoma de Barcelona (1985). PhD in Biochemistry from the same university (1990). Pre-Doctoral research fellow of the Spanish MEC. Departament de Bioquímica – Universitat de Barcelona (1987-1989). Assistant Professor of Biochemistry at the same university (1989-1990). Professor of Biochemistry and Molecular Biology. Departament de Bioquímica. Universitat de Barcelona. 1991-2001. Invited Scientist. Department of Chemistry. Yale University 1991-1993. Full Professor of Biochemistry and Molecular Biology. Departament de Bioquímica. Universitat de Barcelona 2002-present. Director Molecular Modeling and Bioinformatic Unit. Parc Cientific de Barcelona 2001-present. Director of the integrative research nodes. Director Joint IRB-BSC Program on Computational Biology.

Counselor and Advisor of different Scientific Societies and Granting Agencies.

Research interests

His Research activity is focused on the theoretical study of biological systems. More than 445 papers published in international peer-reviewed journals like Nature, Nature Genetics, Angew Chem., Proc.Natl.Acad.Sci.USA, Chem.Rev., Chem.Soc.Rev., Acc. Chem. Res., J.Am.Chem.Soc., His Publications have collected more than 27.000 citations (Google Scholar) with an H-index of 82.

Among other awards, in 1997 he got the “Diaz de Santos” National Award for young scientist, the Distinción Investigadora de la Generalitat de Catalunya (Annual award of Science of the Catalan Science Ministry) in 2000, the FEBS Anniversary Prize of the Gesellschaft für Biochemie und Molekularbiologie in 2001, the Fundación Marcelino Botin fellowship (2007), the Brucker award for research in biophysics (2010), as wellas the ICREA Academy award for excellence in research. Since 2012 he is recepient of an ERC Advanced Grant.

Keywords

Computational chemistry, computational biology, bioinformatics, molecular modeling

ICREA MEMOIR 2018

Andrés Ozaita Mintegui
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2016

Andrés Ozaita graduated in Biology at the University of the Basque Country (1992). He obtained his PhD degree in Biology (1996) at the University of the Balearic Islands in the field of Neuropharmacology. He did his postdoctoral training at the New York University School of Medicine (1997-2003) focused on the study of the molecular components of neuronal and cardiac potassium channels. In 2003, he was appointed Ramón y Cajal research fellow at the Department of Experimental and Health Sciences at University Pompeu Fabra, and in 2008 he joined the faculty of this department where he teaches undergraduate and master degree courses. He has received an American Heart Association postdoctoral award (2001), and the Dr. Antoni Esteve Foundation award in Pharmacology research (2011 and 2015).

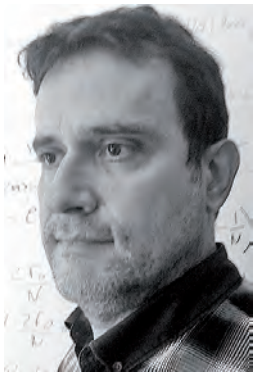
Research interests

Our research is focused on the study of memory and motor coordination from the molecular to the functional level in healthy and diseased states. We use preclinical models of drug exposure and models of genetic neurodevelopmental disorders to investigate the mechanisms involved in brain deficits. Our studies show that an important neuromodulatory system, the endocannabinoid system, is key in controlling neuronal plasticity and proper brain functionality. In this regard, we have characterized aberrant alterations in neuronal plasticity and brain dysfunction produced both by drugs that impact directly on the endocannabinoid system, like cannabis, and by genetic neurodevelopmental disorders, like fragile X syndrome. Based on our knowledge of the endocannabinoid system we are nowadays analyzing and proposing new therapeutic strategies in order to improve memory and motor coordination that could be applied to pathological situations.

Keywords

intellectual disability, animal models, neuropharmacology, neural plasticity

ICREA MEMOIR 2018



Romualdo Pastor-Satorras
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2008 & 2014

Romualdo Pastor-Satorras (Barcelona, 1967) received a PhD in Condensed Matter Physics from the Universitat de Barcelona in 1995. He spent four years as postdoctoral researcher at the MIT (1996-1998) and The Abdus Salam International Centre for Theoretical Physics, ICTP (1998-2000). He is Associate Professor of Applied Physics at the Universitat Politècnica de Catalunya since 2006. He has been visiting scientist at the University of Notre Dame (USA), Kavli Institute for Theoretical Physics (USA), Helsinky University of Technology TKK (Finland), Indiana University (USA) and the Institute for Scientific Interchange (ISI) Foundation (Italy). He hold an ICREA Academia Prize in 2009, was awarded a Distinció de la Generalitat de Catalunya per a la Promoció de la Investigació Universitària in 2003, and is a Fellow of the ISI Foundation (Italy). He is the author of more than 120 publications in peer-reviewed journals with more than 23000 citations. He has an h-index of 50.

Research interests

My research is based in the application of stochastic methods and numerical simulations to the study of complex systems. The main topics in which I work are the following: 1) Topological and temporal properties of natural systems, as represented in terms of complex networks. 2) Dynamical processes and non-equilibrium phase transitions in disordered substrates. 3) Dynamics of social systems. 4) Human activity and dynamics. 5) Non-Markovian temporal networks. 6) Collective motion.

Keywords

Statistical mechanics, complex systems, complex networks, stochastic processes, social dynamics

ICREA MEMOIR 2018

Noemí Pereda
Universitat de Barcelona (UB)
Social & Behavioural Sciences
ICREA Academia 2016

Noemí Pereda (Barcelona, 1975) obtained her BSc in Psychology at the Universitat de Barcelona, where she also obtained her PhD (Outstanding Doctoral Dissertation Award) in 2006. She was a visiting researcher in the Crimes against Children Research Center at the University of New Hampshire, where she understood the importance of building a culture of evidence in violence research. She became an Associate Professor at the Universitat de Barcelona, where she leads the 'Grup de Recerca en Victimització Infantil i Adolescent' (GReVIA). She serves as temporary adviser for the World Health Organization's Regional Office for Europe for the study of child and adolescent victimization in Spain. She is also a member of the Catalan Ombudsman's Advisory Council for the 'Prevenció de la Tortura i altres Tractes o Penes Cruels, Inhumans o Degradants'. She provides in-service training for practitioners on violence against children sponsored by the Spanish and Catalan Governments.

Research interests

Our research interest focuses on developmental victimology, a field that studies victimization of children and youth, the consequences for mental health of violent experiences at an early age, and the resilience factors individuals develop to cope with these experiences. At present, the GReVIA research is driven by the idea that the existence of a 'v factor', or a general victimology factor, in the structure of interpersonal victimization can be empirically demonstrated. This work has an enormous impact on the design of public policies for reducing the risk of victimization in children, and to raise public awareness about the situations of violence suffered by one of the most victimized groups in society. Our main goal is to foster an evidence-based approach that is able to produce valid and reliable results and help practitioners and public agencies to prevent violence against children.

