The European Research Council (ERC) at the Annual Meeting of the New Champions, World Economic Forum "Summer Davos"
26 - 28 June 2016, Tianjin, China

Biographies

The ERC President, Vice President & 12 ERC Grantees in 9 sessions

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**Prof. Jean-Pierre Bourguignon**  
President of the European Research Council

Tianjin Session:

**Forum debate: Betting on Moon Shots**  
Sunday, 26 June: 12.00 – 13.00 Congress Centre, Arena

Professor Jean-Pierre Bourguignon was the Director of the Institut des Hautes Études Scientifiques (IHÉS) from 1994 till 2013. This international research institute located near Paris, France, was built as the European counterpart of the Institute for Advanced Study in Princeton. He was also the first ERC Panel Chair in Mathematics, for Starting Grants.

A mathematician by training, he spent his whole career as a fellow of the Centre National de la Recherche Scientifique (CNRS). He held a Professor position at École polytechnique from 1986 to 2012. From 1990 to 1992, he was President of the Société Mathématique de France and President of the European Mathematical Society from 1995 to 1998. He is a former member of the Board of the EuroScience organisation (2002-2006) and served on EuroScience Open Forum (ESOF) committees since 2004.

Professor Bourguignon received the Prix Paul Langevin in 1987 and the Prix du Rayonnement Français in Mathematical Sciences and Physics from the Académie des Sciences de Paris in 1997. He is a foreign member of the Royal Spanish Academy of Sciences. In 2005, he was elected honorary member of the London Mathematical Society and has been the secretary of the mathematics section of the Academia Europaea. In 2008, he was made Doctor Honoris Causa of Keio University, Japan, and, in 2011, Doctor Honoris Causa of Nankai University, China.
Prof. Mart Saarma
Vice President of the European Research Council

Tianjin Sessions:

Ask about Parkinson’s disease
Sunday, 26 June: 10:45 - 11:15, Congress Centre, Brain Hub

What if: We become Superhuman?
Sunday, 26 June: 15:30 - 16:30, Congress Centre, Arena

Into to Fighting Superbugs: ERC Ideas Lab session
Monday, 27 June: 17:30 - 18:45, Congress Centre, Ideas Lab 1

Professor of Biotechnology and Director of the Laboratory of Molecular Neuroscience at the Institute of Biotechnology, University of Helsinki, Finland

Prof. Mart Saarma has studied the structure, biology and therapeutic potential neurotrophic factors and their receptors. His recent studies are focused on the role of neurotrophic factors in development and neurodegenerative diseases. His group has characterised several new GDNF family receptors and demonstrated that RET receptor tyrosine kinase is the signalling receptor for GDNF. Recently his group has discovered a new neurotrophic factor CDNF and shown that it very efficiently protects and repairs dopamine neurons in animal models of Parkinson’s disease. He has received several domestic and international science prizes, including the Nordic Science Prize by Lundbeck Foundation in 2009. He is the member of several academies and EMBO. Currently he is the member of EMBO Council and Vice President of the European Research Council.
ERC Grantees in Ideas lab - "Fighting Superbugs!"

**Prof. Kevin Foster**

**Professor of Evolutionary Biology, University of Oxford (UK); ERC Starting grant holder**

Modern cell biology rests upon the power of studying pure cultures, often in shaking flasks. However, natural cell groups are complex systems that often contain genetically-distinct populations. This genetic diversity ranges from point mutations that separate normal and cancerous tissue, through different strains of malaria in a host, to bacterial biofilms that contain a myriad of species. Prof. Foster’s research focuses on how genetic variability affects and explains the biology of cell groups, particularly microbial communities.

Kevin Foster studies the evolution of interactions between organisms, particularly microorganisms. After a first degree at Cambridge, he moved to a Ph.D. in Sheffield under Francis Ratnieks studying the yellowjacket wasps with the goal of dissecting the conflict and cooperation that occurs within their societies. Next was the study of the slime mould Dictyostelium discoideum at Rice University in Texas. After time in Berlin and Helsinki doing theory, he started up a lab as a Bauer Fellow at the Harvard Center for Systems Biology where his focus moved to more conventional microbes, in particular bacteria and yeast. A few years ago, the lab moved to Oxford where Prof Foster is now a Tutorial Fellow at Magdalen and Professor of Evolutionary Biology in the Department of Zoology. In 2016, he received the Scientific Medal from the Zoological Society of London for his research.

**Prof. Nicole Joller**

**Assistant Professor, Institute of Experimental Immunology, University of Zurich (CH); ERC Starting grant holder**

Prof. Joller was awarded a Starting Grant in 2015. In her research, she will address the question of how the immune response to one pathogen alters the body’s ability to respond to a second infectious agent or the susceptibility to autoimmunity or cancer. She will focus on infection-induced changes in regulatory T cells (Tregs) as they may lead to biased suppression and changes in the nature of subsequent immune responses.

