




Leopoldina
Nationale Akademie
der Wissenschaften

Leopoldina news

4/2017

Deutsche Akademie der Naturforscher Leopoldina –
German National Academy of Sciences

Halle, 10 August 2017



In focus: Genome editing

Leopoldina's Annual Assembly will discuss the latest developments

ANNUAL ASSEMBLY

P. 3



Leopoldina's members to
meet in September
Talk with Ernst-Ludwig
Winnacker and Axel Meyer

SOCIAL MEDIA

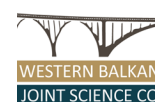
P. 6



Science, the public and
the media
Position paper presented
in Berlin

BALKANS CONFERENCE

P. 8



Western Balkans and the
European Union
New foundation promotes
young scientists

Editorial

Dear Members and Friends of the Leopoldina,



In light of new possibilities for more targeted genetic intervention, it is essential that we provide the public with reliable scientific information and encourage social debate.

How should genome editing tools be utilised and where should lines be drawn when it comes to their application in plants, animals and humans? As a national academy of sciences, the Leopoldina has taken up this issue and organised several forums this year that provide an opportunity for medical, ethical, evolutionary biological, and legal opportunities and risks to be discussed with experts in the field.

At the Leopoldina's Annual Assembly, taking place from 22 to 23 September in Halle (Saale), leading scientists will tackle the subject of genome editing and the challenges that come with it. Prof. Ernst-Ludwig Winnacker ML and Prof. Axel Meyer ML provide a taste of what to expect on page 3. This year's Leopoldina meeting for journalists in early September will also focus on the possibilities presented by genome editing. Media representatives will have the chance to enter into lively debate with experts on the topic in a setting similar to a British House of Commons session (see page 4). In October, an international workshop organised by the Leopoldina, the Inter Academy Panel (IAP), the European Academies Science Advisory Council (EASAC), the National Academy of Sciences (NAS) and the Volkswagen Foundation will be held in Hanover with a focus on the potential risks associated with the application of genome editing techniques (see also page 4). We very much hope to see you at one of our events to discuss these topics further. You can also find background information and publications on genome editing on our website www.leopoldina.org, under the section "Topic in focus".

I wish you a thought-provoking read.

Ernst-Ludwig Winnacker

Leopoldina's Annual Assembly to focus on genome editing

Members and guests convene on 22 and 23 September in Halle



In 2015, Emmanuelle Charpentier was honoured with the Leopoldina's Carus Medal for her research into the targeted and precise modification of genes. She is among the most highly anticipated speakers at this year's Annual Assembly.

Photo: Christoph Rieken

The topic for this year's Annual Assembly of the German National Academy of Sciences Leopoldina is "Genome Editing – Challenges for the Future". Members and guests of the Leopoldina will come together on 22 and 23 September to discuss issues surrounding the development and application of new methods in molecular biology known as "genome editing" or "genome surgery". These methods enable certain locations in the DNA of a cell to be targeted and modified with a level of precision and accuracy that has not been possible before now.

So-called molecular scissors such as the TALENs and CRISPR/Cas systems are currently the most widely used genome editing tools. At the Annual Assembly's opening session the Friday, Prof. Jens Boch (Hanover), Prof. Emmanuelle Charpentier ML (Berlin) and Prof. Rudolf Jaenisch ML (Cambridge, MA/USA) will speak about the application and development of these

tools. Over the subsequent sessions and the panel discussion, participants and speakers will address, explain and discuss topics ranging from clinical research and applications in human medicine and plant breeding to social issues and international legal standards.

One of the central objectives of the Annual Assembly is to offer a platform for scientists working in various fields to exchange ideas and perspectives.

In his keynote speech on the Friday evening, Prof. Axel Meyer ML will explain the extent to which genes determine our lives.

To conclude this year's Annual Assembly, an excursion will take participants to the Panorama Museum in Bad Frankenhausen – thus tying in with celebrations surrounding the 500th anniversary of the Reformation. (dw)

PRIZES AND MEDALS

On Friday 22 September, the Leopoldina will once again award prizes and medals during the opening ceremony of its 2017 Annual Assembly.

These include the Cothenius Medal for a lifetime of outstanding scientific achievement as well as the Schleiden and Carus Medals. In addition, the Leopoldina will present the Leopoldina Prizes for Junior Scientists and the Georg Uschmann Award for outstanding doctoral dissertations on topics related to the history of science.

“This is the cutting edge of science“

Ernst-Ludwig Winnacker and Axel Meyer look forward to a thought-provoking Annual Assembly

Biochemist Prof. Ernst Ludwig Winnacker ML (Munich), the long-standing president of the German Research Foundation (DFG), is already looking ahead to the Leopoldina's Annual Assembly with excitement: “Genome editing is a biological breakthrough the likes of which we haven't seen in a long time!” He explains that, although he has experienced many scientific developments in his time, significant progress has hitherto been stalled for lack of a method such as CRISPR/Cas9.