Keywords

developmental victimology, victim, children, trauma, violence, ptsd

ICREA MEMOIR 2018

David Pérez Castrillo
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2008 & 2014

David Pérez-Castrillo earned a PhD in economics from the Ecole des Hautes Etudes en Science Sociales, Paris, in 1991. He had previously graduated in Mathematics from the University of the Bask Country in Bilbao. He is currently Professor at Universitat Autònoma de Barcelona and Barcelona GSE. He is also MOVE, CODE and CESIfo Research Affiliate. He is a member of the editorial board of the Journal of Economics and Management Strategy, Economics Letters, Journal of Public Economic Theory, and the Encyclopedia of Complexity and Systems Science. He has been awarded the Distinció per a la Promoció de la Recerca Universitària for Young Researchers, ICREA Academia chairs, the Prize Haralambos Simeonidis, and the Arrow Price of the BE Journal. His research on game theory and applied microeconomics has been published, among others, in American Economic Review, Journal of Economic Theory, Journal of Financial Economics, Games and Economic Behavior, and Management Science.

Research interests

David Pérez-Castrillo's research interests include Economics of Innovation, theoretical and applied Game Theory, and Contract Theory. He is particularly interested in research that lies in the intersection between fields. For example, he uses matching market models to analyze the collaboration between academic researchers and firms, or the optimal incentive contracts in general equilibrium environments. More recently, he also builds new datasets to study from both empirical and theoretical points of view the research process and the dynamics of start-ups.

Keywords

Economics of Innovation, Mechanism Design, Contract Theory, Game Theory, Industrial Economics

ICREA MEMOIR 2018

Juan Perez Torres
Universitat Politècnica de Catalunya (UPC)
Experimental Sciences & Mathematics
ICREA Academia 2014

Juan P. Torres is professor at the Universitat Politecnica de Catalunya since 1994, when he joined the Department of Signal Theory and Communications. He made his PhD thesis under the supervision of Prof. Lluis Torner on optical nonlinear waves and solitons. At the beginning of the 2000s, he moved towards the realm of Quantum Optics and Quantum Information, at the same time that began collaborating with ICFO-Institute of Photonic Sciences as UPC professor. His research deals with quantum concepts, such as entanglement, and what they mean when describing how Nature works. During all these years he has taught different courses in his university, or invited by other universities, about Quantum Theory, Optics, Electromagnetic Theory and Telecommunications. Seven PhD students have graduated under his supervision, and he keeps collaborations with many research groups all around the world, which have helped him to write more than 150 papers in scientific journals.

Research interests

Quantum theory describes Nature as its most fundamental level. In science, it is continuously checked in its ability to make accurate predictions and the consistency and meaning of its postulates. My research combines theoretical and experimental work for distilling the meaning behind quantum concepts, such as entanglement, exploring what the concepts mean and represent in experiments. Light is the main tool of our research, that encompass a fuzzy area between nonlinear and quantum optics. Nonlinear optics provides most of the experimental tools that we use in the lab, and Quantum theory provides the framework to describe the results. We generate, tailor and detect streams of photons, under different conditions, what can be generally called as quantum engineering. Our research is a mix of fundamental physics and photonic engineering, where we answer fundamental questions about Nature, and devote efforts to looking for new or simply better solutions to important problems.

Keywords

Experimental Quantum Optics, Nonlinear Optics

ICREA MEMOIR 2018

Raquel Piqué Huerta
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2016

Raquel Piqué i Huerta obtained her PhD in History at the Universitat Autònoma de Barcelona (1997) where she started working as an associated professor in 1993. She was a visiting researcher at both, the Swiss Federal Institute for Forest, Snow and Landscape Research (2002), University of California- Berkeley (2004), University of Gothenburg (2013). Since 2018 she is Full Professor at the Department of Prehistory of the Universitat Autònoma de Barcelona where she leads the laboratory of Archaeobotany. Her research concerns on prehistoric forest resources management and landscape transformation among hunter-gatherer and firsts farming societies. She has been the main researcher of eleven projects funded by national research programs and she has collaborated on more than twenty-five other international and national programs. Her main research has been performed in the Northeast of Spain and Tierra del Fuego (Argentina).

Research interests

Her main research interest are the first farming societies in NE of the Iberian Peninsula; focusing on the understanding of the social organization and the use of resources among these societies. This research is concentrated at the early Neolithic site of La Draga, Girona (5300-4900 cal BC), one of the oldest in Europe. The recent approach of the research involves the use of computer modelling and virtual reality in order to improve the knowledge on Neolithic technologies.

She uses archaeobotany as a tool to learn about landscapes and the acquisition and consumption of plants among different societies during the recent prehistory. Finally, she is interested in ethnoarchaeology as an experimental approach which allow the generation of working hypotheses to study the archaeological record. The research has been focused on the characterization of social organization and resource management, with special attention to the plant resources.

Keywords

Prehistory, Archaeobotany, Ethnoarchaeology,

ICREA MEMOIR 2018

Josep M. Poblet
Universitat Rovira i Virgili (URV)
Experimental Sciences & Mathematics
ICREA Academia 2015

Josep M. Poblet graduated in Chemistry in 1979 from the University of Barcelona. From the same university he obtained his PhD degree in 1983 on theoretical studies of kinetic isotopes effects in organic reactions under the supervision of Professor Enric Canadell. After a postdoctoral stay with Professor Marc Bénard at the Louis Pasteur University in Strasbourg he became Associate Professor in Physical Chemistry at the Rovira i Virgili University (URV) in 1986. Since 2001 he is Professor of Physical Chemistry at this university and Director of the Physical and Inorganic Chemistry Department since 2011. JMP did a research stay in the Emory University in 2004 and he is coauthor of more than 200 scientific publications including papers in Nature, Nature Chemistry, Nature Communications, Angew. Chem., JACS, etc. He was awarded with the 2012 Bruker Physical Chemistry Prize of the Spanish Royal Society of Chemistry and was named Distinguished Professor of the URV in 2014.

Research interests

My current research is theoretical inorganic chemistry with particular interest in the electronic structure, reactivity and self assembly of complex systems. I have large experience in the computational modeling of molecular metal oxides (or polyoxometalates) that are a vast family of transition metal oxides with applications in many fields, such as materials science, homogeneous and heterogeneous catalysis, spintronics, medicine, and analytical chemistry among many others. We are also interested in the study of formation mechanisms at high temperatures of fullerenes and metallofullerenes and in general in the structural, physical and chemical properties of carbon nanoforms.

Keywords

Computational chemistry, Nanoscience, polyoxometalates, carbon nanoforms, catalysis, clean energy

ICREA MEMOIR 2018

Alex Pomarol
Universitat Autònoma de Barcelona (UAB)
Experimental Sciences & Mathematics
ICREA Academia 2009 & 2014

Alex Pomarol (Barcelona, 1964) received his Ph.D. in Theoretical Particle Physics from the Autonomous University of Barcelona (UAB) in 1991. He has been postdoctoral researcher at the University of California, Santa Cruz (1991-1993), University of Pennsylvania (1993-1994) and CERN, Geneva (1994-1996, 1998-2000). He is currently Professor of Physics at the UAB. He has also been Scientific Associate at CERN (Geneva) in 2006 and 2015, member of the Scientific Committee of the Galileo Galilei Institute for Theoretical Physics (Florence) 2008-2015, and at present is a member of the Particle Data Group (PDG). He has received the Distinció de la Generalitat award (2001) for young researchers and an ICREA Academia (2009 & 2014).

