



Leopoldina
Nationale Akademie
der Wissenschaften

Leopoldina news

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Deutsche Akademie der Naturforscher Leopoldina –
German National Academy Of Sciences

Halle (Saale), 1 August 2014

The ideal learning environment

Academies present statement
on early childhood socialisation

ANNUAL ASSEMBLY

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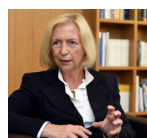


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Do science and
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Lord John Krebs

Editorial

Dear members
and friends of the Leopoldina,



Should researchers in the lab be allowed to work with highly pathogenic viruses in order to test, for example, the

threat of bird flu passing on to humans? Or is the risk too high that the findings may be misused? This debate was the starting point for recommendations produced by the Leopoldina in collaboration with the German Research Foundation (DFG). Read more in the adjacent article.

Biosecurity was not the only topic of interest; the scientists also delved into the complex relationship between freedom of research and responsibility in science. On the one hand, science requires a large degree of freedom; on the other hand, there are research findings in almost every field that could be misused.

Statutory controls alone cannot minimise the risk of misuse. That is why research institutes and individual scientists themselves also need to judge whether their findings could be used for nefarious purposes. Their knowledge, experience and freedom gives scientists a special ethical responsibility that goes beyond merely legal obligations.

As the German National Academy of Sciences, the Leopoldina sees itself as duty-bound to promote discussion on this issue – both among academy members and within society. Its recommendations are an initial step. Another will follow in early November, when the Leopoldina will hold a joint symposium with the German Ethics Council and the DFG on freedom of research and responsibility in science.

We wish you a thought-provoking read!

G. J. R.

Working group draws up guidelines for security-relevant research

DFG and the Leopoldina present joint recommendations

Free research is essential to progress, but it entails the risk that promising research results may also be misused. The German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) and the Leopoldina have set up an interdisciplinary, cross-institutional working group to analyse the complex relationship between freedom of research and responsibility in science.

Building on the Max Planck Society's guidelines and rules on a responsible approach to freedom of research and research risks, the working group has drawn up guidelines for handling security-relevant scientific research, which it presented in Berlin on 26 June.

The recommendations are addressed to individual scientists, who need to be aware of the risk of misuse of research. Scientists must weigh the potential benefits of research against the possible risks to human dignity, life and other important commodities and must take a decision about what can be justified. This may entail a risk analysis, risk reduction measures, rethinking on whether certain findings should be published, and maybe

even the decision to forego a certain research project altogether.

Research institutions need to raise awareness of the dual-use dilemma among their staff and to pass on the required knowledge about legal constraints on research. They are also recommended

Greater awareness of the dual-use dilemma needed

to draw up appropriate ethics rules for handling security-relevant research and to set up a special committee on research ethics to implement these rules and to advise scientists.

In a symposium on “Scientific freedom and scientific responsibility” to be held on 3 November in Halle, the Leopoldina, the DFG and the German Ethics Council plan to discuss awareness of the dual-use dilemma, options for sensitising and advising scientists about the issue, and the usefulness of self-imposed regulation via ethics rules or statutory controls. (jf)

■ THE RECOMMENDATIONS CAN BE FOUND HERE.

What makes good science communication?

Statement from academies inspires animated debate

A statement published by acatech - the German Academy of Science and Engineering, the Leopoldina and the Union of the German Academies of Sciences and Humanities on “Shaping communication between science, the public and the media” has sparked lively debate on the topic. Fifteen years after the „PUSH – Public Understanding of Science and Humanities“ initiative, it seems to be time for a new definition of science communication.

The statement comes after the 17 June publication of „The Siggen Call For Action“, a set of guidelines developed by a group of science communicators at Gut Siggen in Schleswig-Holstein. The Volkswagen Foundation also opened the topic

up for debate, inviting researchers, journalists and communicators to its conference on 30 June on “Why we need better science communication”.

At the heart of the debate are the crucial questions of whether scientists need to communicate more, and of how to safeguard the future of science journalism. There is a general consensus that a set of quality criteria is needed for science communication and that communications from researchers should receive more careful attention. Now the scientific community needs to pursue the debate and promote change, whether in the form of a charter for science communication or a science media centre. (cw)

Comprehensive recording of biological diversity

Leopoldina publishes report on the challenges and opportunities of taxonomy

On 25 June in the dinosaur hall of the Museum für Naturkunde Berlin, the city's natural history museum, the Leopoldina presented its report "Challenges and Opportunities of Integrative Taxonomy for Research and Society". The report deals with taxonomy – the science of identifying, describing and classifying living things. Taxonomy is currently undergoing a technical revolution. As a result, the goal of collecting data on the Earth's entire biological diversity is becoming achievable. At the same time, the importance of taxonomy is growing in many fields, such as medicine, the food industry, and agriculture.

