MAX-PLANCK-GESELLSCHAFT

Outstanding!

Junior scientists
of the Max Planck Society
June 2016, Saarbrücken

Contents

Outstanding!

The Max Planck Society is always on the lookout for the most creative, innovative minds in almost every discipline of the basic sciences. We offer such pioneers ideal conditions for the achievement of their research goals. From the Directors to our doctoral students, Max Planck researchers of all career stages have the courage and intellectual strength to open up new chapters in science. Especially in the case of junior scientists, our aim is to make them more aware of their own abilities and to encourage them to find their own way in research. Support of junior scientists is therefore an essential element of the Max Planck Society. We are fully aware that the same universal law holds true in science as elsewhere: the future depends on the up-and-coming generation!

The level at which our junior scientists pursue their research is consistently high across all 83 Institutes. Nevertheless, every year we single out a small number of junior scientists whose achievements we deem to be particularly outstanding. They have succeeded – right at the start of their careers – in demonstrating a high degree of scientific creativity.

The laureates featured in this booklet will be honoured at a ceremony at the 2016 Annual General Meeting in Saarbrücken in the presence of all the members of the Max Planck Society.

Prof. Dr. Martin Stratmann,
President of the Max Planck Society

The Otto Hahn Medal

2016 award winners


FÜR DEN WISSENSCHAFTLICHEN NACHWUCHS
MAX-PLANCK-GESELLSCHAFT

Biology
& Medicine
Section

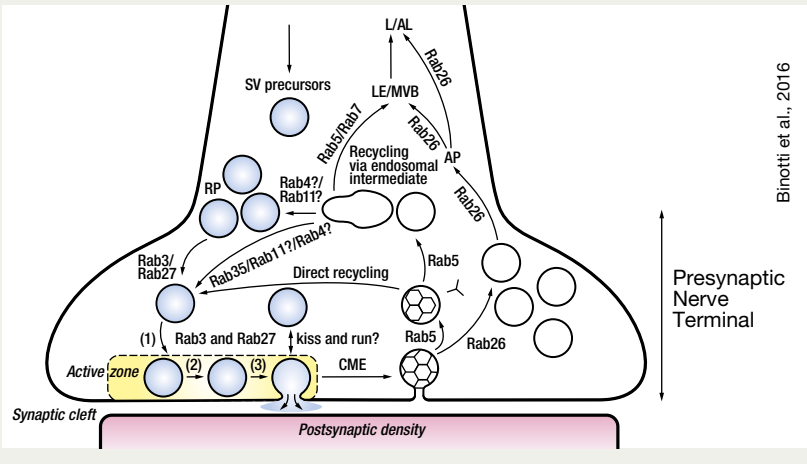
Dr. rer. nat. Beyenech Binotti

for the discovery that the small GTPase Rab26 links synaptic vesicles to autophagosomes, a novel pathway for synapse turnover

Max Planck Institute for Biophysical Chemistry, Göttingen

Research field: neurobiology

Current activity: postdoctoral fellow at the Max Planck Institute for Biophysical Chemistry, Göttingen



My topic of interest

I would like to understand the mechanism by which neuronal presynaptic proteins are degraded. I am focusing on autophagy, which is one of the important pathways involved in this process.

My motivation

I find it fascinating how single cells are capable of sustaining themselves, in a sufficient and efficient way. Trying to decipher the strategies and mechanisms with which they achieve this and observing the small steps that we are able to make to uncover these mysterious systems is the driving force that guides me to spend my days at a lab bench.

My next professional station

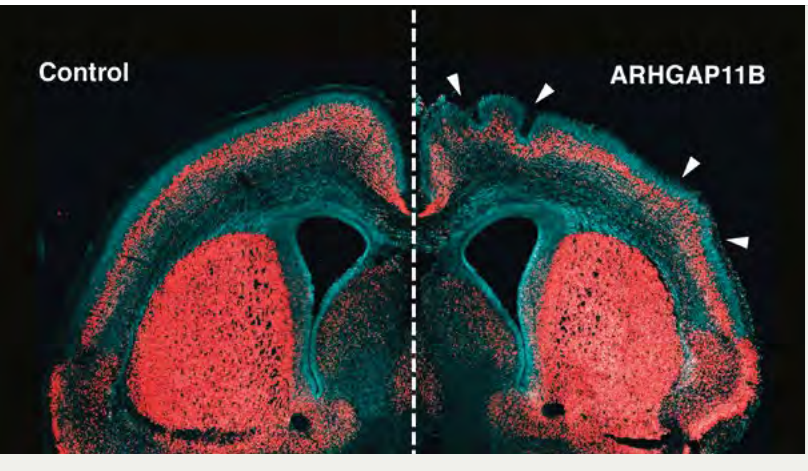
I am looking for a place where I can combine my expertise with new and useful techniques in order to build up my knowledge.

Biology
& Medicine
Section

Marta Florio, PhD

for research on the human-specific gene ARHGAP11B and the demonstration of its key role in the evolutionary expansion of the cerebral cortex

Max Planck Institute of Molecular Cell Biology and Genetics, Dresden
Research field: evolutionary neurobiology, genetics
Current activity: postdoctoral fellow at the Max Planck Institute of Molecular Cell Biology and Genetics, Dresden



My topic of interest

The evolutionary expansion of the human neocortex underlies our unique cognitive abilities, bearing on the issue of what makes us human. In search of mechanisms underlying neocortex expansion in human development and evolution, I identified genes that are specifically expressed during corticogenesis and that are unique to the human genome. I found that one such human-specific gene – ARHGAP11B – promotes cortical expansion during development, implicating this role in cortical evolution. I am now addressing the question of what is the evolutionary role of other human-specific genes active in brain development.

My motivation

I am interested in the genomic and cellular basis underlying the evolutionary emergence of human cognition. Studying what is unique about human brain development may shed light on the key evolutionary steps that led to human intelligence.

My next professional station

During my postdoc at Harvard I plan to use single-cell genomics to study the function of somatic mutations in individual neurons in the human cortex. I will explore the possibility that these mutations, by making up a genetic and cellular 'mosaic' of clonally-related neurons, could increase functional diversity within and between human brains.

Biology
& Medicine
Section

Dr. rer. nat. Nina Hafer

for the experimental proof that one parasite sabotages another parasite's manipulation of a shared host's behaviour when parasites disagree

Max Planck Institute for Evolutionary Biology, Plön
Research field: evolutionary biology, behavioural ecology, parasitology
Current activity: postdoctoral fellow at the Max Planck Institute for Evolutionary Biology, Plön

My topic of interest

I am interested in how parasites change the behaviour of their hosts by means of host manipulation. During my dissertation work, I focused specifically on what influence additional parasites have on host manipulation by another parasite.

My motivation

I have always been fascinated by the variety of nature and the question as to how complex life forms and interactions arise. In my current research I am intrigued by the fact that hosts cannot determine their own behaviour independently and that it is also at least influenced by parasites. In view of the many different organisms that live in a host and are thought to have a potential interest in its behaviour, the question arises as to whether any hosts exist that have complete control of their own behaviour. I am also stimulated by research because as soon as one question has been answered, new ones arise.

My next professional station

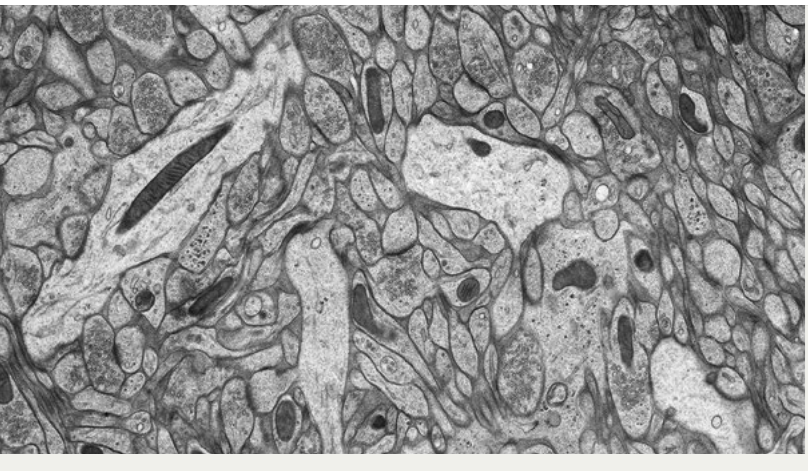
I am currently conducting research at the MPI for Evolutionary Biology as part of a postdoc position. I have not yet decided on my next challenge.