Research interests

His research aims to comprehend the fundamental laws of the elementary particles. After the discovery of the Higgs particle at the Large Hadron Collider (LHC) at CERN (Geneva), his main interest has been trying to unravel the nature of the Higgs from the recent experimental data, and infer implications for the next LHC run, that just started fully exploring, for the first time, the TeV territory. He is interested in understanding what lies at TeV energies, as this can elucidate on many open questions in particle physics, such as the origin of particle masses and flavor mixings or the constituents of dark matter in our universe.

Keywords

Elementary Particle Physics, Quantum Field Theory, Theoretical Physics

ICREA MEMOIR 2018

Xavier Pons
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2010 & 2015

Xavier Pons received his BS in Biology in 1988, MS degrees in Botany and Geography in 1990 and 1995, and a PhD in Remote Sensing (RS) and Geographic Information Systems (GIS) in 1992 (UAB). His main work has been done in radiometric and geometric corrections of satellite imagery, cartography of land cover and ecological parameters from remote sensors and GIS development, both in terms of data structure, organization and international standards for geoservices, and in terms of software writing (MiraMon). He has also worked in forest fire hazards, implications of image data compression on RS and in analysis of landscape changes, water usage, snow coverage and droughts from long time series of satellite images. Dr. Pons is Full Professor at the Geography Department of the UAB and leads the research group GRUMETS, devoted to Geographical Information Science and composed by 20 people from the UAB, CREAF and EBD-CSIC. He won an ICREA Academia award in 2010 and in 2015.

Research interests

1. Climate models based on geographical analysis and high resolution and global RS/GIS databases (Big Data), and their application to detect spatial patterns of drought at different time scales. 2. Robust methodologies for comprehensive RS processing (geometric, radiometric, classification), with particular emphasis on global data to improve knowledge of land cover dynamics. 3. To contribute to standards for geoservices in the context of GMES/Copernicus, GEOSS, etc. 4. To properly address the spatialization of the quality in geographic information. 5. To develop methods and experiments to adapt our radiometric correction models to diffuse-only illumination situations and in areas of high latitude. 6. To continue working in the synergy between field radiometry, drones and satellite imagery

Keywords

GIS, Remote Sensing, Climatology, Geography, Environmental Sciences

ICREA MEMOIR 2018

Gonzalo Pontón
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2014

Born in Barcelona, Dr. Ponton is Associate Professor of Literary Theory and Comparative Literature at the Universitat Autònoma de Barcelona and co-director of Prolope research group. He has published books on XVth century Castile letter-writing and historiography, as well as scholarly editions of Cervantes's "Quijote", Lope de Vega's plays, and Spanish short novels of XVIth and XVIIth centuries. Co-author of the most recent History of Spanish Literature, he has contributed to it with two volumes on literary and aesthetic ideas on XVIth and XVIIth centuries, and on XVIth century theater. He has also written scientific articles on literary history and textual criticism. Visiting professor and Visiting Scholar at Duke University, Venezia-Ca'Foscari, Paris IV-La Sorbonne, University of California Berkeley, and several Spanish universities. He is also a publisher of non-fiction and academic books.

Research interests

The current field of research is the analysis of the circumstances of production of literary texts in early modern Europe: the materiality of their transmission, the conditions and paths of their making and consumption, and the intellectual framework that made them possible and available. The most extensive research is devoted to the Spanish theatrical heritage of the XVIth century, especially in two lines: the origins of this spectacle, the first commercial one of the modern period, always in a comparative perspective (with Italian, English and French national theatres on the scope), and the study and edition of Lope de Vega's early plays. Other related areas of current interest are rethoric, history of literary ideas and concepts, cultural studies of the early modern era, and textual criticism.

Keywords

Early modern era, Spanish and European drama, Comparative literature, Textual criticism

ICREA MEMOIR 2018

Francesc Posas Garriga
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2008, 2013 & 2018

Francesc Posas is Full Professor at the Universitat Pompeu Fabra (UPF) and the Director of IRB Barcelona (Institute for Research in Biomedicine (2018-). After obtaining his doctorate in Biochemistry and Molecular Biology at the Universitat Autònoma de Barcelona (1995), he made a postdoctoral stay at Harvard University (Boston, USA). From 1999 co-leads the Cell Signaling Research Group (https://www.irbbarcelona.org/en/research/cell-signaling). He was the chair of the Department of Health and Experimental Sciences at the UPF (2007-2013), Vice-rector for Science Policy at the UPF (2013-2017) and Commisioner for UPF scientific strategy (2017-2018). Dr. Posas received the award to Young Investigators from the Catalan Government (2001), EMBO Young Investigator Program (2000), EURYI to young investigators (ESF) (2004), EMBO member (2006), awarded with an ICREA Academia (2009-2014) and the “Carmen and Severo Ochoa” Award (2011). Recipient of an ERC Advanced Grant (2012).

Research interests

His group aim to unravel how cells detect and respond to environmental changes, focussing on the characterisation of stress signal transduction pathways, especially those regulated by MAP kinases of the Hog1/p38 family, also known as the stress-activated MAP kinases (SAPKs). Proper adaptation to stress involves the modulation of several basic aspects of cell biology, among them the cell cycle and gene expression. Using *S. cerevisiae* budding yeast as a model organism, as well as higher eukaryotic cells, the group dissects the molecular mechanisms underlying cell response to changes in the extracellular environment and characterising the adaptive responses required for cell survival. Based on the knowledge of signal transduction and using synthetic biology, they also seek to modify cell behaviour to reprogram cell response to specific inputs/stimuli.

Keywords

Stress adaptation. Cellular heterogeneity. Signal transduction. Transcription. Cell cycle control. RB. Tumorigenesis. Synthetic Biology. Biological Computation

ICREA MEMOIR 2018

J. Daniel Prades
Universitat de Barcelona (UB)
Engineering Sciences
ICREA Academia 2018

Dr. Juan Daniel Prades García (Barcelona, 1982) is Degree in Physics (2005) and in Electronic Engineering (2009), Master in Nanoscience and Nanotechnology (2007), and Doctor (2nd February 2009) by the University of Barcelona.

In February 2009, was hired postdoctoral researcher at the Catalonia Institute for Energy Research (IREC). Later he won several professor positions in the Department of Electronics of the University of Barcelona, where he works until now.as. He has supervised 25 Degree and Master Theses, as well as 5 Doctorate Thesis.

Since his first paper in 2007, his publication metrics are: 82 JCR journal papers, average impact factor 5.7, more than 2200 citations, h-index = 26. This activity has allowed him to establish my own research group of 13 people (10 PhD students, 2 PostDoc, 1 Business Developer), which is currently funded by 5 ongoing projects (1.2 million Euros, on top of the ERC funding) obtained in the last couple of years.