Now, this newly discovered technique is being used to carry out targeted modification of genomes across all fields of bioscience, enabling the genetic building blocks of plants, animals and humans to be “cut out” and replaced. The potential imprecision of these “molecular scissors”, i.e. the risk of unintentional cuts being made in the genome, does not worry Winnacker: “The precision of this method is constantly improving,” he says with conviction.

But Winnacker also understands the other side of the issue. In the keynote speech that he will deliver on Friday 22 September, titled “Evolution – natural or man-made?”, Winnacker will outline expectations that we will one day succeed in eradicating monogenic disorders such as Huntington's or sickle-cell disease. Yet he will also stress the importance of considering the implications of inherited genetic modifications. “Do we know enough about these mutations to simply eliminate them?” he asks. “Or will we be jumping out of the frying pan and into the fire?”

These are the pressing questions that Winnacker wants to tackle. Winnacker, who co-authored the discussion paper “Ethical and legal assessment of genome editing in research on human cells”, advocates research on surplus embryos produced through in vitro fertilisation methods. This is a controversial topic. “We simply want to use surplus embryos to research human development,” he explains in defence of his position. “We have no intention of making a CRISPR baby.” But what laws are required? How should German science position itself internationally in this field? And how will genome editing continue to develop?



Ernst-Ludwig Winnacker was inducted into the Leopoldina in 1988 and awarded the Leopoldina's Medal of Merit in 2010. He was one of the eleven co-authors of the Leopoldina Discussion Paper “Ethical and legal assessment of genome editing in research on human cells”, which was published in March of this year.

Photo: David Ausserhofer

Axel Meyer has been a member of the Leopoldina since 2008. He was recognised in 2009 with the Leopoldina's Carus Medal. He is an active member of the working group “Challenges for taxonomic research in the age of omics technologies” and serves as the scientific organiser of symposia such as the “Genomics of speciation, species differences and adaptations”.

Photo: Marco Schilling



These are the sorts of discussions that Prof. Axel Meyer ML (Konstanz) is looking forward to engaging in at the Annual Assembly. As an evolutionary biologist and genomicist, Meyer has first-hand experience of using CRISPR/Cas9 in the laboratory. He mentions that even he had initial reservations about the accuracy of the method. “The complex topic of genome editing will be discussed in Halle not solely from a biomedical point of view, but candidly from many different perspectives – that is what makes the event really exciting.” And that is very much the context for his public lecture, which will be held on the Friday evening. The lecture takes its title from Meyer's latest book, *How Genes Determine Our Lives and Why Women Are Different From Men*. “I want to explain how we are all born with a different genetic fate and outline what is known about the genetic and epigene-

tic differences between men and women,” explains Meyer.

He sees his popular science book – which was considered a provocation by some in gender research – as an entertaining means of bridging the gap between natural and cultural sciences. “Both sides still live in seemingly different worlds and often don't know enough about one another.” For Meyer, this scientific exchange is all about open discussion.

Both speakers agree that, with a topic of such social relevance as its focus, this year's Annual Assembly is an extremely important event. “I, too, will learn a great deal over the two days in Halle,” Meyer is convinced. Winnacker is particularly looking forward to discussing how research will continue to progress from here: “Speakers include Emmanuelle Charpentier and other pioneers of genome editing. This is the cutting edge of science.” (cwe)

Topic in focus: Genome editing

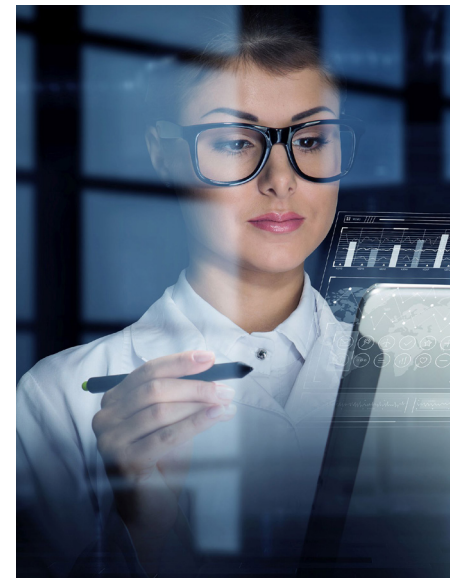


In May of this year, Leopoldina introduced a new section on its [web-site](#). The section – titled “Topic in focus” – casts a spotlight on scientific issues that provoke intense interest among the public and the media. The first topic to be covered is genome editing, a biomedical method so precise that it is often indistinguishable from a natural mutation. This raises a number of questions that the new section addresses through podcasts, expert information, publications and event coverage.

Photo: freshidea - fotolia.com

Freedom and responsibility in computer sciences

Particularly over the last two decades, the contribution of computer sciences to the development of new information and communication technologies has had an enormous impact on our professional, private and public lives. While the benefits of mobile telephones with all their sensors, self-learning software agents and social networks are generally obvious to consumers, the associated risks – such as potential violations of our personal rights or new methods aimed at influencing consumer behaviour and public opinion – are not always so easy to recognise.