In the report, the academy recommends using the new opportunities of taxonomy to the full – for example, to describe all the species of Central Europe. The authors would like to see more investment in taxonomic research and teaching. "Taxonomic research in Germany has an excellent reputation worldwide. If we are to continue to pursue cutting-edge research in this important area, it must become a priority at the most capable research institutions, networking and in-



The report on "Challenges and Opportunities of Integrative Taxonomy for Research and Society" was presented in the dinosaur hall at Berlin's natural history museum on 25 June.

Photo: David Ausserhofer

ternationalisation must be increased, and the training of young scientists in taxonomy must be improved," said Prof. Rudolf Amann ML of the Max Planck Institute for Marine Microbiology in Bremen, spokesman of the Leopoldina working group. A particularly important role is played by high-throughput methods of analysing genetic information, proteins and metabolites – the "omics" technologies. These

enable fast and accurate taxonomic analysis. In the report, the academy calls for more to be done to make these opportunities usable for the life sciences and industry. For example, the exact classification of microorganisms used in food production contributes to greater food security. And soil microbes that are important for the yields of agricultural land can be more accurately classified. (jk)

Research project: The "war of the scholars" and its consequences

The 100th anniversary of the start of the First World War raises important questions for the Leopoldina: How did the Leopoldina react to the outbreak of war? What did the members of the Leopoldina do? How did the work of the academy change over the course of the war? Other

national academies of science, particularly those of the other nations that took part in the conflict, are asking similar questions. Against this backdrop, the Leopoldina is hosting an international symposium in cooperation with the Académie des sciences on 13 October. Representatives

from the Royal Society are also expected to attend the conference.

Following the opening symposium, a research project will be developed to pursue the topic further, coordinated by Prof. Wolfgang U. Eckart ML and Prof. Claude Debru ML. (rgo)

The opportunities of demographic change

Low birth rates, high life expectancy and increasing immigration within the EU are presenting governments with a wide range of challenges. This is the conclusion of "Mastering Demographic Change in Europe", a joint statement by eight European national science academies. It recommends increasing investments in the education of each and every citizen,

stating that this should make an important contribution to securing prosperity in Europe and its competitiveness on the global stage. The academies also point out that longer working lives require a higher acceptance of unusual career paths. Governments must ensure the conditions are right for their citizens to switch more regularly and flexibly between learning,

working and family life. The statement was signed by the national science academies of Austria, Finland, Germany, Poland, Denmark, the UK, Sweden and Switzerland. (jk)

■ THE STATEMENT OF THE EIGHT ACADEMIES CAN BE FOUND HERE.



It is sensible to invest in high-quality education and upbringing of young children.

Photo: Robert Kneschke - Fotolia.com

Perspectives on early childhood socialisation

Academies present a statement on learning and development

“You can’t teach an old dog new tricks” and “It’s never too late to learn” are two sayings that seem to contradict one another. And yet both of them are true in their own way. While it is correct that it is both possible and necessary to continue learning throughout life, it is also correct that there are crucial time periods in early childhood when children need to pass through certain stages of development if they are to progress to their full potential.

The statement “Early childhood socialisation – biological, psychological, linguistic, sociological and economic perspectives”, published in July this year by the Leopoldina, the Union of the German Academies of Sciences and Humanities

and acatech, presents these contexts and frameworks from an interdisciplinary viewpoint and points out the conclusions to be drawn from the findings.

Across these disciplines, the findings on early childhood socialisation highlight the great importance of this stage of life, above all in the areas of linguistic competence, core cognitive abilities, and social, emotional and motivational skills. From an economic perspective, too, it is sensible to invest in high-quality education and upbringing at this stage. When it comes to linguistic development, for example, the brain’s genetically determined development process means that the structural characteristics of a language (phonology, morphology and syntax) need to be acquired by around the age of six if native-speaker level is to be attained. It is also possible for two “first languages” to be acquired during this period.

Although targeted support is especially important for children from socio-economically disadvantaged backgrounds, it is es-

sential for all children to have a stable, secure relationship with their principal caregivers and a suitable, stimulating environment – which is not to be equated with school-like regimentation – if they are each to realise their individual potential.

The existing body of work on early childhood socialisation, which has been conducted across these different disciplines, still leaves some gaps for research. In particular, there is a lack of longitudinal studies observing the specific conditions in Germany. Furthermore, development on the molecular biological, genetic and neuroanatomical level still needs to be researched in experimental studies using animal models.

On 3 July, the statement was discussed with members of the Bundestag before being presented to the media at a press conference. A public podium discussion, organised in collaboration with the Academy of Sciences and Literature in Mainz, took place a few days later, on 8 July, at the academy’s premises in Mainz. Here, members of the working group discussed the statement’s findings with representatives from the Haus der kleinen Forscher (“Little Scientists’ House”) association and the Stiftung Lesen reading foundation.