Biology
& Medicine
Section

Dr. rer. nat. Cordelia Imig

for the molecular and ultrastructural characterization of synaptic vesicle priming, a process that determines the efficiency and fidelity of signalling between nerve cells

Max Planck Institute for Experimental Medicine, Göttingen
Research field: molecular neurobiology
Current activity: postdoctoral fellow at the Max Planck Institute for Experimental Medicine, Göttingen



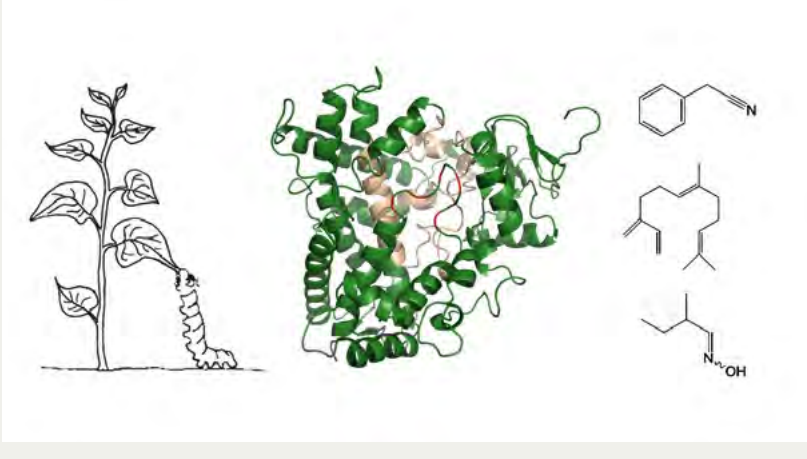
My topic of interest	I would like to understand how neurons control the release of neurotransmitters at synapses.
My motivation	For my research I use high-resolution electron microscopy methods that can visualize subcellular details such as membrane structures and organelles. I am especially fascinated by the relationships between basic cellular processes and their effects on the morphology and function of cells in general and on synapses in particular.
My next professional station	I will continue my work as a postdoc at the Max Planck Institute for Experimental Medicine. The results of my PhD dissertation have opened up exciting new lines of research and methodological approaches that I would like to pursue. In the long term, I would like to establish my own research group.

Biology
& Medicine
Section

Dr. rer. nat. Sandra Irmisch

for investigations on the biosynthesis and biological function of herbivore-induced volatiles in poplar

Max Planck Institute for Chemical Ecology, Jena
Research field: molecular biology, plant biochemistry
Current activity: postdoctoral fellow at the University of British Columbia, BC, Canada



My topic of interest

Plants produce an enormous variety of chemical compounds which might be involved in herbivore defence. In my doctoral work I investigated which of these compounds are particularly important for plant defence, how the biosynthesis of these compounds is regulated and which enzymes mediate their biosynthesis.

My motivation

I am fascinated by how plants are able to synthesize complex chemical compounds, from water and air, that carry out a variety of functions in the plants and are also indispensable to humans.

My next professional station

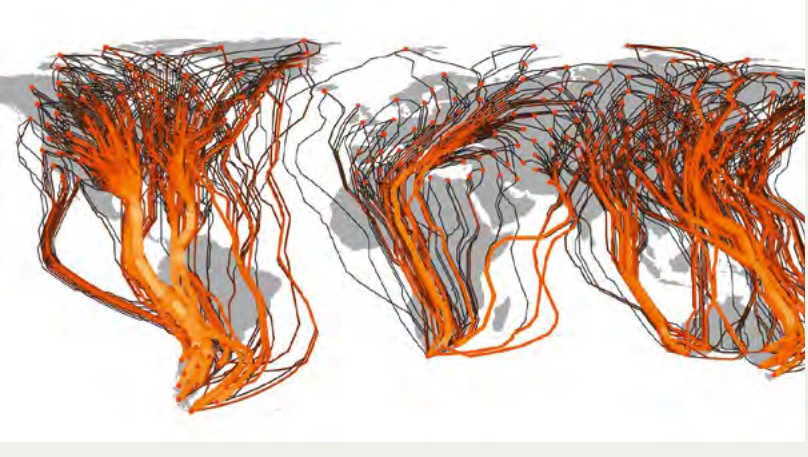
I am currently working as a postdoctoral fellow at the University of British Columbia in Vancouver, Canada, where I am investigating the biosynthesis of pharmaceutically useful plant-derived secondary metabolites.

Biology
& Medicine
Section

Dr. rer. nat. Bart Kranstauber

for research towards
a new quantitative and analytical
understanding of global animal
movements

Max Planck Institute for Ornithology, Radolfzell
Research field: movement ecology
Current activity: postdoctoral fellow at the Institute for Evolutionary Biology and Environmental Sciences at Zurich University, Switzerland



My topic of interest

I want to know how animals use the environment and how the environment influences the decisions of animals. By observing the movements and behaviour of animals via GPS tracking technology we can gain insights into which environmental conditions are important and preferred. Specifically, I would like to understand the responses of animals to environmental variation as a product of the previous experiences and physiology of the individuals.

My motivation

My research is mainly motivated by my curiosity to understand the variation that I see in nature. New technological developments allow insights that were previously unimaginable. Being part of this process, combining global datasets with computational models, is stimulating and very exciting.

My next professional station

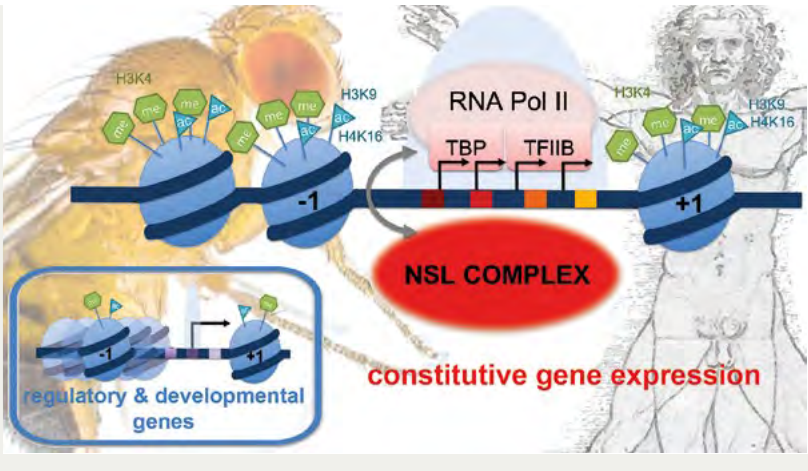
I am currently working at the University of Zurich investigating the movements and space use of meerkats. This is a very interesting opportunity, as a lot of information on individual animals is already available which can be used to understand their movements and space use.

Biology
& Medicine
Section

Dr. rer. nat. Kin Chung Lam

for contributing fundamental understanding of two distinct epigenetic complexes involved in histone acetylation in flies

Max Planck Institute of Immunobiology and Epigenetics, Freiburg im Breisgau
Research field: epigenetics and chromatin research
Current activity: postdoctoral fellow at the Max Planck Institute of Immunobiology and Epigenetics, Freiburg im Breisgau



My topic of interest

I am investigating how a histone acetyltransferase complex can specifically target housekeeping gene promoters. I am also interested in understanding how this complex regulates gene transcription.

My motivation

The homeostasis of housekeeping gene expression is vital for cell survival; yet the regulatory mechanisms of housekeeping gene transcription remain elusive. My work satisfies my curiosity to learn how gene transcription is initiated. Our research will allow us to understand diseases where housekeeping genes are misregulated.

My next professional station

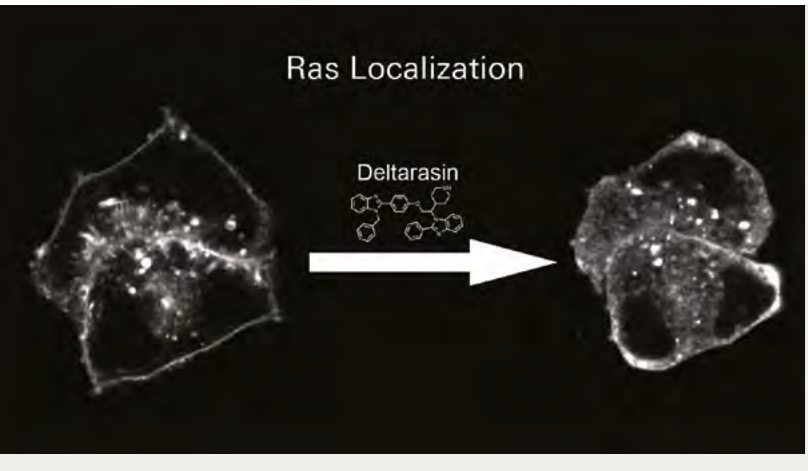
I am planning to do my postdoc training in the USA.

Biology
& Medicine
Section

Dr. rer. nat. Björn Papke

for the development of a new approach to affect oncogenic Ras signalling by pharmacological interference

Max Planck Institute for Molecular Physiology, Dortmund
Research field: molecular cell biology
Current activity: postdoctoral fellow at the Lineberger Comprehensive Cancer Center of the University of North Carolina at Chapel Hill, USA



My topic of interest

I wish to understand how oncogenes influence the growth of cancer cells, how cancer cells develop resistance to drugs and how this can be prevented. Ultimately, I hope my findings will someday have an influence on the treatment of cancer patients.

My motivation

I am motivated by fun in the lab, curiosity and interaction with fellow scientists. I am fascinated by the fact that every question answered and every paper read immediately brings up new questions. Science is a never-ending process.

My next professional station

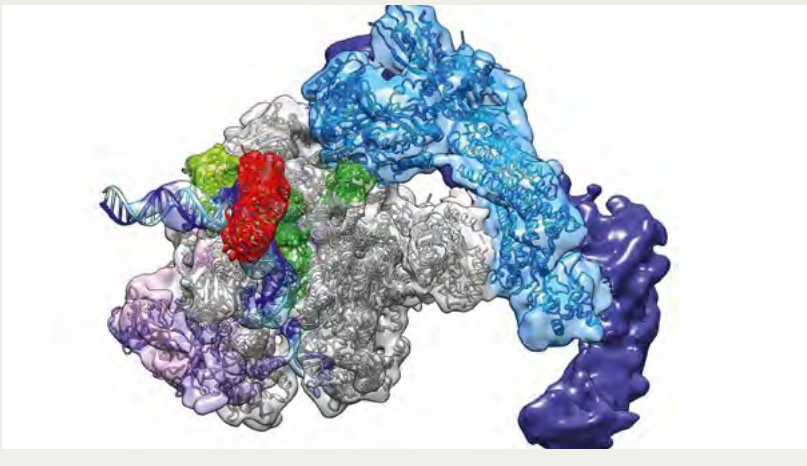
I am currently working as a postdoc in the laboratory of Professor Channing Der at the University of North Carolina at Chapel Hill. After my stay in the USA, I have my sights set on an independent group leader position or a professorship in Europe.