Computer science is a key technology of the 21st century.

Photo: Sergey Nivens

Computer scientists are constantly faced with the challenge of weighing up the potential benefits of new findings for IT technology development against the potential (inadvertent) risks of misuse. The Joint Committee is holding a full-day workshop on 27 October in Darmstadt to delve deeper into the security issues surrounding IT research.

The event will encourage discussion with the scientific community about responsible approaches to security-relevant research in computer sciences and help make researchers more aware of their own personal responsibility in this area.

(jf, yb)

Assessing the security implications of genome editing technologies

International workshop at Herrenhausen Palace in October

Former Leopoldina president Prof. Volker Meulen ML has organised a workshop for October 2017 that will explore the potential security concerns posed by genome editing technologies. “We are delighted to have put together a line-up of high-profile experts,” says ter Meulen, “including Nobel laureate and President of the Royal Society Venkatraman Ramakrishnan.”

The purpose of the event is to address the latest developments in genome editing and analyse these developments in relation to their current and future use in organisms such as microbes, plants, animals and humans. Focus will be placed on the risks and potential misuse of genome editing methods.

Ter Meulen sees international dialogue as particularly important in this field because of the rapid development and wide-spread use of genome editing tools, such as CRISPR/Cas9, in countries with various, sometimes divergent, regulations and governance of research.

Workshop participants will explore near, middle and long-term security concerns – relating to intentional misuse – that may arise from these applications. Participants will also discuss the technical, operational, regulatory and governance strategies that may aid the scientific and security communities in preventing or mitigating those security concerns.

The event is hosted by the Leopoldina; the US National Academies of Sciences, Engineering, and Medicine; the InterAcademy Partnership (IAP), the global network of science academies; and EASAC, the European network of national science academies. A report summarizing the workshop discussions will be published subsequently. These activities are supported by the Volkswagen Foundation and the Gordon and Betty Moore Foundation.

(csd)

■ INFORMATION AND REGISTRATION

■ WORKSHOP COMPUTER SCIENCES

Social media and science communication

Guest article by Reinhard F. Hüttl, Executive Board Member of acatech – the National Academy of Science and Engineering

BY PROF. REINHARD F. HÜTTL *

Social media is rapidly changing the way we communicate with one another, as accessing knowledge and voicing our opinions publicly is now easier than ever before. At the same time, we are witnessing the emergence of echo chambers: closed circles where like-minded people reinforce each other's opinions. The way science is communicated is undergoing similar changes. How can we best safeguard – and indeed increase – the quality of science communication in this environment? These are the kinds of questions that were addressed in the second phase of the joint academy project “Communication between Science, the Public and the Media”.

One thing was immediately clear: without independent and high-quality media, the future looks bleak. Freedom of the press and freedom of science are two of the central pillars of our democratic society. Self-generated content on social media can never replace independent journalism. There are many reasons why critical journalism not only requires attention, but also financial support – without compromising its autonomy. For example, independent journalism could receive and allocate public funding in the same way science already does. We in the scientific community are also currently debating how the quality of our communication can be safeguarded. This should be considered more important than output. At the same time, science must resist the temptation to replace journalism with self-promotion. Exaggerated statements should be avoided. Not every research finding needs to be marketed as ground-breaking, and we do not need an excessive amount of glossy brochures. But most importantly, science communication should not primarily serve to advertise the specific institution, but rather to communicate the science. Joint initiatives such as Wissenschaft im Dialog or the recently created Science Media Center are extremely helpful in this regard.

Science abandoned its ivory tower a long time ago. But the walls of the new echo chambers are getting thicker and thicker. If you search for opponents of car-



Reinhard F. Hüttl is the spokesperson of the academies' joint working group.

Photo: David Ausserhofer

bon capture and storage (CCS) via social media, you will soon be bombarded with content in the same vein. Algorithms follow our habits and use the data collected to determine our opinions and beliefs. So as well as focusing on hate speech and fake news, we should also be talking about regulations that address these algorithms. Regulated social media should strive to quickly delete illegal content and to maintain diversity and democratic access to as much reliable and verified information as possible.

The closing event for our joint academy project was held in Berlin on 28 June. That same week, a law was passed in Germany known as the Network Enforcement Act (NetzDG), which the Ministry of Justice is hoping will serve to stem hate speech on the internet. In his keynote speech, State Secretary at the Federal Ministry of Justice and Consumer Protection, Gerd Billen, explained the context for this new

law. More than 100 guests from science, industry, government and communications attended the event at the Berlin-Brandenburg Academy of Sciences and Humanities, which involved a public presentation and discussion of the project's final report. A central point in the report is that a nuanced approach that includes continuous monitoring is required to deal with the ever-increasing diversity of social media sites. Member of the German Bundestag Daniela De Ridder is hoping that the analyses will prompt more proactive and effective science communication – this is a topic that will remain on the agenda in the next legislative term.