Nicole Joller is Assistant Professor at the Institute of Experimental Immunology at the University of Zurich, where she studies the mechanisms that lead the immune system’s decision to initiate a harmful or beneficial response. Professor Nicole Joller is investigating regulation by so-called T helper cells, which are responsible for producing messengers and thus regulate the immune response.
Prof. Stephan Sieber

Chair of Organic Chemistry II, Technical University of Munich (DE); ERC Starting grant holder

Prof. Sieber's research addresses the issue of bacteria drug resistance and the urgent need for effective antibacterial drugs. The aim of his study is to develop a streamlined chemical-biology platform that facilitates the consolidated identification and structural elucidation of natural products together with their dedicated cellular targets. This innovative concept overcomes several limitations of classical drug discovery processes by a chemical strategy that focuses on a directed isolation, enrichment and identification procedure for certain privileged natural product subclasses.

Prof. Sieber’s research field is bioorganic chemistry. The aim of his work is to develop new drugs for multidrug-resistant bacteria. His research is based on methods which combine synthetic chemistry, functional proteomics, cell biology and mass spectrometry. This approach enables the discovery of new active substances, some of which are currently being optimised for medical application. He studied chemistry at the University of Marburg and completed his doctorate at the laboratories of Prof. C. T. Walsh at the Harvard Medical School and Prof. M. Marahiel at the University of Marburg (2004). He did postdoctoral research at the Scripps Institute in La Jolla, California, under Prof. B. F. Cravatt (2006). After that, he undertook independent research at Munich’s Ludwig Maximilian University with the assistance of an Emmy Noether scholarship from the German Research Foundation. In 2009, he was appointed to the Chair of Organic Chemistry II at TUM. In 2010, he received an ERC starting grant and EXIST start-up support for the company AVIRU GmbH, which was established based on his research.

More ERC Grantees at AMNC 2016

Dr Gerardo Adesso

Professor of Mathematical Physics, University of Nottingham (UK), ERC Starting Grant holder

Gerardo Adesso obtained his PhD in Physics in 2007 from the University of Salerno (Italy) and has been a permanent faculty member at Nottingham since 2009. His main expertise is in the characterisation and quantification of quantum coherence and all forms of quantum correlations in composite systems, such as entanglement, steering and nonlocality. He contributed significantly to the development of quantum information theory with continuous variable systems. His research is mainly devoted to the identification and exploitation of genuinely unique quantum resources for secure communication, quantum sensing and metrology.
quantum resources for robust quantum information technology. His current interests further include mathematical foundations of quantum dynamics and thermodynamics, and applications of metrology techniques to quantum-enhanced magnetometry, thermometry, and imaging.

Prof. Flemming Besenbacher

Chairman of the Supervisory Board, Carlsberg A/S, Professor at Interdisciplinary Nanoscience Center and Department of Physics & Astronomy, Aarhus University (DK); ERC Advanced grant holder

Prof. Besenbacher is a leading scientist within the field of nanoscience, he has published more than 600 scientific articles in international journals and he is one of the most cited Danish scientists. Using Scanning Tunneling Microscopy (STM) as the primary experimental technique, his research topics include nanocatalysis, surface science, and molecular self-assembly. He co-developed a very stable and productive STM, today known as the “Aarhus STM”, sold all over the world. His scientific results have great impact in industry and have served as inspiration for the development of new, improved catalysts.

Prof. Besenbacher is Chairman of the Carlsberg Group, the Carlsberg Foundation and the Tuborg Foundation. He is also Deputy Chairman of Innovation Fund Denmark, and member of the boards of Unisense and LevOss. He is professor at Science and Technology, Aarhus University, where he was the founding director of the Interdisciplinary Nanoscience Center (iNANO) from 2002-2012. He is an honorary doctor at twelve Chinese universities and he has received several distinctions in Denmark and abroad for his research. He is also Foreign Member of the exclusive Chinese Academy of Science and holds the title of Knight 1st Class of the Order of Dannebrog.

Prof. Martin Fussenegger

Professor of Biotechnology and Bioengineering, ETH Zurich (CH); ERC Advanced grant holder

Prof. Fussenegger’s projet focuses on providing novel treatment opportunities for diabetes and obesity, two core pathologies of the metabolic syndrome, by resorting to prosthetic networks - synthetic sensor/effector devices or molecular prostheses which, upon integration into cells and functional connection to their metabolism, monitor disease-relevant metabolites, process off-level concentrations and coordinate adjusted diagnostic, preventive or therapeutic responses in a seamless, automatic and self-sufficient manner.