Biology
& Medicine
Section

Dr. rer. nat. Clemens Plaschka

for investigations of the structure of transcription initiation complexes with the use of integrated structural biology

Max Planck Institute for Biophysical Chemistry, Göttingen
Research field: structural biology and molecular mechanisms
Current activity: postdoctoral fellow at the MRC Laboratory of Molecular Biology (LMB), Cambridge, UK



My topic of interest

During my doctoral work, I studied the activation and regulation of gene expression. Using structural and systems biology methods I was able to investigate the three-dimensional structure of the minimal set of proteins required for gene activation, and to elucidate how these proteins work together to activate a specific gene.

My motivation

A cell produces millions of nucleic acid and protein molecules, which govern its growth, division and death. This complexity is fascinating. I am particularly interested in how nucleic acids and proteins interact and thereby control gene expression. Owing to recent developments in cryo-electron microscopy, it is now possible to determine the atomic structure of very dynamic macromolecules. Atomic snapshots of such processes, complemented with functional studies, enable a deeper understanding of the molecular mechanisms that control key decisions in the life of a cell.

My next professional station

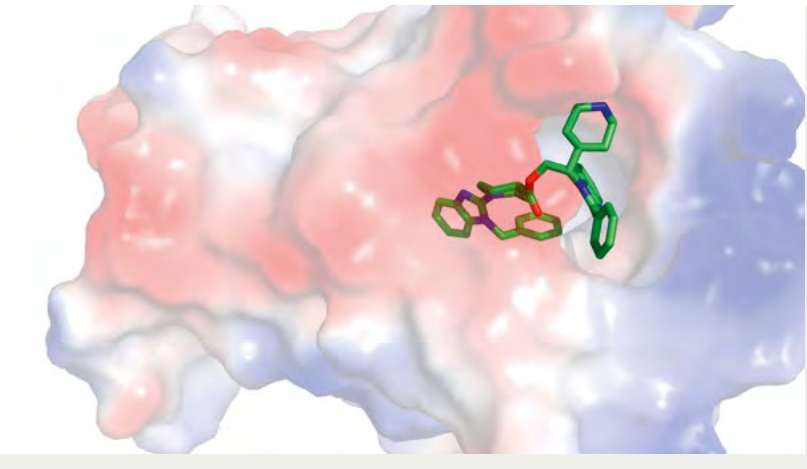
In March 2016 I joined the MRC-LMB in Cambridge as a postdoc, where I am investigating the structural basis of nucleic acid maturation by the spliceosome. Afterwards, I plan to return to Germany and continue my work as an independent research group leader.

Biology
& Medicine
Section

Dr. rer. nat. Gunther Zimmermann

for the development of a
new principle for the inhibition
of the Ras oncoprotein

Max Planck Institute for Molecular Physiology, Dortmund
Research field: medical chemistry
Current activity: postdoctoral fellow at the Swiss Federal Institute of Technology in Zurich (ETH), Switzerland



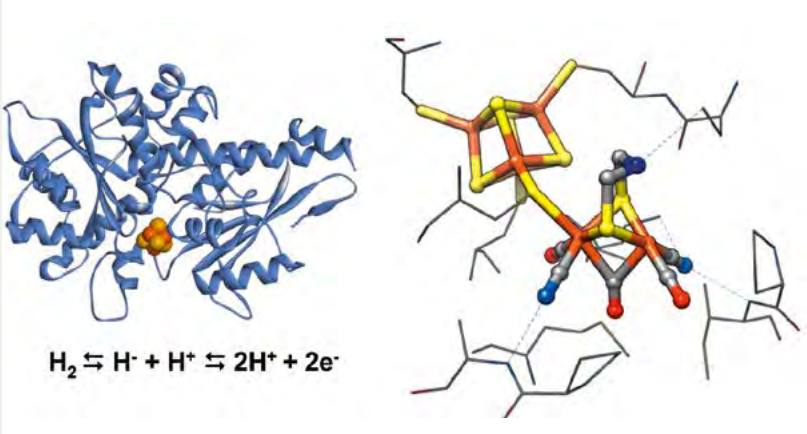
My topic of interest	Our understanding of many biological processes is still rudimentary. I would therefore like to use small, organic molecules to understand those processes better. In the long term, I would like to develop new drugs, for example for the treatment of cancer, based on that understanding.
My motivation	My research is driven by an interest in the interface between organic chemical synthesis and the development of biochemical methods. I believe that in the long term, this highly dynamic field will open up new possibilities in drug discovery.
My next professional station	I would like to continue to work in the field of pharmaceutical research.

Chemistry, Physics & Technology Section

Agnieszka Adamska-Venkatesh, PhD

for work leading to the discovery and characterization of [FeFe] hydrogenases with artificial active sites

Max Planck Institute for Chemical Energy Conversion, Mülheim an der Ruhr
Research field: biophysics
Current activity: postdoctoral fellow at the Max Planck Institute for Chemical Energy Conversion, Mülheim an der Ruhr



My topic of interest

We have to find an efficient way to store renewable energy, and to do so we are turning to nature to learn how to produce hydrogen in a cheap and efficient way using only abundant metals like iron. My research focused on the active site of an enzyme called [FeFe] hydrogenase, and I tried to understand the mechanism of hydrogen evolution as well as the structure and functionality of the active site.

My motivation

The human mind is curious by nature, and it is this that drives me to understand basic mechanisms, which often turn out to be very complicated and intriguing puzzles. Additionally, solving this riddle created by nature could be the key to solving the energy problems of our century.

My next professional station

I will continue to conduct research at the MPI for Chemical Energy Conversion on the same topic, since there are several more questions that demand answers, and these answers will determine my future.

Chemistry, Physics & Technology Section

Dr. rer. nat.
Eduardo Enrique Banados Torres

for groundbreaking studies regarding the characterization of quasars in the very early universe

Max Planck Institute for Astronomy, Heidelberg
Research field: observational cosmology, distant galaxies and black holes
Current activity: postdoctoral fellow at Carnegie Observatories, Pasadena, California, USA

My topic of interest

I am interested in understanding how and when the first stars, galaxies, black holes and large-scale structures of the universe formed and evolved through cosmic time.

My motivation

A profound motivation of mine is to gain insights into where we come from. How did our galaxy reach its current state, where can life as we know it exist? These are questions that humanity has been asking itself for millennia. However, to answer these questions we need to delve deeply into the past, as archaeologists do. In order to do this, I am seeking to discover and study some of the most distant and luminous objects of the universe: quasars. These are the only sources we can study in detail with the current generation of telescopes, when the universe was 1/14th of its current age (i.e. within its first gigayear).

My next professional station

Last November, I started the first two years of my fellowship at Carnegie Observatories, after which I will move on for two more years to Princeton University. I plan to use the telescope access and facilities at both Carnegie and Princeton to perform a comprehensive multiwavelength characterization of the earliest black holes and galaxies we know in the universe, a large fraction of which was reported on in in my dissertation.

Chemistry, Physics & Technology Section

Dr. rer. nat. Michael Förtsch

for his work on the efficient generation of narrowband photon pairs in an optically nonlinear whispering gallery mode resonator

Max Planck Institute for the Science of Light, Erlangen
Research field: quantum technologies
Current activity: new business development, Trumpf GmbH+Co.KG, Ditzingen

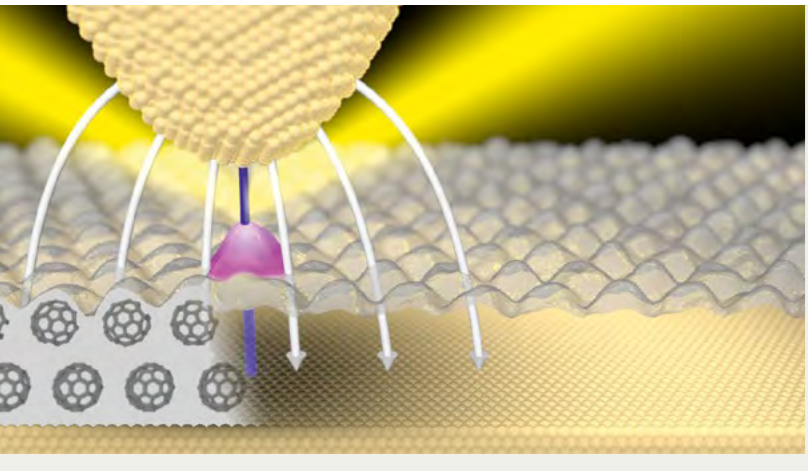
My topic of interest	In my dissertation, I dealt with the generation of individual photons. The question was whether it is possible to control those light quanta in all relevant parameters so precisely that they become compatible with other quanta.
My motivation	The – at first glance – non-intuitive behaviour of quanta, which appears to contradict everyday experience, has always fascinated me. I am driven by the possibility to understand these fundamental principles, confirm them in experiments and thus make them available as solutions to other challenges.
My next professional station	I would like to work on transferring scientific findings in quantum physics to concrete products and make them part of our everyday lives.