I was very impressed by the discussions I observed both at the event and in the media – whether it was the taz newspaper, the Deutschlandfunk radio station or the web portal www.wissenschaftskommunikation.de. People are engaging deeply with our report – and not only, of course, in agreement. Important criticisms have included that we focus far more on commercial social media platforms than on the wide variety of blog, podcast and debate platforms; that Wikipedia merits recognition on its own; and that further discussion is needed on the topics of funding journalism while preserving independence and establishing common scientific platforms.

I hope that we can sustain this momentum and that we are all able to work together – scientists, communicators, journalists, policymakers and citizens – to ensure the continued quality of science communication. Let's strive to make “fake news” a buzzword of the past.

* Reinhard F. Hüttl is Scientific Executive Director of the GFZ German Research Centre for Geosciences and Executive Board Member of acatech – the National Academy of Science and Engineering.

SOCIAL MEDIA AND DIGITAL SCIENCE COMMUNICATION

The working group behind the project “The Relationship between Science, the Public and the Media” began its work in 2012. It is a joint undertaking by acatech – the National Academy of Science and Engineering, the Union of German Academies of Sci-

ences and Humanities and the German National Academy of Sciences Leopoldina, and published its second position paper, titled “Social Media and Digital Science Communication”, in 2017.

■ SOCIAL MEDIA POSITION PAPER

How stress gets under our skin

Leopoldina Lecture and Class III Symposium explore translational medicine

This year's Class III – Medicine Symposium was held on 12 and 13 July under the heading "Translational medicine – basic science meets practical applications". The event began with the presentation of membership certificates to 13 new members in front of a full auditorium.

Elisabeth Binder ML (Munich) then opened the series of scientific presentations with her Leopoldina Lecture "How stress gets under our skin: the molecular mechanisms of gene-environment interactions and their impact on psychiatric disorders". Traumatic childhood experiences are a major risk factor in the emergence of psychiatric disorders. Such experiences can leave someone up to 17 times more likely to develop certain disorders – particularly those related to anxiety and depression. But humans possess a high level of resilience, and not everyone who has such experiences will suffer from mental illness.

Binder's lecture focused on how these stressful experiences biologically alter our brains and leave a lasting impact on the mechanisms that equip us to deal with stress. Depending on the individual person and experience, this can trigger a complex genetic response whereby an individual profile of risk and resilience is created. Environmental factors also play a key role in regulating stress, as they influence our reaction to stress via epigenetic mechanisms. Binder and her colleagues want to further investigate the various paths that lead to depression, with a view to developing better and more personalised treatment methods.

On the second day of the event, five more scientific presentations were given that effectively demonstrated the link between basic scientific research and clinical application. These lectures were all delivered by new members of the Leopoldina and spanned a wide range of topics and methodologies.

Dermatologist Prof. Kathleen J. Green (Chicago, USA) spoke about the mechanisms that cause cells to "stick together". Throughout the evolution of vertebrates, certain molecules responsible for this task have played an important role in the development of particular organ functions – such as skin sensors for UV radiation.



On 12 July, the new members of Class III received their membership certificates from Leopoldina President Prof. Jörg Hacker ML (Halle, Germany). From left to right: Leopoldina Secretary-General Prof. Jutta Schnitzer-Ungefug (Halle, Germany), Prof. Kai Zacharowski ML (Frankfurt am Main, Germany), Prof. Pierluigi Nicotera ML (Bonn, Germany), Prof. Ralph Weissleder ML (Boston, USA), Prof. Hannelore Ehrenreich ML (Göttingen, Germany), Prof. Max Gassmann ML (Zurich, Switzerland), Prof. Matthias Endres ML (Berlin/Germany), Prof. Claus Cursiefen ML (Cologne, Germany) and Leopoldina President Prof. Jörg Hacker ML (Halle, Germany). Continuing, left to right: Prof. Gero Miesenböck ML (Oxford, UK), Prof. Benedikt Grothe ML (Martinsried), Elisabeth Binder ML (Munich, Germany), Prof. Michael D. Menger ML (Homburg, Germany), Prof. Kathleen J. Green ML (Chicago, USA) and Prof. Ulf Müller-Ladner (Gießen/Bad Nauheim, Germany).

Photo: Markus Scholz

If these structures are not intact, however, they contribute to the development of certain diseases.

Prof. Tobias Moser (Göttingen) shared his fascination with hearing. He is currently using rats to research how the optogenetic stimulation of the auditory nerve via small LED implants can significantly improve the frequency range and intensity of perceptible sound.

Prof. Pierluigi Nicotera (Bonn) presented new findings on the molecular basis of neurodegenerative diseases. Radiologist and cancer researcher Prof. Ralph Weissleder (Boston, USA) used three examples to demonstrate the importance of certain macrophages (scavenger cells) in cancer treatment. Weissleder is not only proposing a new biological model as to

how macrophages destroy cancer cells; he also concluded through his experiments that the presence of a large number of macrophages in the tumour environment can make treatment more effective.