Research interests

My research domain is sensor technology, with focus on chemical and gas sensors. In the last 5 years I have centered my activities in addressing two of the main challenges in these field: lowering the power consumption and improving the selectivity of the response towards specific molecular compounds. This topic, and the strategies that I have followed, have been supported by the European Research Council with a Starting Grant. As outcomes of this main activity I have developed:

- a new gas sensor principle offering zero-power operation,
- two systematic strategies to lower the power consumption of existing technologies more than 3 orders of magnitude: the self-heating operation and the microLED technology,
- improved the specificity towards selected gases by more than 2000%,
- a new ultra-low-cost sensor concept based on printed disposable sensors and smartphone cameras.

Keywords

sensors, micro and nano devices, low power, selective chemical/gas sensors, low-cost chemical/gas sensors

ICREA MEMOIR 2018

Cristina Pujades
Universitat Pompeu Fabra (UPF)
Life & Medical Sciences
ICREA Academia 2015

I am Full Professor at the Department of Experimental and Health Sciences of the Universitat Pompeu Fabra. I got my PhD in Biology in the Universitat de Barcelona (1991) and afterwards I went to the Dana Farber Cancer Institute at Harvard Medical School (Boston) as a postdoctoral fellow, where I worked in cell adhesion receptors. In late 1995, I moved to Paris to work in developmental neurobiology, first as a postdoctoral fellow at the École Normale Supérieure (1995-99) and then with an independent position at the Université Pierre et Marie Curie (1999-2010). In 2002, I joined the Department of Experimental and Health Sciences at the Universitat Pompeu Fabra, where I served as Academic Secretary (2007-10) and Vice-Chair (2010-13). Since 2017, I am the Vice-Rector of Professorate at the UPF. My group works in questions related to how morphogenesis and cell fate acquisition are coordinated to build up the embryonic brain (pujadeslab.upf.edu).

Research interests

The assembly of functional neural circuits requires the specification of neuronal identities and the execution of developmental programs that establish precise neural network wiring. The regional plan of the vertebrate Central Nervous System is beautifully orchestrated by restricted expression of crucial genes during embryonic development. Noteworthy, the generation of this brain cell diversity takes place during embryogenesis, and one of the main unsolved questions is how multiple cell types are generated and maintained in highly organized spatial patterns upon brain morphogenesis. Our aim is to **understand how spatiotemporally coordinated cell progenitor specification and differentiation occurs alongside morphogenesis to construct the functional brain**. We combine high-resolution *in vivo* imaging with genomic edition, using the zebrafish embryo as a model system.

Keywords

Developmental neurobiology, segmentation, compartments, cell lineage, morphogenesis, neurogenesis, cell specification, life 3D-imaging

ICREA MEMOIR 2018

Petia Ivanova Radeva
Universitat de Barcelona (UB)
Engineering Sciences
ICREA Academia 2014

Petia Radeva completed her undergraduate study on Applied Mathematics at the University of Sofia, Bulgaria, in 1989. In 1996, she received a PhD degree in Computer Vision at UAB. In 2007, she moved as Tenured Associate professor at the Universitat de Barcelona (UB), Department of Mathematics and Informatics, where from 2009 to 2013 she was Director of Computer Science Undergraduate Studies. Petia Radeva is Head of the Consolidated Group Computer Vision at the University of Barcelona (CVUB) at UB and Head of the Medical Imaging Laboratory of Computer Vision Center (www.cvc.uab.es). She is a coautor of 24 international patents in the field of Computer Vision applied to Medical Imaging. Associate editor of International Journal of Visual Communication and Image Representation. She was a vice-chair of REA-FET-OPEN-2-2015 and REA-FET-OPEN-1-2016. She obtained an ICREA Academia in 2014 and the Prize “Antonio Caparrós” for the best technology transfer project of 2013.

Research interests

Petia Radeva’s research interests are on Development of learning-based approaches (specially, deep learning) for computer vision, and their application to health. Currently, she is involved on projects that study the application of wearable cameras and life-logging, to extract visual diary of individuals to be used for memory reinforcement of patients with mental diseases (e.g. Mild cognitive impairment). Moreover, she is exploring how to extract semantically meaningful events that characterise lifestyle and healthy habits of people from egocentric data. Other projects she is involved are: Machine learning tools for large scale object recognition, Food analysis by Computer Vision, Evaluation of intestinal motility by wireless endoscopy, Tissue characterisation and plaque analysis in carotid images, Automatic stent detection in IVUS, etc. She has h-index of 33 (Google Academic), with 1138 citations publishing 95 JCR articles and 232 international scientific publications.

Keywords

Computer Vision, Machine Learning, Medical Imaging, Health applications

ICREA MEMOIR 2018

Xavi Ribas
Universitat de Girona (UdG)
Experimental Sciences & Mathematics
ICREA Academia 2010 & 2015

Dr. Xavi Ribas (born in 1974, Santa Coloma de Farners) obtained his B.Sc. Chemistry degree in 1996 at the University of Girona (UdG), and his PhD in Chemistry in 2001 at UdG. His academic career continued with a postdoctoral position at Institute of Material Science of Barcelona (ICMAB-CSIC) in the period 2002-2004. Afterwards, he obtained a "Juan de la Cierva" position and promoted to Associate professor in Chemistry at UdG by the end of 2006. He got different grants to be highlighted, such as a Juan de la Cierva postdoctoral award (2005), ICREA Academia (2010 and 2015) and an ERC- Starting Grant project (2011). He has conducted several scientific missions at international research institutions, such as University of Basel (in 1999), Stanford University (in 2000-2001), Instituto Tecnológico e Nuclear Lisboa (in 2002 and 2004), Zurich – ETH (in 2005 and 2006). He has been the co-director of 9 PhD thesis, and currently is co-directing 6 PhD students and 4 postdocs.

Research interests

Research focused on in-depth mechanistic understanding of the organometallic chemistry of coinage metals, and specially the fundamental M(I)/M(III) redox processes for copper, silver and gold. He is also interested in the mechanistic aspects behind first-row transition metal-catalyzed reactions for organic transformations, i.e. C-C and C-heteroatom cross-coupling reactions, C-H activation with directing groups, etc. Other research interests fall in the field of high oxidation states of other transition metals, and their involvement in organic transformations (i.e., C-H functionalization, alkane and alkene oxidations). The development of nanocages for catalysis and host-guest reactions is also pursued. The research group of Dr. Ribas was established in 2006. He has published more than 100 papers (h index 33), 4 book chapters and is the editor of the book entitled "C-H and C-X functionalization. Transition metal mediation", published by RSC-Publishing in 2013.

Keywords

Cu-based cross-couplings, Bioinorganic and organometallic chemistry of Cu(III), Coinage metal-mediated transformations, Transition Metal Mediated C-H functionalization, Bioinspired Fe and Mn oxidation Catalysts, Supramolecular nanovessels and nanoreactor

ICREA MEMOIR 2018

Fèlix Ritort
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2008, 2013 & 2018

Dr. Felix Ritort got his PhD in 1991 in spin glasses. Since then he has made contributions to the field of disordered systems and nonequilibrium physics. In 2002 he made a turn in his career working in single-molecule biophysics to investigate energy processes in the molecular world. Ritort's group is recognized worldwide as leader in applying the finest and most powerful methods to extract accurate quantitative information about thermodynamics and kinetics of molecular interactions in nucleic acids and proteins. He has been awarded several prizes for his research: Distinció de la Generalitat de Catalunya in 2001 for his research during the years 1991-2000; ICREA Academia Awards 2008,2013,2018 for his research as scholar at the University of Barcelona; Premio Bruker 2013 from the Sociedad de Biofísica de España for his contributions to molecular biophysics research in Spain. He is chair of the Division of Physics for Life Sciences of the European Physical Society.