Chemistry, Physics & Technology Section

Dr. ès sc. Christoph Große

for regulating light generation on the atomic scale by using the electronic and structural control of individual molecules

Max Planck Institute for Solid State Research, Stuttgart
Research field: nanophotonics at the scale of individual molecules
Current activity: postdoctoral fellow at the Max Planck Institute for Solid State Research, Stuttgart



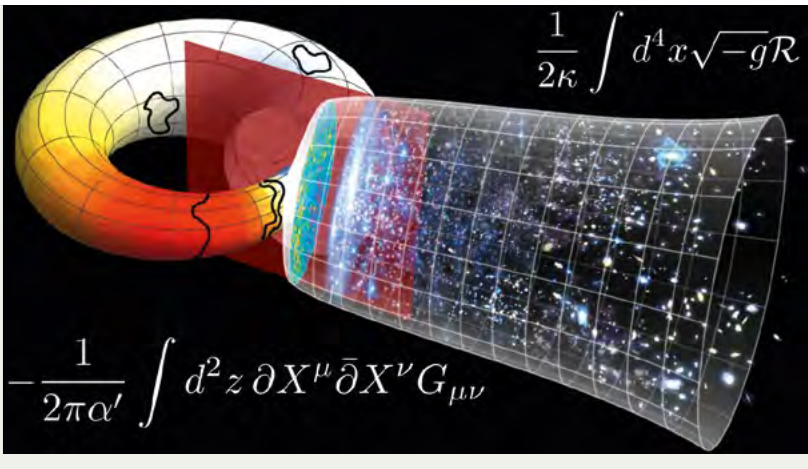
My topic of interest	In my research, I am particularly interested in the light generation of thin films and surfaces on the length scale of individual molecules and time scales of less than one billionth of a second. This is relevant, for example, for improving organic light emitting diodes or for controlling light on the atomic scale and thus far below the diffraction limit.
My motivation	There is nothing more motivating for me than the feeling of answering a fundamental question and revealing another secret of nature, after weeks or months of experiments and pondering. In this process, I always love to go to the limits of physics and the limits of what is feasible.
My next professional station	Most likely, I will continue my research as a postdoctoral fellow at the University of Cambridge.

Chemistry, Physics & Technology Section

Dr. rer. nat. Falk Haßler

for the formulation of a new double field theory of gravitation in string theory

Max Planck Institute for Physics, Munich
Research field: theoretical high-energy physics, string theory
Current activity: postdoctoral fellow at the University of North Carolina, Chapel Hill, USA



My topic of interest

At extremely high temperatures, such as those that occurred during the origin of the universe, gravitation and quantum mechanics can no longer be treated separately. String theory is an elegant approach for unifying them and allows us to study such extreme processes. I am investigating corrections of the general relativity theory – the classical theory of gravitation – that arise as a result of the extended nature of strings.

My motivation

I am motivated by curiosity as to what lies behind all the many wonders we can admire every day in our surroundings. Wouldn't it be wonderful if all this variety could be described with just one fundamental equation?

My next professional station

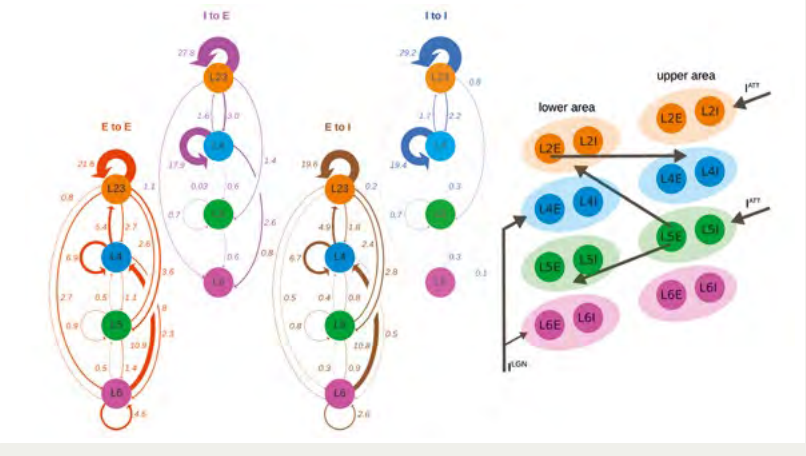
At the moment I am a postdoc at the University of North Carolina. In the long term, I would like to stick with theoretical physics and perhaps someday head a research group.

Chemistry,
Physics &
Technology
Section

Dr. rer. nat. Markus Helmer

for pioneering advances in neuronal modelling of selective attention

Max Planck Institute for Dynamics
and Self-Organization, Göttingen
Research field: computational neuroscience
Current activity: postdoctoral fellow at the
Max Planck Institute for Dynamics
and Self-Organization, Göttingen



My topic of interest

We can almost instantaneously switch the focus of our attention between various stimuli in order to process them preferentially. Many areas of the brain are involved, and they have to interact with each other flexibly. What underlying dynamic mechanisms are at work? How do these areas coordinate their activity? What are the requirements for the topology of the connections in those areas?

My motivation

Every day we process information, experience emotions and solve many problems. I am fascinated by how a piece of biological material can give rise to such properties and what general principles play a role. It is also particularly exciting to better understand the problems that can arise.

My next professional station

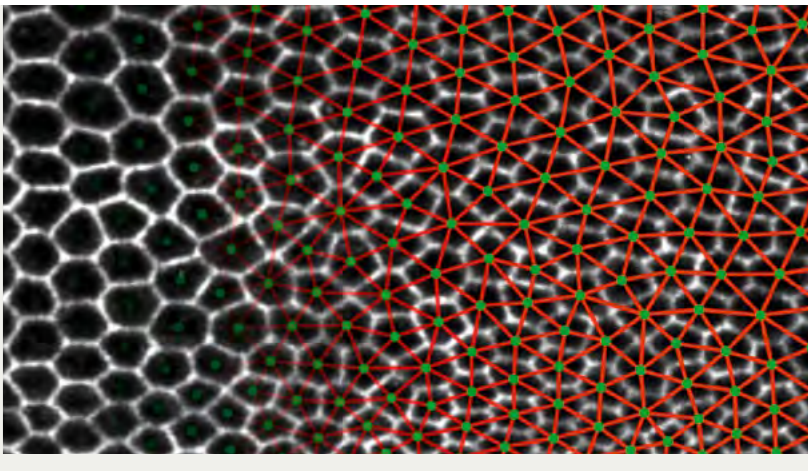
I am starting a postdoc position at Yale University in New Haven, USA.

Chemistry,
Physics &
Technology
Section

Dr. rer. nat. Matthias Merkel

for theoretical work on the biophysics of cell dynamics during tissue morphogenesis

Max Planck Institute for the Physics of Complex Systems, Dresden
Research field: physics of cellular materials
Current activity: postdoctoral fellow at Syracuse University in New York, USA



My topic of interest

With my research, I would like to understand how properties of biological tissues emerge from the complex interplay of many individual cells. That applies both to the mechanical properties of tissues, as well as the dynamics of tissue polarity. Tissue polarity is defined as the anisotropic distribution of proteins within cells. It controls for instance the orientation of hairs on our skin.

My motivation

I am fascinated by how complex behaviour on a large scale can emerge from the behaviour of individual building blocks. A breathtaking example of that is the development of higher life forms from a single egg cell. There is no architect or construction supervisor. Cells communicate often only within a short radius, and yet, in the end, an incredibly complex organism arises – and it happens reliably. At the same time, my research is relevant to an understanding of pathological situations, cancer for example, where altered cellular behaviour results in cancer tissue having different mechanical properties than healthy tissue.

My next professional station

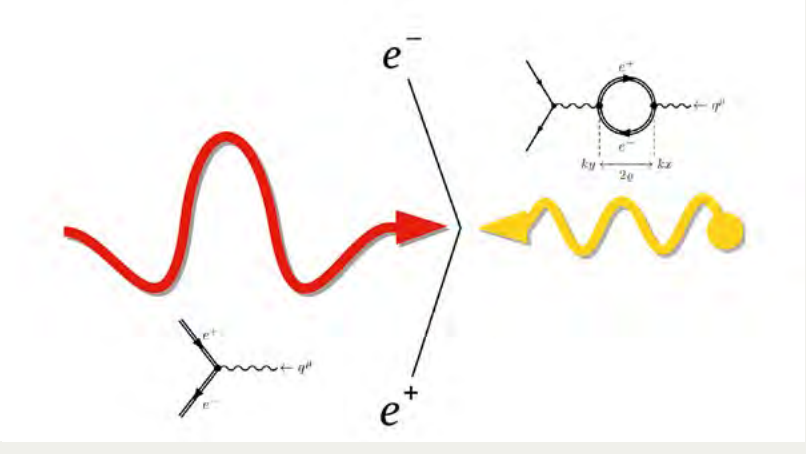
At the moment I am a postdoc at Syracuse University in the USA. In the medium term I would like to apply for a group leader position in Europe.

Chemistry, Physics & Technology Section

Dr. rer. nat. Sebastian Meuren

for his outstanding fundamental contributions to extreme-field physics and, in particular, for developing the concept of a laser-based collider from vacuum

Max Planck Institute for Nuclear Physics, Heidelberg
Research field: theoretical physics (non-linear quantum fields in strong laser fields)
Current activity: postdoctoral fellow at the Max Planck Institute for Nuclear Physics, Heidelberg



My topic of interest

The declared aim of physics is to understand the fundamental mechanisms of the micro- and macro-cosmos. Specifically, my research is concerned with processes that take place in very strong electromagnetic fields. The key question is how the laws of nature act beyond the critical field strength, also known as the Sauter-Schwinger limit.