The closing lecture was delivered by rheumatologist Prof. Ulf Müller-Ladner (Giessen) and focused on synovial fibroblasts – connective tissue cells that lubricate the joints and promote the fast healing of wounds. However, an inflammatory milieu of certain epigenetic factors can turn these fibroblasts into wolves in sheep's clothing: Once "activated", they can cause irreversible damage to joints and connective tissue in a very short space of time and, much like a metastasising tumour, migrate and aggressively invade other healthy joints. (kh)

The road to Europe is paved with education, research and innovation

Conference and summit address science in the Balkan countries



About 60 participants of the third joint science conference of the Western Balkans process met at the Académie des sciences in Paris.

Photo: © Académie des sciences – Institut de France

In mid-June, the Joint Science Conference of the Western Balkans Process met for the third time in Paris. During the conference, consensus was reached to establish the Western Balkans Research Foundation – a new independent, international institution developed by Prof. Donald B. Dingwell ML and a team of experts. The appeal for this foundation was made by the European Commission and heads of state and government to the Joint Science Conference of the Western Balkans Process at the Western Balkans Summit in July 2016. The request was to come up with a funding mechanism by the summer of 2017 that would enable junior scientists to gain experience abroad and establish their own laboratories of excellence in the Balkan countries.

The resulting concept involves awarding ad personam grants to scientists under 45 years of age. These funds would allow scientific institutions in the Balkans to set up their own research groups or laboratories and put the structures in place that are required for achieving scientific excellence. The exchange of knowledge and expertise will be further promoted by prior research stays at top-level EU institutions. This proposal was officially submitted to heads of state and government at the Western Balkans Summit in Trieste on 12 July 2017.

The second topic addressed at the Paris conference was the development of recommendations to optimise the link

between education, research and innovation and the creation of jobs, with the aim of promoting intelligent and inclusive growth in the Balkan countries. Initial ideas were outlined included reducing the skills gap, strengthening cooperation between universities and businesses, and creating strategic modernisation partnerships between EU and Western Balkan ministries and scientific institutions. An expert group now has until summer 2018 to flesh out these ideas, evaluate their feasibility and pool them into a single action plan.

The Joint Science Conference is part of the Western Balkans Process – a multilateral initiative launched by German Chancellor Angela Merkel in 2014 with a view to integrating the region of the Western Balkans into the European Union. At the suggestion of the German government, the Leopoldina holds the coordinating role in the area of science and education. As a platform for science diplomacy, the conference brings together national academies, rectors' conferences, research organisations and distinguished scientists invited ad personam. The first conference was held in Germany in 2015; the second in Austria in 2016. The third Joint Science Conference in Paris was organised jointly by the Académie des sciences – Institut de France and the Leopoldina. (lb)

■ FURTHER INFORMATION

Climate change through the eyes of the European academies network

In May and June of this year, two new policy reports of the European Academies Science Advisory Council (EASAC) were publicly launched in Brussels. Both reports contribute to the debate on climate change issues. The report on “Valuing dedicated storage in electricity grids” looks at the challenges and potential of European electrical power systems. The starting point is the increasing feed-in of electricity from wind and solar. The benefits of using forest biomass are examined by the report titled “Multi-functionality and sustainability in the EU’s forests”. The focus is on how forests can help mitigate climate change. Both public launches received a tremendous response from high-ranking representatives of the European Commission and Members of the European Parliament.



Claude Turmes gives comments on the EASAC report from the perspective of an EU parliamentarian. Foto: Vivian Hertz

The national science academies of the EU member states, Norway and Switzerland, which together form EASAC, collaborate with each other in providing science-based expert advice on topical issues related to energy, environment and life sciences. The target audience includes EU institutions, European national governments, NGOs, interest groups, the media and the general public. (csd)

■ EASAC REPORTS

Water management for growing urban regions

Young Brazilian and German scientists publish new policy report

A modern and efficient management of water resources is essential in order to ensure a sustainable development of urban regions. But what would such a system of water management in rapidly growing cities look like? What factors need to be taken into account?

These and other questions were discussed by 26 young scientists from Germany and Brazil at the workshop on “Perspectives on Water Management in Urban Regions”, held in October 2016 in Essen. The workshop was organised by the Leopoldina, the Brazilian Academy of Sciences (ABC) and the Centre for Water and Environmental Research (ZWU) of the University of Duisburg-Essen. The accompanying policy report, titled “How Do We Want to Live Tomorrow? Perspec-



When cities experience rapid growth in population and size, their water supply systems also need restructuring.
Photo: ChiccoDodiFC - fotolia.com

tives on Water Management in Urban Regions”, was released in June 2017. It identifies central research topics for urban water management – such as integrated watershed management for urban areas, sustainable sanitation and rainwater management, and solutions for dealing with micropollutants – while also formulating research questions within these topics.