Research interests

The Small Biosystems Lab is a worldwide reference in the research of the thermodynamics and kinetics of biophysical processes at the single molecule level using laser tweezers, a fabolous playground to explore nonequilibrium physics at the nanoscale. Recently we have started a new line of research based on single molecule translocation electrical measurements across nanocapillars.This setup combined with optical tweezers allows for controlled molecular translocation through electrical and force measurements, offering a powerful tool for single molecule sequencing. I also emphasize my interests in measuring information content in nonequilibrium processes and heterogeneous molecular ensembles, a field that aims to explain biological evolution from physical principles. I also carry out a spin off activity that consists in building optical tweezers instruments for universities and instittutes in a novel scientific collaborative framework.

Keywords

Statistical physics, Molecular biophysics

ICREA MEMOIR 2018

David Roas
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2018

David Roas is writer and Associate Professor of Literary Theory and Comparative Literature at the Universitat Autònoma de Barcelona and director of *Grupo de Estudios sobre lo Fantástico* (GEF) and the Research Project *Lo fantástico en la cultura española contemporánea (1955-2017): narrativa, teatro, cine, TV, cómic y radio*. He is also the director of *Brumal. Research Journal on the Fantastic*. He has published several books, articles and anthologies devoted to the study of the fantastic from a clearly interdisciplinary perspective in which literary theory, comparative literature, film studies and cultural studies are combined. Also, another important part of his works is linked to the specific study of the Spanish fantastic. Visiting professor and Visiting Scholar at Brown University, CUNY, University of Virginia, Université de Neuchâtel, Pontificia Universidad Católica del Perú, Universidad Adolfo Ibáñez, and several Spanish universities.

Research interests

His research during the last years has followed two converging lines linked to the study of the fantastic. In the first place there are the specifically theoretical works dedicated to the definition of the fantastic, its generic boundaries, its emotional effects, and its linguistic transgressions (his main contributions *are Teorías de lo fantástico* and *Behind the Frontiers of the Real*). He has also dealt with the relationship between humor, grotesque and fantastic, and he has devoted several works to analyzing the representations of monstrosity in postmodern fiction. The second area of his research has to do with the Spanish fantastic. Along with his own works on the fantastic narrative, his main contribution has been the direction of volume *Historia de lo fantástico en la cultura española contemporánea (1900-2015)*, which arises from the combined work of the members of the GEF. His most recent line of research has to do with the feminine fantastic.

Keywords

Theory of the Fantastic, fantastic fiction (literature, cinema,TV, comic), comparative literature, short story, humor

ICREA MEMOIR 2018

Pere Roca-Cusachs
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2018

Pere Roca-Cusachs obtained his PhD in cellular biophysics in 2007 from the Medical School at the University of Barcelona. He then worked in the lab of Prof. Michael Sheetz (Columbia University) as a post-doctoral researcher until 2011. He is currently a Serra-Hunter Associate Professor at the University of Barcelona, and Group Leader at the Institute for bioengineering of Catalonia (IBEC). His group studies the physical and molecular mechanisms by which cells detect and respond to mechanical signals. He currently coordinates an EU-funded Future and Emerging Technologies (FET) project dedicated to understanding the mechanical control of biological function. He is a recipient of the EMBO Young Investigator award, the 2017 City of Barcelona award to the life sciences, and the 2019 Young Investigator Award of the European Biophysical Societies Association (EBSA).

Research interests

Every time we blink, move a hand, draw a breath, or walk, cells in our body exert, transmit, withstand, and detect forces. This mechanical interaction with the environment determines how cells proliferate, differentiate, and move, and regulates development, tumorigenesis or wound healing. Just like biochemical stimuli initiate signaling cascades, mechanical forces affect the links and conformation of a network of molecules connecting cells to the extracellular matrix. Our research aims precisely at unraveling the mechanisms that these molecules use to detect and respond to mechanical stimuli like forces or tissue rigidity, triggering downstream cell responses. To this end, we combine biophysical techniques like magnetic tweezers, Atomic Force Microscopy, traction microscopy, and microfabricated force sensors with molecular biology, advanced optical microscopy, and theoretical modelling.

Keywords

biomaterials, mechanobiology, nanotechnology, biomechanics, biophysics, adhesion

ICREA MEMOIR 2018

Javier Rodrigo Sánchez
Universitat Autònoma de Barcelona (UAB)
Humanities
ICREA Academia 2018

Javier Rodrigo, born in Saragozza in 1977, is Associate Professor -recognized for Full professorship-, Universitat Autònoma de Barcelona. PhD (2004) in History from the European University Institute in Florence and postdoctoral researcher at the London School of Economics, has later been “Juan de la Cierva” Research Fellow at the University of Zaragoza and “Ramón y Cajal” Research Fellow at the Universitat Autònoma of Barcelona. He is the author or coordinator of 16 books on concentration camps history, mass violence and the Spanish Civil War, the Great War and Total war in Europe, on the Italian Fascist intervention in Spain, on historiography and on the global history of Civil Wars, among others.

Research interests

As a historian, I am interested in war, violence, terror and-or genocide, forced displacements, eliminationist theories and practises (particularly fascism), historiography and cultural representations. I am currently working in a continental history of post-civil war periods, after having completed a global history, together with David Alegre, of civil wars in the XXth Century, *Comunidades rotas. Una historia global de las guerras civiles, 1917-2017* (Galaxia Gutenberg, 2019). I am also dealing with the history of the links between Fascism and war, as a continuation of my previous reseach on the Italian intervention in the Spanish Civil War (*La guerra fascista. Italia en la guerra civil española*, Alianza, 2016, to be publish by Routledge in 2019). Furthermore, I am carring on two parallel projects, on forced displacements history and memory in Europe, and on local perceptions of violence and terror.

Keywords

Civil Wars, Europe, Violence, Fascism, Genocide, War Experience, Historiography, Spain

ICREA MEMOIR 2018

Flocel Sabaté
Universitat de Lleida (UdL)
Humanities
ICREA Academia 2015

He is Professor of Medieval History at the University of Lleida, Doctor Honoris Causa of the Universidad Nacional de Cuyo, and he has been visiting professor in universities such as Paris-I, Poitiers, ENS-Lyon, UNAM, Yale, Cambridge, Tokyo.He is member of different research centre boards in Spain, France, UK, USA, Portugal and Brazil, academies of History in Spain, France, Greece and USA, and 71 boards of scientific journals and series, and director of *Imago Temporis. Medium Aevum*. He has held charges in agencies in Spain and Romania and directed the Institute for Research into Identities and Society. As a leader of the higher rated research group in Medieval History in Catalonia he has organized more than one hundred scientific meetings, and led different international research projects. He has published more than 400 research works: *El territori de la Catalunya medieval, La feudalización de la sociedad Catalana, Fin del Mundo y Nuevo Mundo or Percepció i identificació dels catalans.*

Research interests

He studies the processes of social cohesion and governance focusing on the Late Middle Ages and its legacy: the creation of social identity, the construction and maintenance of a memory and the function of ideology. There are studied the values with which the members of the society articulated their conviviality better, according to such aspects as the socio-economic context, territory, religion, view of otherness and political articulation, paying attention to the representativeness, discourses of power and use of institutions, especially those that related to contact rulers and people, like justice. Three lines are combined: a) the items that gave cohesion to medieval society, attending the reasons for the minorities' exclusion as well as the creation of an European model of society that passed down to following centuries; b) the analyses of the territory reflecting a social space; c) the medieval legacy in cultural, religious and social practices on the Mediterranean space.