Martin Fussenegger is professor of biotechnology and bioengineering at the ETH Zurich. In 1992, he graduated in molecular biology and genetics with Werner Arber at the Biocenter in Basel, joined the Max Planck Institute of Biology for his Ph.D. thesis in medical microbiology and continued his studies at the Max Planck Institute of Infection Biology as a postdoctoral
fellow. In 1996, he joined the research unit of James E. Bailey at the ETH Institute of Biotechnology as an independent group leader and became Swiss National Science Foundation professor in 2002. From 2006 to 2008, he was director of the ETH Institute for Chemical and Bioengineering. In 2008, he moved to Basel to build up the D-BSSE, the Department of Biosystems Science and Engineering of the ETH Zurich. Prof. Fussenegger has published over 280 refereed research papers, is co-inventor of over 20 patents and the co-founder of the start-up company Bioversys. He is a fellow of the American Institute for Medical and Biological Engineering (AIMBE) and a member of the Swiss Academy of Engineering Sciences. He received the Gaden Award, the Merck Cell Culture Engineering Award, the Medal of the European Society for Animal Cell Technology (ESACT), the Gutenberg Chair Excellence Award and the James E. Bailey Award. He is also an honorary professor at the East China Normal University.

**Prof. Sander van Kasteren**

Assistant Professor, Faculty of Science, Leiden University (NL); ERC Starting grant holder

Prof. van Kasteren research focuses on immune therapies. To reinvigorate the immune reaction against tumours, the right type of immune cells must be activated against a tumour-specific antigen. One method to achieve this is by targeting tumour antigens to certain cross-presentation-promoting receptors on antigen presenting cells. One of these receptors is glycoprotein-binding mannose receptor (MR). The main objective of his study is to determine what structural parameters of the glycoprotein antigen result in enhanced cross-presentation upon MR-ligation.

The research of Prof. van Kasteren focuses on understanding and improving the immune system. Through careful application of new chemical approaches he aims to provide new insights into the interaction of the immune system with vaccines, but also with some of the devastating pathogens that hijack it. These fundamental new insights may well contribute to the development of more effective immune therapies against cancers and pathogenic diseases. For his work he was awarded the Early Career Award of the British Biochemical Society, as well as fellowships from the ERC, Wellcome Trust and NWO.

**Prof. Bradley Nelson**

Professor of Robotics and Intelligent Systems, ETH Zurich (CH); ERC Advanced grant & Proof of Concept grant holder

Microrobotics and nanomedicine are the core of Prof. Nelson's research. He has investigated the integration of newly developed wireless microrobotic technologies with nanomedicine to perform targeted, localised endoluminal techniques, by using devices capable of entering the human body through natural orifices or small incisions to deliver drugs, perform diagnostic procedures, and excise and repair tissue. With his Proof of Concept, he is developing a wireless, magnetically driven microrobot (the RodBot) for micromanipulation of delicate biological entities.
Brad Nelson has been the Professor of Robotics and Intelligent Systems at ETH Zürich since 2002, where his research focuses on microrobotics and nanorobotics. Fundamentally, he is interested in how to make tiny intelligent machines that are millimetres to nanometres in size. He studied mechanical engineering at the University of Illinois and the University of Minnesota, worked as a computer vision researcher at Honeywell and a software engineer at Motorola, served as a United States Peace Corps Volunteer in Botswana, Africa, and then obtained a Ph.D. in Robotics from Carnegie Mellon University. He was an Assistant Professor at the University of Illinois at Chicago and an Associate Professor at the University of Minnesota before moving to ETH. He has over thirty years of experience in the field of robotics and has received a number of awards for his work in robotics, nanotechnology, and biomedicine. He was named to the "Scientific American 50", Scientific American magazine's annual list recognising fifty outstanding acts of leadership in science and technology. His lab is the undefeated international champion in Robocup's Nanogram Soccer League, and he is in the Guinness Book of World Records for the "Most Advanced Mini Robot for Medical Use." His research group has won more than a dozen best paper awards at various international conferences and in international journals. He serves on the advisory boards of academic departments and research institutes across North America, Europe, and Asia and is on the editorial boards of several academic journals. He has been the Department Head of Mechanical and Process Engineering at ETH, Chairman of the ETH Electron Microscopy Center, serves on the Research Council of the Swiss National Science Foundation, and is a member of the board of directors of three Swiss companies.

Prof. Björn Schuller

Reader, Imperial College London (UK); ERC Starting grant holder

Prof. Schuller's project focuses on speech processing technology and computer-mediated communication and speech-analysis services. The goal of his work is to develop a ground-breaking methodology including novel techniques for multi-task and semi-supervised learning, in order to deliver for the first time intelligent holistic and evolving analysis in real-life condition of universal speaker characteristics which have been considered in isolation so far.