My motivation

Although the existence of a critical field strength was predicted as early as the 1930s, the experimental investigation of this phenomenon has only recently become technically possible with the help of powerful lasers. Thanks to close cooperation between theory and experiment, we will soon be able to explore hitherto unknown worlds and put our current understanding of nature to the test.

My next professional station

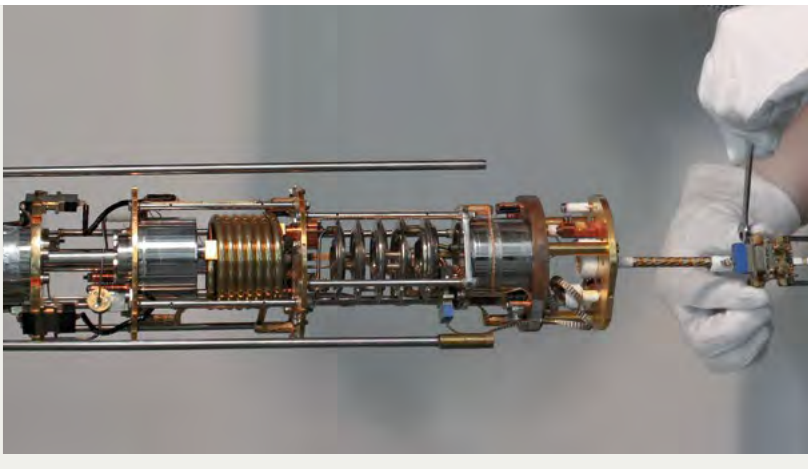
I will definitely remain in the science world and am currently planning to go to the United States as a postdoc.

Chemistry, Physics & Technology Section

Dr. rer. nat. Heike Pfau

for her studies revealing the first-ever observation of a violation of the Wiedemann Franz law, a principle of fundamental importance in metal physics

Max Planck Institute for Chemical Physics of Solids, Dresden
Research field: physics of condensed matter, strongly correlated electron systems
Current activity: Humboldt Research Fellowship recipient at Stanford University, USA



My topic of interest

Some metallic and oxidic materials show very strong correlations between the electrons. In my research, I am experimentally investigating the resulting novel electronic and magnetic states whose properties can't be described by standard physical theories of solids. Examples are unconventional superconductivity and quantum criticality.

My motivation

It is fascinating when you obtain information about tiny samples that we examine with the help of sophisticated experimental apparatus. With each measurement we are able to reveal a small secret from the crystals, while at the same time raising new questions. The concepts in the research field of strongly correlated electron systems are at once very complex and an exciting challenge to understand. I am motivated by advancing this research field with our findings.

My next professional station

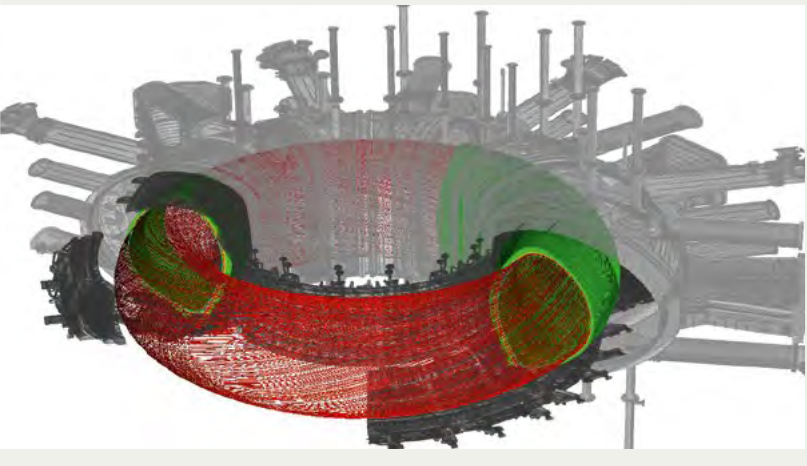
Whereas in Dresden I conducted experiments at very low temperatures on Kondo lattice systems, in Stanford I am currently investigating iron-based unconventional superconductors with the help of photoelectron spectroscopy.

Chemistry, Physics & Technology Section

Dr. rer. nat. Andreas Stegmeir

for work on the structure of turbulence in fusion plasmas in the presence of a magnetic separatrix

Max Planck Institute for Plasma Physics, Garching
Research field: plasma physics, fusion research, numerical methods
Current activity: postdoctoral fellow at the Max Planck Institute for Plasma Physics, Garching



My topic of interest

An understanding of the boundary layer in fusion reactors (tokamak) is crucial for the success of fusion. Unanswered questions relate above all to the interaction of the boundary layer with the internal zone and technically relevant criteria such as the heat load of wall materials. I am particularly interested in the influence of the geometry, which is determined by the magnetic field required to contain the plasma.

My motivation

My strongest drive is curiosity and the wish to constantly learn new things. I particularly enjoy reducing and simplifying a complex problem that initially looks impenetrable so that it eventually reveals its nature. The fact that I am working in an important research field that ultimately aims to find a solution to the energy supply of the future and in a friendly and international field keeps me motivated, even during frustrating phases.

My next professional station

I will continue my ongoing research as a postdoc at the Max Planck Institute for Plasma Physics in Garching until at least the end of 2017. I have received a great deal of trust and support there. I would therefore first like to concentrate on answering the questions related to this postdoctoral work. I will see what comes after that.

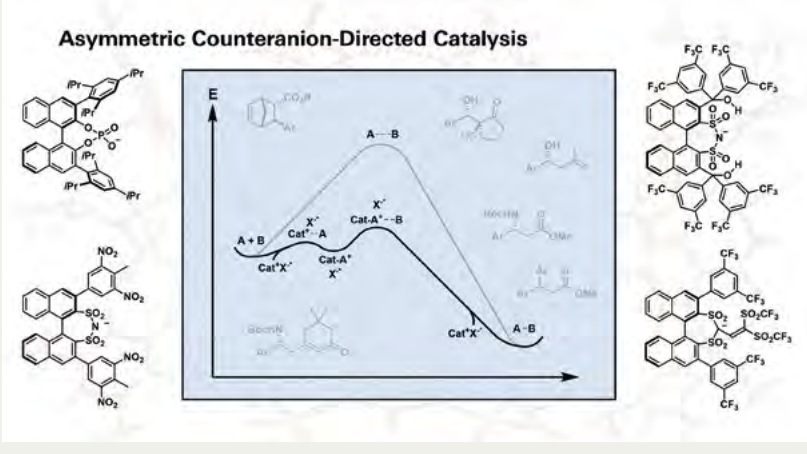
Chemistry, Physics & Technology Section

Manuel van Gemmeren is also a recipient of this year's Otto Hahn Award. **See page 37.**

Dr. rer. nat. Manuel van Gemmeren

for his development of exceptionally active and selective organocatalysts

Max Planck Institute for Coal Research, Mülheim an der Ruhr
Research field: organic chemistry, catalysis
Current activity: postdoctoral fellow at the Institut Català d'Investigació Química (ICIQ) in Tarragona, Spain



My topic of interest

In my research I study how typically unreactive substances can be brought to reaction selectively by employing a suitable catalyst. During my doctoral work, I developed extremely strong chiral acids which, in the context of asymmetric counteranion-directed catalysis, facilitate enantioselective reactions of challenging substrate combinations. I am currently investigating reactions in which carbon dioxide is activated and serves as a building block for the synthesis of preparatively useful carboxylic acids.

My motivation

In organic chemistry, especially in the synthesis of pharmaceuticals and other fine chemicals, it is important to be able to build up molecular complexity efficiently from simple compounds. I am therefore motivated by the opportunity to increase the repertoire of available key reactions through the development of new selective processes.

My next professional station

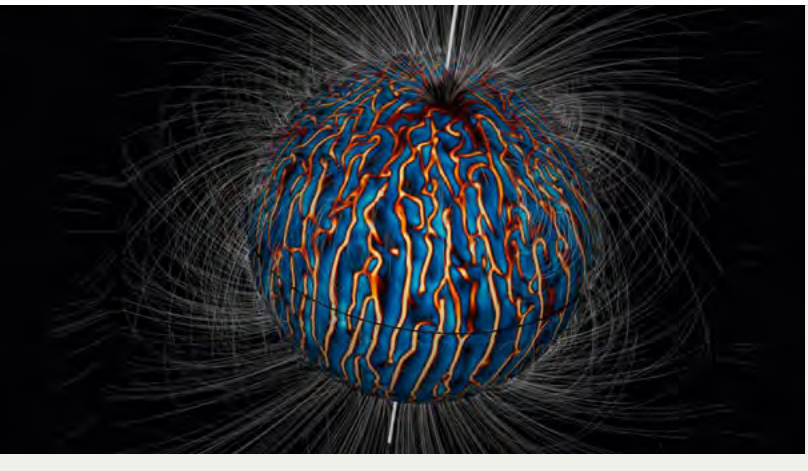
I am currently working as a Feodor-Lynen Fellowship holder at the ICIQ in Tarragona, Spain. Starting in May 2016, I plan to establish a junior scientist group in which I would like to develop new synthetic methods for the selective activation of typically inert compounds.