Keywords

Medieval history, Power, Institutions, Territory, Society

ICREA MEMOIR 2018

Núria Sebastián Gallés
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2008, 2013 & 2018

Núria Sebastián received her PhD in Experimental Psychology from the University of Barcelona in 1986. After Post-doctoral training at the Max Plank Institute and the CNRS in Paris, she was appointed Associate Professor of the Faculty of Psychology, University of Barcelona, in 1988, and then was promoted to Full Professor in 2002. In 2009, she moved to the Universitat Pompeu Fabra (UPF). She was a Visiting Scholar at several research centers including the IRCS at the University of Pennsylvania, the ICN at University College (London) and the University of Chicago. She was coordinator of the Consolider-Ingenio 2010 research consortium (BRAINGLOT). She is PI of a European Research Council (ERC) Advanced grant (UNDER CONTROL). From Jan. 2014 Dec. 2016 she was Vice-President of the ERC. She leads the SAP Research Group (Speech Acquisition and Processing) at UPF's Center for Brain and Cognition. She has authored over 90 publications in international journals.

Research interests

Her research focuses on the study of learning and language processing with a special emphasis on bilingual populations. Research in her laboratory extends from infants to adults with methodologies that are based on behavioural as well as physiological and brain imaging responses.

Keywords

psychology, cognitive neuroscience, bilingualism, development

ICREA MEMOIR 2018

Miquel Solà
Universitat de Girona (UdG)
Experimental Sciences & Mathematics
ICREA Academia 2009 & 2014

Miquel Solà (1964) obtained his PhD at the UAB in 1991 with academic honours. His doctoral research under the supervision of Profs. Bertran and Lledós was awarded with the Saint Albert Prize. After several months in a consultant private company, in 1993 he moved to the University of Girona (UdG) as assistant researcher. In 1994 he did postdoctoral research in Amsterdam with Prof. Baerends and in 1995 in Calgary with Prof. Ziegler. He was appointed assistant professor of the UdG in 1997. In 2001, he got the Distinction for the Promotion of University Research (young scientist category). Since 2003, he holds a permanent position as full professor in the UdG. He received ICREA Academia Awards in 2009 and 2014. In 2013 he got the Physical Chemistry prize awarded by the Spanish Royal Society of Chemistry. He is coauthor of about 350 scientific papers and he has supervised 19 doctoral Theses. He serves in the Editorial Board of Front. Chem., Theor. Chem. Acc., ACS Omega, and Sci. Rep.

Research interests

He works in the field of theoretical and computational chemistry. In the last years, his research interests have been mainly focused on three research lines: i) the study of molecular aromaticity, and particularly the development of new indicators of aromaticity and the examination of new forms of aromaticity such as three-dimensional aromaticity, excited state aromaticity, metalloaromaticity, and multiple aromaticity; ii) the analysis of the nature of the chemical bond using energy decomposition analysis and different electron delocalization measures like multicenter electron delocalization indices or the electron localization function; and iii) the investigation of organic and organometallic reaction mechanisms with special emphasis on the reactivity of fullerenes and endohedral metallofullerenes.

Keywords

Chemistry, theoretical, computational, reaction mechanism, electronic structure

ICREA MEMOIR 2018

Eduardo Soriano García
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2014

Eduardo Soriano (ES) received his PhD in Developmental Neurobiology from the University of Barcelona in 1986 (Supervisor, Alfonso Fairén). After post-doctoral training at the Universities of Lausanne, Frankfurt and Freiburg (Profs. Hendrik van der Loos and Michael Frotscher), he was appointed Associate Professor at the Institute of Cell Biology (University of Barcelona) in 1989, where he was promoted to Full Professor in 1995. He has been a Visiting Professor at the University of Fribourg (Michael Frotscher), the INSERM U-106 (Constantino Sotelo, Paris), and Bristol-Myers Squibb Pharma (Mariano Barbacid, Princeton-USA). He has been honored with national awards, including the “Rey Jaime I Research Award” (2000) and The “Francisco Cobos Biomedical Research Award” (2001). He has been Chairman of the National Biomedicine Granting Program (ANEP) 2008-2010, member and Vice-Chair (2009) of the LS5 Panel (2009, 2011, 2015 and 2017) at the ERC and Elected Member of the RACAB.

Research interests

The main goal of the laboratory is to understand how key developmental genes play a fundamental role in neuronal plasticity in the adult brain, which is crucial for complex neural functions (eg., learning and memory). The rationale is that adult plasticity (adult neurogenesis and synaptic plasticity) is reminiscent of developmental processes. Because dysregulation of adult neurogenesis and synaptic plasticity are implicated in neurological, neurodegenerative and psychiatric disorders, we aim also to understand how these genes contribute to the pathology of these diseases and whether modelling developmental genes in the adult brain ameliorate these neural disorders. Reelin is an extracellular protein that is critical for neural migration and synaptogenesis. To unravel the function of this developmental gene in the adult forebrain, we have generated conditional transgenic mice that overexpress Reelin and conditional (floxed) reelin KO mice.

Keywords

Neurosciences, Cell Biology, Neurological Diseases, Development, Plasticity

ICREA MEMOIR 2018

Jordi Surrallés Calonge
Universitat Autònoma de Barcelona (UAB)
Life & Medical Sciences
ICREA Academia 2008, 2013 & 2018

With a PhD in Genetics and postdoctoral experience in The Netherlands (Leiden University Medical Center) and Finland (Finnish Institute of Occupational Health), he set up his research team at the UAB where he is currently Full Professor of Genetics and, since January 2017, he was appointed Director of the Genetics Service at Sant Pau Hospital, Barcelona. He is Director of the Biobank of DNA Repair Syndromes, Head of the Chromosome Fragility Laboratory Service and team leader at the Center for Biomedical Network Research on Rare Diseases (CIBERER). Dr. Surrallés has supervised over 35 research grants awarded from public and private institutions world-wide summing over 4M euros and participated in clinical trials, several patents and contracts with private foundations and biotech-pharma companies. He has given tens of invited lectures in international meetings, published over 100 articles (>7200 citations and H factor: 44 by GS) and supervised >25 PhD and Master students.