Reader in Machine Learning at the Imperial College London and Chair of Complex and Intelligent Systems at the University of Passau. Research interests in speech processing, computer audition, machine learning, affective computing, health informatics. Previously worked as Tenured Reader and Head of the Machine Intelligence and Signal Processing group at Technische Universität München, Visiting Researcher at CNRS LIMSI, Orsay, Joanneum Research, Graz and University of Geneva, Switzerland.
**Prof. Fabio Sciarrino**

Associate Professor, Physics Department, University of Rome - La Sapienza (IT); ERC Starting grant & Proof of Concept grant holder

The research of Prof. Sciarrino is centred on quantum information and quantum system dynamics. The aim of his project is to develop and implement quantum simulation by exploiting 3-dimensional integrated photonic circuits, which have a strong potential to perform quantum information processing through optical system. He received an ERC Proof of Concept for his study on photonics, whose goal is to develop and test a communication platform prototype, comprised of single photon detectors, which are efficiently coupled to single mode fibers using an innovative laser written device.

Associate Professor in Matter Physics at the Department of Physics, Sapienza University of Rome. Research activities in the fields of experimental quantum optics, quantum computation and information, foundations of Quantum Mechanics, integrated quantum photonics. Former University Researcher and Junior Research Fellow at Sapienza University of Rome. Obtained a PhD in 2004 with a thesis in experimental quantum optics. Winner of the Premio Sapio Junior per la Ricerca Italiana Award, the Medal "Le Scienze in Fisica" with the "Medal of the Presidency of the Republic". He is recently focusing on the experimental achievement of quantum supremacy – the scenario in which, for a specific computational task, quantum machines unambiguously surpass any conventional (classical) hardware. His ERC-funded lab project supported the Italian "Pint of Science 2016".

**Prof. Maria Elena Torres-Padilla**

Group Leader and Director, Helmholtz Center Munich (DE) & University of Strasbourg (FR); ERC Starting grant holder

Prof. Torres-Padilla's research aims to understand how epigenetic cues are established at the beginning of embryonic development and how it supports totipotency, which refers to the largest plasticity that a mammalian cell can have; it also examines the way in which early mammalian development is regulated by epigenetic information. Her work will also allow new insights in understanding the biology of the pluripotent stem cells, as well as early aspects of embryonic development, human reproduction and stem cell biology.

With her degree in biology, Prof. Maria-Elena Torres-Padilla left Mexico and embarked on an international career in epigenetics. She completed her PhD at the Pasteur Institute in Paris and then moved to Cambridge University. In 2006, she joined IGBMC in Strasbourg working as a group leader. She has just been appointed Director of the Institute of Epigenetics and Stem Cells of the Helmholtz Zentrum in Munich. Supported by an ERC grant, she studies the mechanisms controlling embryonic cellular plasticity with the aim of shedding new light on today's fertility issues.
Prof. Viola Vogel

Trained as a Physicist at Frankfurt University and after completing her graduate research at the Max-Planck Institute for Biophysical Chemistry, she joined the Department of Bioengineering at the University of Washington/Seattle as faculty member (1991), and moved there through the ranks to Full Professor. She was there the Founding Director of the Center for Nanotechnology (1997-2003). After her move to Switzerland in 2004, she initially joined the Department of Materials and then co-founded the new Department of Health Sciences and Technology (2012). She is a core faculty member of the new Wyss Translational Center Zurich (2015). Her research was recognized by major honors and awards, including the Otto-Hahn Medal of the Max-Planck Society 1988, the “First Award” from the Institute of General Medicine (National Institutes of Health USA, 1993-98), the Julius Springer Prize 2006 for Applied Physics, the ERC Advanced Grant (European Research Council 2008-13), the International Solvay Chair in Chemistry Brussels 2012, and an Honorary Degree Doctor of Philosophy from Tampere University, Finland 2012. She also served as Rapporteur for the Max-Planck Society (Physical-Chemical Technical Division 2012-2013), as Panel Member Representing the ERC at the World Economic Forum in Davos (2013), as Jury Member for the Queen Elizabeth Prize for Engineering (2014-present), and is a Member of the World Economic Forum Global Agenda Council in Nanotechnology (2014-2016).

Set up in 2007 by the EU, the European Research Council (ERC) is the first European funding organisation for excellent frontier research. Every year, it selects and funds the very best, creative researchers of any nationality and age, to run five-year projects based in Europe. The ERC also strives to attract top researchers from anywhere in the world to come to Europe. To date, the ERC has funded more than 6000 top researchers at a variety of stages in their careers. Under the EU research and innovation programme Horizon 2020, the ERC has a budget of over €13 billion (2014-2020). The ERC consists of an independent Scientific Council and an Executive Agency. The Scientific Council, the ERC's governing body, is composed of distinguished scientists and scholars. Prof. Jean-Pierre Bourguignon has been the ERC President since January 2014.

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