Chemistry, Physics & Technology Section

Rakesh Kumar Yadav, PhD

for work elucidating the communalities and differences of magnetic field generation in planets and stars

Max Planck Institute for Solar System Research, Göttingen
Institute of Astrophysics, University of Göttingen
Research field: fluid dynamics, geophysics, plasma physics
Current activity: postdoctoral fellow at the Harvard-Smithsonian Center for Astrophysics, USA



My topic of interest	How do planets and stars produce their magnetic fields? I use supercomputer simulations to answer this question.
My motivation	Since my early school days, I have been fascinated by how science helps us to better understand the world around us. I am delighted that I am now a scientist myself. Every new result that I discover using simulations of planets and stars in supercomputers gives me increased energy to move forward and explore further.
My next professional station	I have joined Harvard-Smithsonian Center for Astrophysics as a postdoc fellow. I will continue my research there.

Human Sciences Section

Dr. jur. Konrad Duden

for his enquiries into surrogate motherhood in private international law

Max Planck Institute for Comparative and International Private Law, Hamburg
Research field: private international law, comparative law
Current activity: clerk at the higher regional court, Hamburg

My topic of interest

How should German law deal with children born through surrogate motherhood? German law prohibits surrogate motherhood. Nevertheless, German couples are time and again commissioning surrogate mothers abroad. When they return to Germany with the children, the question arises as to who the parents of the child are from the viewpoint of German law. Can German law deny legal parentage of the intended parents in order to enforce the prohibition of surrogate motherhood? Or should the parentage of the intended parents be recognized for the good of the child?

My motivation

Law is generally national. Considerable differences exist between the legal regimes of various countries, particularly in family law. Nevertheless, the reality of life for many families today is international and mobile. The law doesn't always take that into account, which frequently leads to conflicts. My research is motivated by my desire to resolve these.

My next professional station

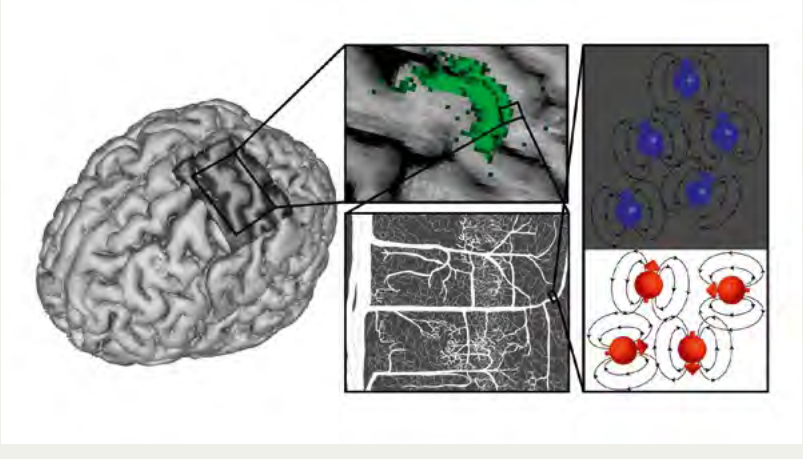
After my legal clerkship, in autumn 2016 I will join the Max Planck Institute for Comparative and International Private Law in Hamburg as a research fellow.

Human Sciences Section

Dr. rer. nat. Laurentius Huber

for the development of a method to map cerebral blood volume at high resolution as an indicator of neuronal activation

Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig
Research field: neurophysics
Current activity: postdoctoral fellow at the National Institutes of Health, Bethesda, Maryland, USA



My topic of interest

Human brain activity is a highly complex process that gives rise to phenomena such as cognition and consciousness. In my research, I am seeking to develop non-invasive imaging methods which are able to model brain activity as precisely as possible, and with the highest resolution possible. I am focusing particularly on measuring methods that can show small blood volume changes in the immediate vicinity of neurons.

My motivation

In general, I very much enjoy understanding how something works, even – or perhaps especially – when it involves puzzle-solving. My motivation to work in the field of neurophysics comes from the hope of learning how the brain works. The new method might also be able to contribute small details to that.

My next professional station

I have recently started working at the National Institutes of Health in the USA on potential uses of the new imaging method.

Human Sciences Section

Dr. jur. Carl-Wendelin Neubert

for his outstanding dissertation entitled ‘Der Einsatz tödlicher Waffengewalt durch die deutsche auswärtige Gewalt’ (‘WThe Use of Lethal Force by German Forces Stationed Abroad’)

Max Planck Institute for Comparative and International Criminal Law, Freiburg im Breisgau
Research field: norm conflicts – especially between international law, criminal law and constitutional law – in the context of the trans-border fight against crime
Current activity: legal clerkship at the Berlin appellate court

My topic of interest

My dissertation analyses the requirements and limits of the use of lethal armed force by German military and security personnel abroad against the backdrop of the increasing involvement of German armed forces in military conflicts around the world. In the normative area of tension between international law, criminal law, defence law and constitutional law, it specifically addresses the question of the legal boundaries within which the fight against terror threats and the asymmetric warfare during foreign missions of the German Army operate. In view of the increasingly lenient application of conventional legal frameworks in the fight against terror, it also looks at the question of what impact this has on security structures in Western democracies.

My motivation

My research is motivated by a quest for solutions to complex problems using instruments of law and in particular by the upholding and strengthening of fundamental legal guarantees in the face of elementary challenges and new threats.

My next professional station

My future career path is still open. But I can say that scientific research will play an important role.

Human Sciences Section

Anaïs Ménard, PhD

for research on the relationship between autochthony discourses and social practices in Sierra Leone, a significant contribution to the theory of identity construction and integration

Anaïs Ménard is also a recipient of this year's Otto Hahn Award. See page 37.

Max Planck Institute for Social Anthropology, Halle
Research field: social anthropology, migration, integration, identity, ethnicity, autochthony, postcolonial nationhood, West Africa
Current activity: postdoctoral fellow at the Max Planck Institute for Social Anthropology, Halle

My topic of interest

My research focuses on processes of social integration at the local level in contexts of migration. My field site is Sierra Leone, West Africa. I explore the following issues: What does integration mean in specific societies? What are the social mechanisms involved in processes of integration? How is alterity negotiated in contexts that are socially and culturally diverse?

My motivation

Issues of migration, mobility and integration are currently at the forefront of public debates, as many countries witness the resurgence of exclusive discourses about identity. My main motivation is to contribute to a better understanding of local dynamics of conflict, informed by relations of integration and reciprocity between social groups. I wish to explore the effects of migration and mobility on the social fabric, the way new 'imagined communities' emerge out of situations of conflict and the role that various ethnic and social identities play in the construction of the postcolonial nation.

My next professional station

At the moment, I teach at Sciences Po (France), and I have long-term research plans with respect to (1) the role of religion in processes of social integration, and (2) geographical mobility as a key feature of socialization. These two themes are part of a wider research agenda on the social and historical role of specific societies in processes of transcultural interactions.

Human Sciences Section

Dr. rer. pol. Paul Schempp

for work on liquidity provision by banks, shadow banks and the government, and the implications for financial stability

Max Planck Institute for Research on Collective Goods, Bonn
Research field: financial economics
Current activity: postdoctoral fellow at the Max Planck Institute for Research on Collective Goods, Bonn

Bundesarchiv, Bild 102-12023/Georg Pahl/CC-BY-SA 3.0

My topic of interest

My research addresses the question of the efficiency and stability of financial intermediation by banks and other institutions and markets. In the normative dimension, I am concerned with how a financial system should be optimally designed, and in the positive dimension, why our actual financial system is different and what risks this might carry.

My motivation

Financial economics is a fascinating field that combines microeconomic and macroeconomic methods and findings. The financial crisis of 2007–09 reminded us once again of the key role the financial sector plays in our economy. The crisis showed that not all aspects of financial intermediation have been adequately studied or implemented in regulations. There is still a need for research on some very fundamental questions, but also concerning the application of research findings, for example in the implementation of financial regulations. The latter is particularly challenging in view of the constant innovation of financial products.

My next professional station

I am looking forward to continuing my work as a postdoctoral fellow at the Max Planck Institute for Research on Collective Goods.

Human Sciences Section

Marcin Serafin

for research on the social organization of the working time of taxi drivers with the example of Warsaw

Max Planck Institute for the Study of Societies, Cologne
Research field: economic sociology
Current activity: postdoctoral fellow at the Max Planck Institute for the Study of Societies, Cologne

My topic of interest

The fundamental question that my research addresses is how economic outcomes are shaped by different social processes. In my dissertation, I studied the working day of taxi drivers and explored how it has been affected by diverse social factors, such as the organization of taxi drivers' family life, their engagement in political struggles, and the transformation of the Polish economy from socialism to capitalism.

My motivation

My research has been motivated by the idea that sociologists are able to successfully study topics that are usually considered to be within the domain of economics. Like other economic sociologists, I try to show that in order to understand economic processes we have to study their social contexts. And this social context is very often neglected by standard approaches in economics.