Research interests

Prof. Surrallés leads an internationally competitive group in the field of cancer-prone DNA repair syndromes with a focus in Fanconi anemia and familiar breast cancer. In the last 5 years was involved in the discovery of 8 new disease genes involved in 6 cancer syndromes. He also performs advance therapeutic research in the field of DNA damage response including gene and cell therapy and drug and genetic screenings to obtain 2 Orphan Drug Designations by EMA, file 5 patents to protect therapeutic innovations in the field of DNA repair and participate in several clinical trials including gene therapy. A long term goal of Surrallés' team is to understand the mechanisms that maintain genome stability and protect us from disease, cancer, and ageing and to translate this knowledge to develop novel therapeutic and diagnostic strategies in the fields of oncology, precision medicine and rare diseases.

Keywords

Fanconi anemia, DNA repair, Genome Instability, Rare Diseases, Hereditary Cancer, BRCA

ICREA MEMOIR 2018

Pietro Tierno
Universitat de Barcelona (UB)
Experimental Sciences & Mathematics
ICREA Academia 2018

Associate Professor at the Departament de Física de la Matèria Condensada,
Universitat de Barcelona, Av. Diagonal 647, 08028 Barcelona (Spain)
2011 – 2016 “Ramon y Cajal” researcher, University of Barcelona, Spain.
2008 – 2011 Post-doc: University of Barcelona, Spain
2006 – 2008 Post-doc: Florida State University, USA
2003 – 2006 Ph.D.: University of Ulm, Germany
2002 – 2003 Predoctoral Marie Curie fellowship
B.S.: University of Napoli, Italy

Research interests

My research experience involves experimental and theoretical approaches to scientific inquiry fundamental processes occurring in Soft Matter systems, including colloids, monolayers, polymers and liquid crystals. In the last 5 years, I built up a research group focused on developing new approaches to manipulate, transport and assemble colloidal matter with external fields. Besides the basic advances, my research lead to new applications in emerging technologies like micro-fluidics and drug-delivery in lab-on-a-chips.

Keywords

Soft Matter, Colloids, Magnetism, Microfluidics

ICREA MEMOIR 2018

Mariano Torcal
Universitat Pompeu Fabra (UPF)
Social & Behavioural Sciences
ICREA Academia 2014

Full Professor in Political Science at the Dept. of Political and Social Sci. since 2003 and co-director of the Research and Expertise Centre for Survey Methodology (RECSM) at the Pompeu Fabra University in Barcelona. Previously, he was the Spanish national coordinator of the ESS and is currently the President of WAPOR Latin America. He has published articles on topics such as political political trust, satisfaction with democracy, electoral behavior, and political participation and serves on the editorial boards of various international journals. He is the co-author of *Political Disaffection in Contemporary Democracies* (Routledge 2006) and *The Europeanization of National Polities? Citizenship and Support in a Post-Enlargement Union* (Oxford University Press 2012) and has published three books in the Centro de Investigaciones Sociológicas, the last one in 2018 entitled *Opinión Pública y cambio electoral en España. Claves ante el reto europeo y la crisis política y económica*.

Research interests

His research is focussed on several vital and interrelated questions related with multilevel governance and citizens' critical attitudes towards representative democratic institutions. Particularly relevant to his work is understanding the linkages between Europeans' discontent with democratic institutions and the multilevel nature and scope of governance in European polities, and how the current economic crisis and the related social crisis have altered citizens' perceptions of the functioning of their representative democracies. Relatedly, his work seeks to shed light on how citizens' critical attitudes affect their general support for and understanding of democracy, and their effects on electoral behaviour in EU and national elections. Recently he has also obtained a research grant to study the effect of online participation on political attitudes, party preferences and political polarization.

Keywords

Public Opinion, Eleccions, Party Systems, Survey Methodology, Political Behavior

ICREA MEMOIR 2018

David Urbano
Universitat Autònoma de Barcelona (UAB)
Social & Behavioural Sciences
ICREA Academia 2018

David Urbano is a Professor of Entrepreneurship at Universitat Autonoma de Barcelona (UAB). He earned a Ph.D. in Entrepreneurship and Small Business Management (UAB / Växjö University – Sweden). He is Associate Editor of Small Business Economics Journal (SBEJ) and a member of the Board of Directors in the European Council of Small Business and Entrepreneurship (ECSB). He currently participates in several international research projects (e.g., Global Entrepreneurship Monitor, GEM; Panel Study of Entrepreneurial Dynamics, PSED; and Global University Entrepreneurial Spirit Students' Survey, GUESSS) and he also regularly visits Haas School of Business (University of California, Berkeley). His research on institutions and entrepreneurship has been published in multiple leading academic journals, including Entrepreneurship and Regional Development, International Small Business Journal, Journal of Small Business Management, Research Policy, and Small Business Economics Journal.

Research interests

David Urbano's research focuses on the analysis of factors affecting entrepreneurship in different contexts, using the institutional approach, and combining quantitative and qualitative methodologies. Particularly, he is interested in analyzing: (a) the influence of institutions (legal and cultural) on entrepreneurship; (b) the diversity in entrepreneurship (entrepreneurial universities, social entrepreneurship, intrapreneurship, etc.) in light of the institutional perspective; and (c) the link between entrepreneurship and socio-economic performance through institutional lenses. To complement the institutional approach, other theoretical perspectives are considered in order to explain entrepreneurship variations across countries at different levels of analysis (human capital, dynamic capabilities, and entrepreneurship ecosystems). Also, his research provides useful insights for the design of entrepreneurship policies to foster economic performance and social prosperity.

Keywords

Entrepreneurship, entrepreneurial activity, small business, diversity in entrepreneurship, institutions, institutional economics.

ICREA MEMOIR 2018

María José Vega

Universitat Autònoma de Barcelona (UAB)

Humanities

ICREA Academia 2008 & 2014

M. J. Vega is Professor of Literary Theory and Comparative Literature at the Universidad Autónoma de Barcelona and founder and director of the Seminario de Poética del Renacimiento. She has worked mainly on poetics and comparative literature in Early Modern Europe (XVI-XVIIc). Her approach is intended to be interdisciplinary, drawing on a range of subjects related to literary studies, such as cultural history, theology and politics. She has received the Excellence of Research Award of the Generalitat de Catalunya (Distinció, as Junior Researcher), the ICREA Acadèmia Research Grant (first call), the Mercator Gastprofessur of the Deutsche Forschungsgemeinshaft, and the Alexander von Humboldt Research Award. In the last five years, she has been guest professor at several higher research centres in France, Portugal, Belgium and Germany and has developed international research projects at the UAB and at the University of Münster (RFA).

Research interests

In the last years, M. J. Vega has opened a line of research devoted to the theory of censorship and to the analysis of the ideological principles that governed the control and surveillance of books during the Counter-Reformation. Her project for 2015-2019 proposes to study the formation and development of the expurgatory policy of the Spanish monarchy (Spain, Portugal, South Italy and the Low Countries) in the 16th and 17th centuries; to analyse its ideological principles and intellectual impact; and to carry out comparative case studies that will achieve a new perspective of its relevance for European cultural history.