(sw)



Katharina Spieß contributed to the statement and presented it in a Lecture in Schloss Herrenhausen.

Photo: David Ausserhofer

Sensory systems in biology and engineering

Annual Assembly 2014 in Rostock / Nobel laureate Bruce Beutler as guest speaker

The importance of sensory systems in various spheres of life is the focus of the 2014 Leopoldina Annual Assembly, which takes place from 19 to 21 September in Rostock. Sensory systems not only enable living things to interact purposefully with each other and with the inanimate world, they are also essential for life itself. Finding food, identifying enemies, and seeking out other members of the species would all be impossible without visual, acoustic and haptic impressions – without the ability to perceive and process chemical and physical stimuli. Without

Sensory impressions influence our behaviour and our emotions

sensory systems, humans, too, would not be capable of the complex sensations that enable us to enjoy music and art. Sensory impressions influence our behaviour and our emotions; they are involved in the production of fear, joy, affection and disgust. In addition, living things have sensors that, in combination with basic physical functions, control blood pressure, hunger, thirst, and sexual desire.

“The subject ‘Perception and control – sensory systems in biology and engineering’ provides an ideal opportunity for building bridges between the natural sciences, engineering and the humanities,” says Prof. Rudolf F. Guthoff ML, acting



Rudolf F. Guthoff is the scientific coordinator of this year's Annual Assembly.



The 2014 Annual Assembly takes place in Rostock.

Photo: Hansestadt Rostock/Agentur Nordlicht

director of the Institute of Biomedical Engineering at the University of Rostock, who is responsible for scientific coordination of the Annual Assembly.

“At a time of increasing specialisation, it is extremely important to encourage the exchange of ideas across the boundaries of the individual disciplines“, he continues. „This enables us to demonstrate both to scientists and the public that we need high levels of specialisation in order to meet the complex challenges in science and society, but that we are also aware of the boundaries that our scientific world view may impose.“ At the Leopoldina Annual Assembly, the subject will be considered from interdisciplinary perspectives in 17 lectures. A highlight will be the lecture “Sensing microbes and responding to them: a forward genetic approach in mammals” to be given by Prof. Bruce Beutler ML on Saturday, 20 September. Beutler was awarded the Nobel Prize in Physiology or Medicine in 2011. Another major topic on Saturday is the importance of technical sensors in the modern world. For example, Prof. Gerd Hirzinger ML will use his lecture to explore sensor/actor systems, focusing on hu-

manoid robots. Perception and control is also a core component of new approaches to medical treatment, such as the development of prosthetics and implants that interact with patients' body tissues.

Guthoff says he is particularly looking forward to the Leopoldina Lecture “The limits of the human perceptual space and overcoming them. Anthropology – engineering – ethics” by Carl Friedrich Gethmann. This is another highlight of the programme. Gethmann's lecture will conclude the Annual Assembly on Sunday, 21 September.

Leopoldina's Medal of Merit will be awarded

To launch the Annual Assembly, the Early Career Award, which is worth €30,000 and is funded by the Commerzbank-Stiftung, will be presented on Friday, 19 September. During the Assembly, the Leopoldina's Medal of Merit will also be awarded, and an honorary member of the Leopoldina will be appointed from the ranks of the academy members. (mik)

■ MORE INFORMATION CAN BE FOUND AT www.leopoldina.org/en/jv-2014

“Governments need clear, independent analyses”

Federal minister Johanna Wanka on the Leopoldina's role in policy advice

When Federal Minister of Education and Research Prof. Johanna Wanka visited the Leopoldina on 28 May 2014, she was given a tour of the Leopoldina's main building, watched a presentation of the archives, and had an informal discussion with Leopoldina President Prof. Jörg Hacker. Prof. Wanka also took the time to give an interview to Caroline Wichmann.

The Leopoldina has been the German National Academy of Sciences since 2008. What do you believe sets the Leopoldina apart?

Wanka: It is an academy with a very long tradition that has always played a very important role, for example during the GDR period. At that time, I experienced for myself that the Leopoldina was a place of genuine discussion and debate – a real rarity in the GDR. In its years as the German National Academy, the Leopoldina has managed – despite all the competition – to gain a high level of acceptance among other academies and scientific institutions. That achievement should be highly commended, and it is to the credit of the people who work for the Leopoldina – its President Prof. Jörg Hacker in particular.

Why do you believe that the government



Federal minister Johanna Wanka believes that a great tradition and a high level of acceptance in the scientific community are what set the Leopoldina apart.

Photo: Thomas Meinicke

needs the advice of scientific academies?

Wanka: Societal processes are becoming increasingly more complex. That means that governments have to create the right conditions for science and knowledge to develop. On the other hand, governments need clear, independent analyses and information about the possible options. The Leopoldina is fulfilling its task of providing policy advice with a series of excellent statements. Its recommendations on antibiotic research even played a role

at the 2013 G8 Summit. This demonstrates the high scientific standards of the Leopoldina and the importance that its assessments and recommendations are accorded.