The report has been sent to stakeholders in government, academia, water management organisations and research funding bodies to draw attention to the topics and stimulate further research as well as financial support. The next workshop in the series is scheduled for 2018. (jn)

■ REPORT WATER IN URBAN REGIONS

New board and members for the Junge Akademie



Wolfram Pernice, Jule Specht, Christoph Lundgreen, Miriam Akkermann and Jonas Peters.

Photo: J. Lipskoch

The Junge Akademie welcomed ten new members during its annual ceremony on 10 June 2017. The new members hail from diverse disciplines, and include a sinologist, a philosopher, a chemist, and a psychologist, to name just a few. “We received outstanding applications so choosing the new members was not easy,” said Wolfram Pernice, head of the selection commission.

During their five years as members of the Junge Akademie, the newly elected members will collaborate with the other 40 members on interdisciplinary research while

also participating in research groups and projects that explore the intersection between science and society.

The ceremony also saw the induction of the Junge Akademie’s new board, whose members serve a one-year term. The board is made up of the physicist and electrical engineer Wolfram Pernice, the psychologist Jule Specht, the historian Christoph Lundgreen, the musicologist and sound artist Miriam Akkermann as well as the mathematician and statistician Jonas Peters.

(asp)

Global Young Academy holds annual conference



New co-chairs of the Global Young Academy: the medical scientist Tolu Oni and the physicist Moritz Riede.

Photo: St. Grant

The annual general meeting of the Global Young Academy (GYA) is often the only opportunity for GYA members from around the world to meet in person and work face-to-face on the goals of this international and interdisciplinary organisation.

The 2017 annual general meeting was held in May in Aviemore in the Scottish Highlands. The event brought together 111 participants from more than 40 countries, including 83 members and four alumni, as well as guests and speakers from local universities, government offices and

non-profit organisations. Also in attendance were representatives from national young academies, UNESCO and the International Council for Science. The conference theme of “Social Justice in a Rapidly Changing World” was introduced and discussed in interdisciplinary panels. Elections were also held for the eleven-member Executive Committee. Tolu Oni from South Africa and Moritz Riede from the United Kingdom were chosen to lead the GYA externally in their role as co-chairs for the 2017-2018 term of office.

(jp)

People

The German Research Foundation (DFG) has re-elected **Katja Becker ML** as Vice President. At its General Assembly in Halle (Saale), the DFG elected seven new members to the Senate and re-elected six members for another term of office, including three members of the Leopoldina: **Ellen Ivers-Tiffée ML** (Engineering Sciences), **Günter M. Ziegler ML** (Mathematics) and **Roland Lill ML** (Biochemistry and Biophysics). The Senate is the statutory body of the DFG responsible for science policy and attends to important matters of the DFG.

Leopoldina President **Jörg Hacker ML** has received the Stuart Mudd Award for his important work in the field of basic microbiological research. The award ceremony was held in Singapore during the triennial congress of the International Union of Microbiological Societies (IUMS).

Hans Hengartner ML has become an honorary member of the Senate of the Swiss Academy of Medical Sciences (SAMW). The Swiss scientist's research focuses on cellular and molecular immunology, especially its application in animal experiments.

The chemist and Nobel laureate **Roald Hoffmann ML** has been honoured with the Primo Levi Award, which was presented for the first time this year. The award, which is jointly given by the German Chemical Society (GDCh) and the Italian Chemical Society (SCI), recognises scientists who have made an outstanding contribution to advancing human rights and promoting dialogue between the chemistry community and society at large.

The laser physicist **Ursula Keller ML**, a professor at the ETH Zurich, has received the Weizmann Women and Science Award for her pioneering and seminal contributions to ultrafast laser technology and important breakthroughs in attosecond physics.

Klaus Müllen ML, the former director of the Max Planck Institute for Polymer Research, has been named the co-recipient of the 2017 Hamburg Science Award,

together with Xinliang Feng and in recognition of their ground-breaking research into graphene.

The professor for modern and recent history, **Jürgen Osterhammel ML**, has been elected a member of the Order Pour le mérite. Founded in 1842, the Order honours outstanding earnings in science and arts. The Order is currently comprised of 40 German and 35 foreign scholars and artists. Osterhammel is a pioneer of trans-cultural comparative history and world historiography.

The physicist **Hans Joachim Schellnhuber ML**, director of the Potsdam Institute for Climate Impact Research (PIK), has been awarded this year's Blue Planet Prize by the Tokyo-based Asahi Glass Foundation. The prize is considered the world's most prestigious award for achievements in environmental research.

Peter Schreiner ML, a professor at the Justus Liebig University of Giessen, will receive the Adolf von Baeyer Memorial Medal from the German Chemical Society (GDCh) in recognition of his outstanding achievements in the field of organic chemistry. As a pioneer in organocatalysis, he has distinguished himself through his contributions to the development and improvement of sustainable chemical processes.