Keywords

Comparative literature, literary theory, renaissance studies, censorship, early modern literature

ICREA MEMOIR 2018

Luis Velasco
Universitat Politècnica de Catalunya (UPC)
Engineering Sciences
ICREA Academia 2015

He received the M.Sc. degree in Physics from Universidad Complutense de Madrid (UCM) in 1993, the MBA from UPM in 2001, and the PhD degree with honors from Universitat Politecnica de Catalunya (UPC) in 2009. In 1989 he joined Telefonica of Spain and was involved on the specifications and first office application of Telefonica's SDH transport network. In 2004 he joined UPC, where currently he is an associate professor at the Department of Computers Architecture (DAC). He has co-authored more than 150 papers in peer-reviewed International Journals and Conferences and co-authored two books. He is serving as an Associate Editor of the IEEE/OSA Journal of Optical Communications and Networking (JOCN) and in the TPC of several international conferences as well as reviewer of international journals. He has participated in various IST FP-6, FP-7, and H2020 European research projects such as NOBEL 2, e-Photon/ONe+, DICONET, BONE, STRONGEST, IDEALIST, GÉANT, and METRO-HAUL.

Research interests

My research has been focused on multilayer optical networks, specifically on Network planning and re-optimization. However, the development of new innovative services need also a cloud and core networks orchestration to cope with the increasing complexity of networks technologies and services; we call this as the Telecom Cloud. Here, we deal with large problems that need to be solved before a network is deployed or updated on-line while the network is in operation (to be deployed in Software Defined Networking (SDN) controllers). Furthermore, the exploitation of big data storage and analysis solutions is of paramount importance since they facilitate the exploitation of SDN programmability and flexibility while supporting self-configuration of network topology to variable workload demands during lifetime. As a result, I'm also doing research on big data analytics, including distributed architectures where algorithms run inside nodes, to bring cognition to the Telecom Cloud.

Keywords

Cognitive Optical networks

ICREA MEMOIR 2018

Salvador Ventura Zamora

Universitat Autònoma de Barcelona (UAB)

Life & Medical Sciences

ICREA Academia 2009 & 2015

Salvador Ventura is Chair Professor at the Dep. of Biochemistry and Molecular Biology, Director of the Institute of Biotechnology and Biomedicine and leader of the Protein Folding and Conformational Diseases group at the Autonomous University of Barcelona (UAB). He has authored more than 170 research and review papers, apart from several books and patents; pronounced around 100 invited conferences in national and international meetings and supervised over 40 research grants from public and private institutions. He got his Ph. D. in Biology at the UAB in 1998 and was a postdoctoral fellow at EMBL-Heidelberg. He has been researcher at Harvard Medical School (USA) and Karolinska Institutet (Sweden), among other international centres. He re-joined UAB as a “Ramon y Cajal” researcher in 2003. Dr. Ventura has received the UAB Excellence Research Award (2008) and the ICREA Academia (2009 & 2015).

Research interests

The long-term goal of our research is to contribute to decipher the mechanisms of protein homeostasis in the cell. We use a multidisciplinary approach to address fundamental aspects of protein folding, misfolding and aggregation. In addition to define the basic mechanistic principles underlying these processes, we aim to understand how their deregulation leads to the onset of a series of human conformational disorders, which include neurodegenerative diseases, but also diabetes or cancer. This knowledge should ultimately pave the way for the development of novel therapeutic strategies to target these devastating pathologies.

Keywords

Protein folding, Protein Aggregation, Amyloid, Protein Design, Conformational Disorders, Prions

ICREA MEMOIR 2018

Francesc Villarroya
Universitat de Barcelona (UB)
Life & Medical Sciences
ICREA Academia 2014

Villarroya is full professor of Biochemistry and Molecular Biology and current scientific director of the Institute of Biomedicine of the University of Barcelona. He obtained his PhD at the University of Barcelona and after post-doc research in CNRS (Paris) and New York University Medical Center, he established a research group on energy metabolism and adiposity. His findings have been published in close to two hundred articles, some of them in major journals such as Cell, Cell Metabolism, Nature Comm, NEJM and Diabetes. Research is supported by local and international agencies, charities and in collaboration with pharmaceutical and biotech companies. He is member of the steering committees of CIBERobn (Spanish institute for obesity research) and SEEDO (Spanish Society for Studies on Obesity), and editorial board member of the journals Endocrinology and Endocrine. He has acted as member of national and international (France, Portugal, Sweden) agencies of research evaluation.

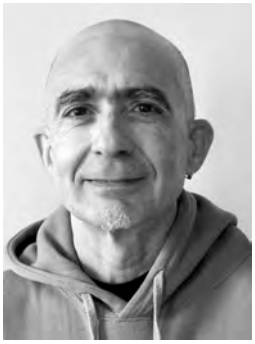
Research interests

Research interest has been to identify the major molecular actors controlling energy metabolism and adiposity, and their relationship with diseases such as diabetes, obesity and lipodystroy. The role of mitochondrial function as well as the regulation of the differentiation of distinct white and brown adipose cells has been a major focus. Francesc Villarroya and his team identified major mechanisms of transcriptional control of the genes encoding UCP1, the key mediator of protection against obesity via brown fat thermogenesis and energy expenditure, and other uncoupling proteins. More recently, fibroblast growth factor-21 was identified as a novel actor in the control of brown fat activity and its consequences in the control of systemic metabolism, with powerful potential for complex metabolic diseases.

Keywords

Metabolism, endocrinology, adipose, mitochondria, transcription

ICREA MEMOIR 2018



Antonio Villaverde
Universitat Autònoma de Barcelona (UAB)
Life & Medical Sciences
ICREA Academia 2008, 2013 & 2018

A. Villaverde is Chair Professor of Microbiology at the Department of Genetics and Microbiology and leader of the Nanobiotechnology group at the Institute for Biotechnology and Biomedicine, Autonomous University of Barcelona. He coordinates a research team of about 20 people (Nanobiotechnology), that is full member of the Networking Biomedical Research Center in Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN). Prof. Villaverde has authored more than 260 peer-reviewed research and review papers on microbiology-biotechnology-nanosciences, apart from several books, book chapters, patents and more than 330 communications to congresses. A. Villaverde founded the Open-Access journal Microbial Cell Factories, (ISSN: 1475-2859), of which he has been Editor-in-Chief from 2002 to 2016.

Research interests

My activities can be summarized through two main research lines:

1- Design of protein nanoparticles for cell-targeted drug delivery. We have evaluated peptidic ligands of cell surface tumoral markers as convenient agents of innovative antitumoral drugs and drug vehicles. The most potent identified ligand, the peptide T22, has been incorporated as targeting agent in self-assembling protein nanoparticles.

2- Exploitation of bacterial inclusion bodies as *in vivo* depots for slow protein drug release. Bacterial inclusion bodies (IBs) are submicron functional amyloids. Recently, we have offered insights on their biomedical applicability by revealing that IBs mimic functions of the endocrine system. Many peptidic hormones are released from amyloidal reservoirs, with a structure compatible with that of IBs. By exploring further this issue we have described how tailored IBs can be implanted in animal models....

Keywords

Biotechnology; Nanomedicine; Nanobiotechnology; Biomaterials; Recombinant proteins