My next professional station

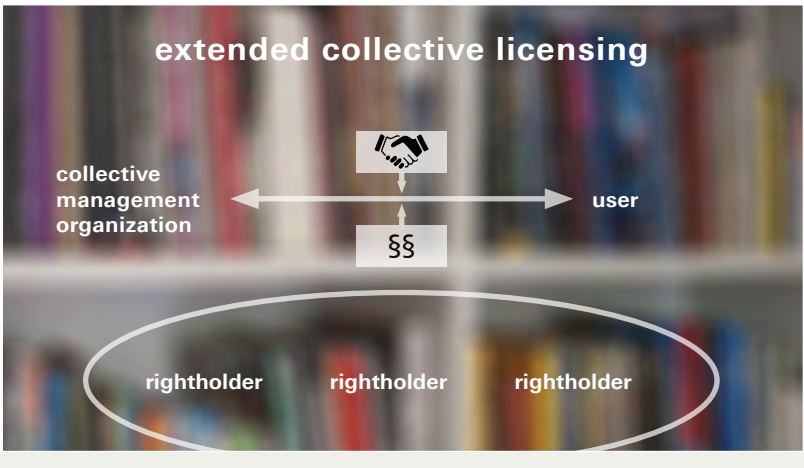
Currently, I am continuing my research as a postdoctoral researcher at the Max Planck Institute for the Study of Societies and I am looking for my next research position.

Human Sciences Section

Dr. jur. Felix Trumpke

for his brilliant analysis of the Nordic extended collective licensing system

Max Planck Institute for Innovation and Competition, Munich
Research field: intellectual property and competition law
Current activity: legal intern at the higher regional court Frankfurt am Main



My topic of interest

My dissertation deals with the Scandinavian copyright model of the extended collective licence. I am investigating the structure and requirements of this legal instrument – which is virtually unknown in Germany – and examining whether the model could also be applied in Germany and the rest of Europe so as to promote and facilitate the licensing of entire repertoires of copyrighted works.

My motivation

Research in intellectual property law always means taking into account recent technological developments and economic and social interests involved in the protection of works of literature and art and of technical knowledge. Copyright law in particular has found itself in a crisis of purpose in recent years due to rapid changes in the form of digitization and global communication. Instead of resorting to traditional patterns of understanding, these times of change call for an unbiased search for solutions regarding how the creation and dissemination of works can be promoted and how authors can be adequately compensated for the use of their works.

My next professional station

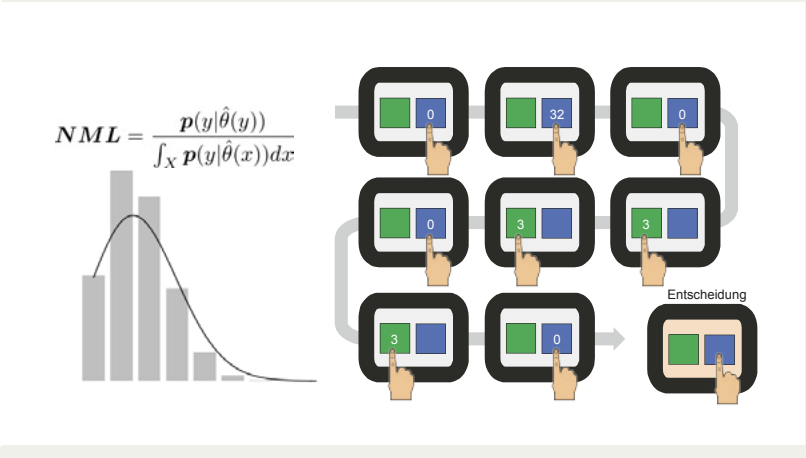
I am currently serving a legal internship at the higher regional court Frankfurt am Main, which I will complete this year.

Human Sciences Section

Dr. Dirk Wulff

for work on the mechanics and psychology of experienced-based decision-making

Max Planck Institute for Human Development, Berlin
Research field: cognitive decision sciences
Current activity: postdoctoral fellow at the Max Planck Institute for Human Development, Berlin



My topic of interest

I am interested in how people make decisions under uncertainty. Real situations rarely provide complete information on the potential consequences of a decision. I study how people reduce uncertainty by seeking out information, what statistical regularities govern the experiences thus gained and how decisions are subsequently made on the basis of experience.

My motivation

Economic and psychological decision research has long ignored the influence of personal experience. With my research, I hope to contribute to a better understanding of why people underestimate risks such as climate change and economic crises. I would like to develop methods that improve the communication and accurate perception of risks.

My next professional station

I am currently working as a postdoc at the MPI for Human Development. In September 2016, I will join the cognitive and decision sciences group of Professor Rui Mata at the University of Basel. I am glad that I will remain affiliated with the MPI for Human Development.

The Otto Hahn Award

The Otto Hahn Award is bestowed by the Max Planck Society every year to particularly worthy recipients of the Otto Hahn Medal.

The award provides for a long-term research residency abroad, followed by leadership of a Research Group with the scientist's own research concept at one of the Max Planck Institutes. The award is intended to pave the way for a long-term scientific career in Germany.

This year one female scientist and one male scientist will be honoured with the Otto Hahn Award of the Max Planck Society.

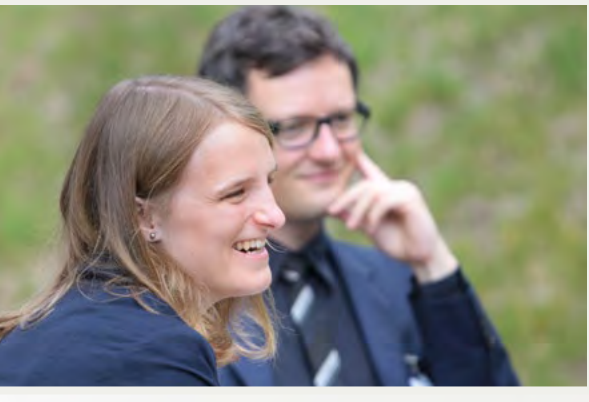
Anaïs Ménard, PhD

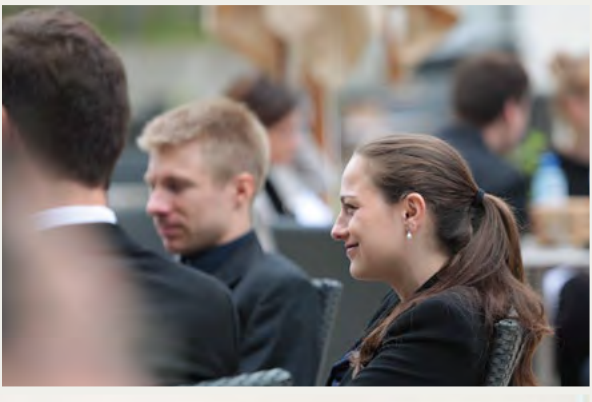
Human Sciences Section
see page 31

Manuel van Gemmeren

Chemistry, Physics & Technology Section
see page 26

Impressions of the 2015 awards ceremony at Harnack House, Berlin-Dahlem





The Dieter Rampacher Prize

As a motivation for students to complete a PhD when young, the Dieter Rampacher Prize has been awarded to the youngest PhD student of the Max Planck Society every year since 1985. The prize usually goes to a young researcher aged 25 to 27. The prize also includes a monetary award.

The prize was endowed by Dr Hermann Rampacher, a Supporting Member of the Max Planck Society, in memory of his brother, Dieter Rampacher, a physics student at the TH Stuttgart, who died in battle in 1945 at the age of 20.

Carsten A. Rampacher, son of the benefactor and also a Supporting Member of the Max Planck Society, has assumed funding of the prize since 2011.

Dr. rer. nat. Michael Maseda

Dissertation: ‘Starbursting Dwarf Galaxies at z > 1’

Max Planck Institute for Astronomy, Heidelberg
Research field: galaxy formation and evolution
Current activity: postdoctoral fellow at the Leiden Observatory (Leiden University), The Netherlands

My topic of interest	I am seeking to understand how galaxies grow by studying low-mass ‘dwarf’ galaxies. It is in the lowest-mass galaxies where many of the most important processes that affect galaxy evolution are poorly understood.
My motivation	Individual galaxies are extremely complex systems consisting of billions of stars that are shaped by a variety of processes and operating on scales differing by many orders of magnitude. Despite this, the galaxy population appears to generally follow similar trends and shows a remarkable level of regularity. This represents a tantalizing puzzle that requires a multifaceted approach with the largest telescopes in the world.
My next professional station	I have been working at the Leiden Observatory as a postdoctoral fellow since September 2015, having received a NOVA Fellowship.

The Nobel Laureate Fellowship

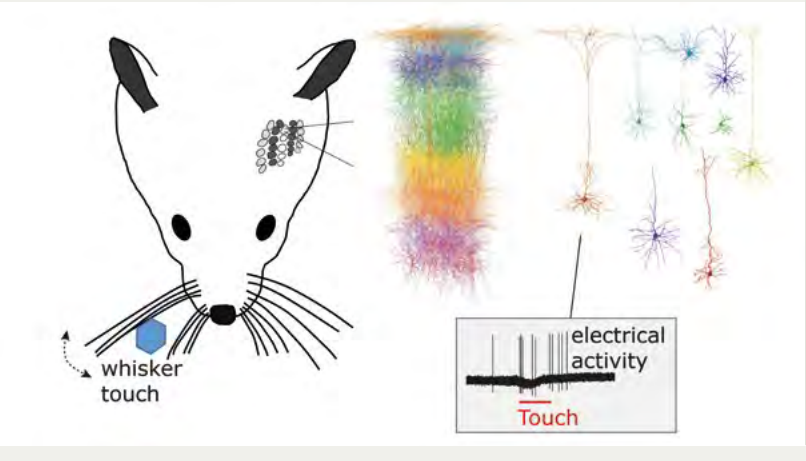
The Nobel Laureates of the Max Planck Society can each nominate an outstanding postdoc for a Nobel Laureate Fellowship in recognition of their achievements. The fellows receive an employment contract at a Max Planck Institute as well as resources for research. This instrument for promoting junior scientists of the Max Planck Society provides postdocs with a unique insight into the research activities of the Nobel Laureates. They also benefit from excellent national and international networks for their future career.