Helmut Schwarz ML has been elected an honorary member of the Academy of Sciences of Bologna Institute. Schwarz, a professor at the Technische Universität Berlin since 1978, investigates the chemistry of organometallic compounds.

The historian **Barbara Stollberg-Rilinger ML**, a professor at the Westphalian Wilhelm University of Münster, will receive the Sigmund Freud Prize for Academic Prose from the German Academy for Language and Literature. The jury praised Stollberg-Rilinger for contributing, through her works, to a better understanding of the Holy Roman Empire.

Andrea Superti-Furga ML has been elected an individual member of the Se-

nate of the Swiss Academy of Medical Sciences (SAMW) in recognition of his outstanding contributions to the field of medicine.

The geneticist **Rajeev Kumar Varshney ML** has received this year's IPGI Award for leadership and contribution to peanut research, which is jointly presented by the Peanut Genome Consortium and the International Peanut Genome Initiative (IPGI). The award honours his achievements in the field of genomics, especially in terms of promoting yield increases of legumes.

New members of Class II

■ **Jens Brüning ML**, Cologne, Max Planck Institute for Metabolism Research (Genetics/Molecular Biology and Cell Biology Section)

■ **Michael Brunner ML**, Heidelberg, Heidelberg University Biochemistry Center (Biochemistry and Biophysics Section)

■ **Dirk H. Busch ML**, Munich, Technical University of Munich, Institute for Medical Microbiology, Immunology and Hygiene (Microbiology and Immunology Section)

■ **Katayoon Dehesh ML**, Riverside, USA, University of California, Riverside, Institute for Integrative Genome Biology (Organismic and Evolutionary Biology Section)

■ **Bernd Fleischmann ML**, Bonn, University Hospital of Bonn, Institute for Physiology I, Life & Brain Center (Physiology and Pharmacology/Toxicology Section)

■ **Bill S. Hansson ML**, Jena, Max Planck Institute for Chemical Ecology, Department of Evolutionary Neuroethology (Organismic and Evolutionary Biology Section)

■ **Volker Haucke ML**, Berlin, Leibniz Institute for Molecular Pharmacology (Genetics/Molecular Biology and Cell Biology Section)

■ **Dorothee Kern ML**, Waltham, USA, Brandeis University, Department of Biochemistry (Human Genetics and Molecular Medicine Section)

■ **Dario Leister ML**, Planegg-Martinsried, Ludwig-Maximilians-Universität München, Faculty of Biology (Organismic and Evolutionary Biology Section)

■ **Maike Sander ML**, La Jolla, USA, University of California, San Diego, Department of Pediatrics, Division of Endocrinology, Department of Cellular Molecular Medicine, Sanford Consortium for Regenerative Medicine (Human Genetics and Molecular Medicine Section)

■ **Michael Sattler ML**, Neuherberg, Helmholtz Zentrum München, Institute of Structural Biology (Biochemistry and Biophysics Section)

■ **Julian Schroeder ML**, La Jolla, USA, University of California, San Diego, Division of Biological Sciences, Cell and Developmental Biology Section (Genetics/Molecular Biology and Cell Biology Section)

■ **Erin Schuman ML**, Frankfurt am Main, Max Planck Institute for Brain Research (Biochemistry and Biophysics Section)

■ **Mandyam V. Srinivasan ML**, St. Lucia, Australia, The University of Queensland, Queensland Brain Institute (Organismic and Evolutionary Biology Section)

Deceased members

■ **Friedrich (Fritz) Eiden ML**
29 August 1925 - 6 March 2017 | **Gräfelfing**
Chemistry

Friedrich Eiden chaired from 1970 onwards the Institute for Pharmaceutical Chemistry and Food Chemistry at Ludwig-Maximilians-Universität München. His studies in pyran derivatives are among his best-known works. The 3-acylchromones he developed have proved to be particularly valuable in manufacturing important heterocycles. The syntheses have

been adopted worldwide by numerous pharmaceutical companies. He received the Carl Mannich Medal in 1963 for his research into novel pharmaceutically relevant compounds, such as morphinans and flavonoids. Friedrich Eiden was elected a member of the Leopoldina in 1982.

■ **Michael Frotscher ML**
3 July 1947 - 27 May 2017 | **Hamburg**
Neurosciences

Michael Frotscher was one of the world's leading neuroanatomists. His research focused on the transmitter-specific characterisation of neurogenesis and their synaptic connections as well as the plasticity and regeneration of the central nervous system. He made major contributions to the understanding of the cellular composition of the hippocampus and its role as a central site of memory formation. He most recently served as director of the Institute for Structural Neurobiology at the Center for Molecular Neurobiology Hamburg of the University Medical Center Hamburg-Eppendorf. Michael Frotscher was elected a member of the Academy in 1995.