Funding period
6/15 – 5/18

Suman Das

Nobel Laureate:
Prof. Dr. Bert Sakmann

Max Planck Institute of Neurobiology, Martinsried
Research field: cellular basis of information processing in the somatosensory cortex
Current activity: postdoctoral fellow at the Center for Neurogenomics and Cognitive Research, VU University Amsterdam, The Netherlands



My topic of interest

In our daily lives, we are constantly bombarded with sensory information, which is processed by highly specialized neuronal circuits in our sensory cortices. These sensory cortices consist of multiple layers and many different cell types, each with their own specific function. My goal is to study the organizational principles of the cortical circuitry and to reveal the link between the structure and function of individual neurons.

My motivation

Perception of our sensory world allows us to interact with our dynamic environment and to optimize behaviour. I am extremely motivated to study sensory processing in the somatosensory cortex (processing of tactile information) and to understand how cortical activity represents the external world and how cortical activity shapes behaviour.

My next professional station

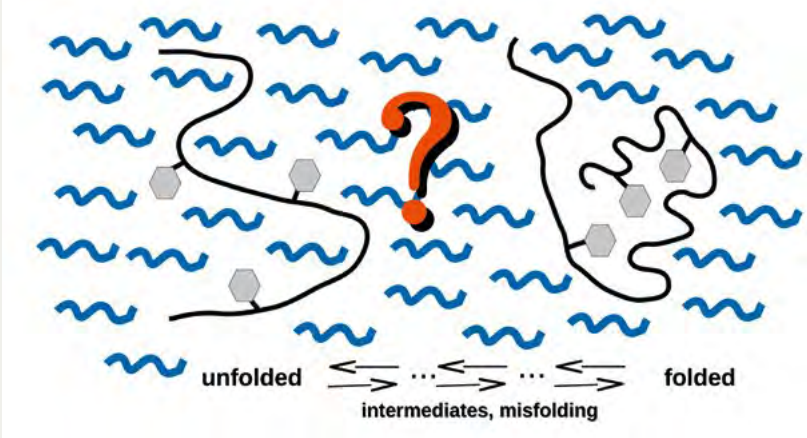
The MPG Nobel Laureate Fellowship will allow me to study sensory processing for the next three years together with Dr. Christiaan de Kock and Professor Bert Sakmann.

Funding period
1/16 – 12/16

Mariusz Jaremko, PhD

Nobel Laureate:
Prof. Dr. Erwin Neher

Max Planck Institute for Biophysical Chemistry, Göttingen
Research field: protein folding and misfolding, NMR-based structural biology
Current activity: postdoctoral fellow at the Max Planck Institute for Biophysical Chemistry, Göttingen



My topic of interest

I am endeavouring to understand and describe the basic principles of protein folding and misfolding under conditions that correspond as closely as possible to physiologically relevant conditions. Detailed knowledge about how proteins adopt their native, biologically vital structures and dynamics along with knowledge of what makes them transform into the pathological forms, such as amyloids, is the key question of current biophysics. Studying the protein conformational landscape mystery, it is hoped, will allow the rational design of new drugs and therapies for numerous neurodegenerative diseases, such as Alzheimer's and Parkinson's disease, as well as other protein-aggregation-related diseases, such type II diabetes. On the whole, the quest for decoding protein folding and misfolding is the Holy Grail of science today!

My motivation

I would like to contribute to our understanding of the processes essential for life and make my modest input to the sum of the general knowledge.

My next professional station

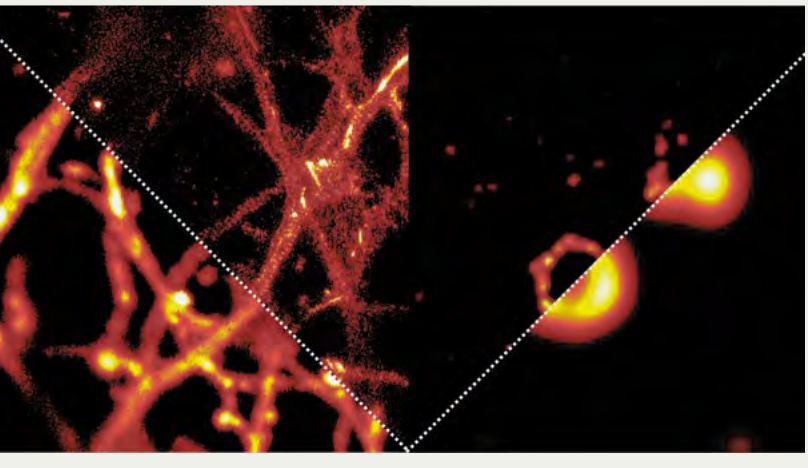
I would like to find an independent tenure-track position in the near future in order to develop and continue my research work in the field of macromolecular biophysics. I would like to share my knowledge and my passion for the study of proteins with others and establish a reputation of excellence.

Funding period
5/16 – 4/18

Gražvydas Lukinavičius, PhD

Nobel Laureate:
Prof. Dr. Stefan W. Hell

Max Planck Institute for Biophysical Chemistry, Göttingen
Research field: labelling of biomolecules, fluorescent probes, super-resolution microscopy applications
Current activity: postdoctoral fellow at the Max Planck Institute for Biophysical Chemistry, Göttingen



My topic of interest	I am looking for answers as to how cell structures are assembled and how they interact with each other at the molecular level in order to respond to environment stimuli. What is the difference between pathological and normal states of the cell?
My motivation	The biggest motivation for me is to gain knowledge that is useful for society. I believe that understanding the complexity of living organisms and how they function at the molecular level represents such knowledge. Eventually, this knowledge will allow us to fight many diseases and improve people's quality of life.
My next professional station	I have just arrived at the Max Planck Institute for Biophysical Chemistry in Göttingen. I would like to benefit from the excellent scientific environment of this institution to generate new ideas and test them.

Funding period
1/16 – 12/16

Dr. rer. nat.
Emilio Rodriguez Caballero

Nobel laureate:
Prof. Dr. Paul J. Crutzen

Max Planck Institute for Chemistry, Mainz
Research field: earth sciences
Current activity: postdoctoral fellow at the Max Planck Institute for Chemistry, Mainz

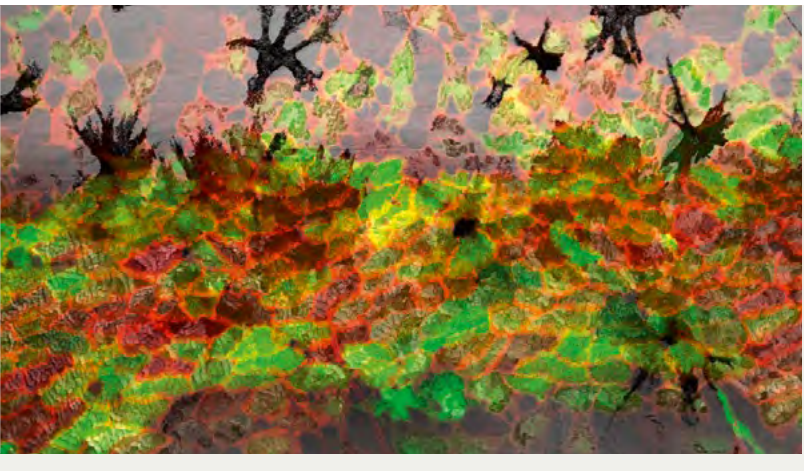
My topic of interest	I am interested in the global role of biological soil crusts on the earth system, and how it is affected by land use and climate change. Currently, I am working on the role of biological soil crust on several processes involved in earth system functioning (C fluxes, water cycles, dust emissions, etc.).
My motivation	I am fascinated by the important role of biological soil crusts on numerous ecosystem processes, and, taking into account their global extent, I decided to quantify their global effect.
My next professional station	I have not yet planned my next professional station. We are focused on our current research and my plans will depend on the results obtained during the actual projects.

Funding period
8/14 – 7/16

Ajeet Pratap Singh, PhD

Nobel laureate:
Prof. Dr. Christiane Nüsslein-Volhard

Max Planck Institute for Developmental Biology, Tübingen
Research field: developmental biology
Current activity: postdoctoral fellow at the Max Planck Institute for Developmental Biology, Tübingen



My topic of interest	I am interested in understanding social behaviour. I will use the zebrafish as an animal model to understand the genetic basis of social behaviour, such as shoaling. Of interest will be an understanding of the role of fish colour patterns in their social behaviour.
My motivation	Ever since I started working with fish, I have been fascinated by their tendency to be in groups. This is intriguing, and somewhat similar to aspects of our own social behaviour.
My next professional station	In July 2016, I will be moving to the Novartis Institutes for Biomedical Research, Cambridge, USA, as an investigator.

The Reimar Lüst Fellowship

The Reimar Lüst Fellowship is financed by a foundation that was created in 1983 on the occasion of the 60th birthday of Reimar Lüst, a former president of the Max Planck Society.

The foundation's endowment consists of donations from German companies. The foundation fosters junior scientists via the two-year Reimar Lüst Fellowship, which is awarded annually.

After the editorial deadline for this publication, it was announced that the fellowship was awarded to

ADRIANE POHL

Max Planck Institute for Astronomy, Heidelberg.

Imprint

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