■ **Paul Hagemuller ML**
3 August 1921 - 7 January 2017 | **Pessac, France**
Chemistry

Paul Hagemuller is the originator of the modern chemistry of solids. After his war experiences, he got involved with a close cooperation between France and Germany and later also Eastern- and Western Europe. In 1995 he received the Order of Merit of the Federal Republic of Germany in recognition of his dedication and outstanding scientific achievements. Numerous scientific awards, as the August-Wilhelm-von-Hofmann-Denkünze in 1978, honored his influential basic research in the field of anorganic chemistry. Hagemuller was elected a member of the Leopoldina in 1975.

■ **Stefania Jabłońska ML**
7 September 1920 - 8 May 2017 | **Warsaw, Poland**
Internal Medicine and Dermatology

The dermatologist Stefania Jabłońska was, in addition to her duties as a histopathologist and clinician, the author of nu-

merous scientific publications. Her most important works include monographs on the functional study of the skin and on scleroderma and its associated disease patterns. She received in 1985 the Robert Koch Award together with Gerard Orth for their research into human papillomaviruses responsible for causing warts. She served as president of the Polish Society of Dermatology from 1962–1982 and from 1987–1995. Stefania Jabłońska was inducted into the Leopoldina in 1964.

■ **Enno Kleihauer ML**
6 July 1927 - 7 June 2017 | **Weißenhorn**
Gynaecology and Paediatrics

The medical scientist and paediatrician Enno Kleihauer initially focused his research activities on the special aspects of fetal red blood cell characterisation. The so-called Kleihauer test for fetal haemoglobin is used worldwide. He also conducted research in various areas of paediatric haemato-oncology, immunology and bone marrow transplantation. In addition, Kleihauer headed for many years the Children's Clinic at the University Hospital Ulm, which he had been instrumental in founding. Enno Kleihauer was inducted into the Academy in 1986.

■ **Diter H. von Wettstein ML**
20 September 1929 - 13 April 2017 | **Værlose, Denmark**
Genetics/Molecular Biology and Cell Biology

The molecular biologist Diter von Wettstein spent his long scientific and academic career at the Universities of Tübingen, Stockholm and Copenhagen and, most recently, Washington State University (USA). His research focused on the molecular genetics of crop plants and the functional genetics of industrial yeasts. He worked for many years at the Carlsberg Laboratory in Copenhagen, which under his leadership became one of the world's leading centres of breeding research. He received the Leopoldina's Gregor Mendel Medal in 1995 for his pioneering work in the field of biology. Diter von Wettstein was elected a member of the Academy in 1969.



Leopoldina
Nationale Akademie
der Wissenschaften

Imprint

Deutsche Akademie der Naturforscher Leopoldina – National Academy of Sciences

Jägerberg 1
D-06108 Halle (Saale)
Phone: +49-345/4 72 39 – 800
Fax: +49-345/4 72 39 – 809
Email: presse@leopoldina.org

Editing:

Caroline Wichmann (cw)
Daniela Weber (dw)
Axel Kunz (ak)
Justus Kröger (jkr)
Sophie Lindner (sl)

Other editors:

Prof. Dr. Jutta Schnitzer-Ungefug (jsu) (responsible)
Prof. Dr. Dr. Gunnar Berg ML (gb)

Other authors of this issue:

Yvonne Borchert, Project Coordinator in the Presidential Office (yb)
Lucian Brujan, Scientific Officer International Relations Department (lb)
Dr. Christiane Diehl, Deputy Head International Relations Department (csd)
Dr. Johannes Fritsch, Scientific Officer Presidential

Office (jf)

Prof. Dr. Rainer Godel, Project Director, Centre for Science Studies (rgo)
Dr. Kathrin Happe, Deputy Head Department Science - Policy - Society (kh)
Dr. Marco Körner, Trainee Department Press and Public Relations (mk)
Dr. Jan Nissen, Scientific Officer International Relations Department (jn)
Jennifer Plaul, Project Coordinator Global Young Academy (jhp)
Anja Spiller, Scientific Coordinator Young Academy (asp)
Christine Werner, Science Journalist (cwe)
Julika Witte, Press and Public Relations ESYS (jw)

Photo credits:

Title: ssilver - fotolia.com, Trueffelpix - Fotolia.com, Markus Scholz

Design:

Agentur unicom, Berlin

Copyright:

For the Leopoldina newsletter the copyright and all other rights are held by the Deutsche Akademie der Naturforscher Leopoldina – National Academy of Science, Jägerberg 1, 06108 Halle (Saale),

Germany. Redistribution, including in the form of extracts, is permitted for educational, scientific and private purposes if the source is quoted (unless otherwise explicitly indicated by the article in question). Permission must be sought from the Leopoldina for commercial use. Leopoldina – Nationale Akademie der Wissenschaften, Jägerberg 1, 06108 Halle (Saale), Germany.

Links to external Websites:

The Leopoldina does its best to select all hyperlinks in Leopoldina news and their contents carefully, but has no influence on the content or design of the pages linked to. The Leopoldina hereby explicitly rejects any liability for the contents of external Internet pages.

Abmeldung:

Please send an email to presse@leopoldina.org.

Abbreviations: ML = Member of the Leopoldina