What are your personal hopes for your government's collaboration with the National Academy of Sciences in the future?

Wanka: I am looking forward to many more excellent and provocative recommendations.

Ensuring the basic rights of researchers

The academies' International Human Rights Network meets in Halle

Every two years, the International Human Rights Network of Academies and Scholarly Societies organises an international meeting with representatives of science academies in order to discuss current cases of oppression of scientists and scholars and ways in which external forces can have an influence on such cases. From 26 to 28 May, the Leopoldina hosted the conference, now in its eleventh edition, for the first time.

In his welcoming address, Leopoldina President Prof. Jörg Hacker ML paid tribute to the network's efforts and to the work of the Human Rights Committee

(HRC) of the Leopoldina as an important contribution made by the scientific community towards protecting human rights around the globe. The HRC has been a member of the network since 2003.

The academy representatives from more than 20 different countries are primarily focusing on selected cases of human rights abuses in Syria, Tunisia, Egypt and Turkey. At the event in Halle, Turkish political scientist Prof. Büşra Ersanlı of Marmara University in Istanbul reported on her imprisonment over a period of months after she was accused of having links with the Kurdistan Workers' Party

PKK. Ersanlı has been temporarily released from jail, but the case against her is ongoing.

One of the highlights of the three-day event was a lecture by British-American Nobel laureate Sir Richard J. Roberts on the options for incorporating Nobel laureates in the academies' human rights activities. Roberts reported, among other things, on his efforts to assist Liu Xiaobo, a recipient of the Nobel Prize for Literature who is currently in prison in China, and his wife Liu Xia, who is under house arrest. The network's next meeting will take place in South Korea in 2016. (jn)

From basic research to policy advice

Class II symposium with Leopoldina Lecture by Lord John Krebs

Lord John R. Krebs ML commenced his career in an area of science that is driven solely by the desire to understand scientific relationships in nature. But pure basic research of this sort rarely has direct practical applications. In his Leopoldina Lecture “Do science and politics mix?” on 21 May, Lord Krebs therefore asked whether this research has any relevance to real-life problems and whether science and politics are compatible.

His verdict was that science and politics not only do mix but that they in fact often depend on one another. Krebs illustrated this with examples from his scientific career, in the course of which he was drawn ever further into politics, with the result that he is now a life member of Britain’s upper house, the House of Lords.

The range of issues he has been involved with is very wide. It all began for him with a request to study the causes of bovine tuberculosis in Britain and possible ways of tackling the disease. Green genetic engineering and climate change are other fields where politicians depend on scientific advice. Green genetic engineering, he said, is an area of constant conflict where both supporters and opponents often put forward spurious, frequently emotional arguments. A scientifically based approach can provide the necessary foundation for political decisions in this field. However, Krebs also believes it is important to acknowledge that science not only conveys facts but must also point out any risks and uncertainties. Finally, Krebs stressed, we must not forget that science has only an advisory function. Politicians make the decisions, and each politician serves a parti-

The new members of Class II



The new members of Class II are presented with their membership certificates. Front row, left to right: Prof. Dr. Ada Yonath ML (Rehovot, Israel), Leopoldina’s Secretary General Prof. Dr. Jutta Schnitzer-Ungefug, Prof. Dr. Johannes-Peter Stasch ML (Wuppertal), Prof. Dr. Gabriel Waksman ML (London, UK), Prof. Dr. Martin Biel ML (Munich), Prof. Dr. Jane Parker ML (Cologne), Prof. Dr. Ralf Bartenschlager ML (Heidelberg), Prof. Dr. Bruce Beutler ML (Dallas, USA), Prof. Dr. Jörg Vogel ML (Würzburg). Back row, left to right: Prof. Dr. Ian Baldwin ML (Jena), Prof. Dr. Peter Westhoff ML (Düsseldorf), Prof. Dr. Christian Jung ML (Kiel), Prof. Dr. Ulrike Kutay ML (Zurich, Switzerland), Prof. Dr. Matthias Tschöp ML (Oberschleißheim), Dr. Jan Löwe ML (Cambridge, UK), Leopoldina President Prof. Dr. Jörg Hacker ML, Prof. Dr. Julia Vorholt ML (Zurich, Switzerland), Prof. Dr. Lord John R. Krebs ML (Oxford, UK), Prof. Dr. Ingo Schubert ML (Gatersleben), PD Dr. Matthias Wilmanns ML (Hamburg), Prof. Dr. Gunther Hartmann ML (Bonn).

Photo: Markus Scholz

cular group of voters whom he or she must represent appropriately. This means that alongside the scientific facts, very varying interests play a major part in a pluralistic political decision-making process.



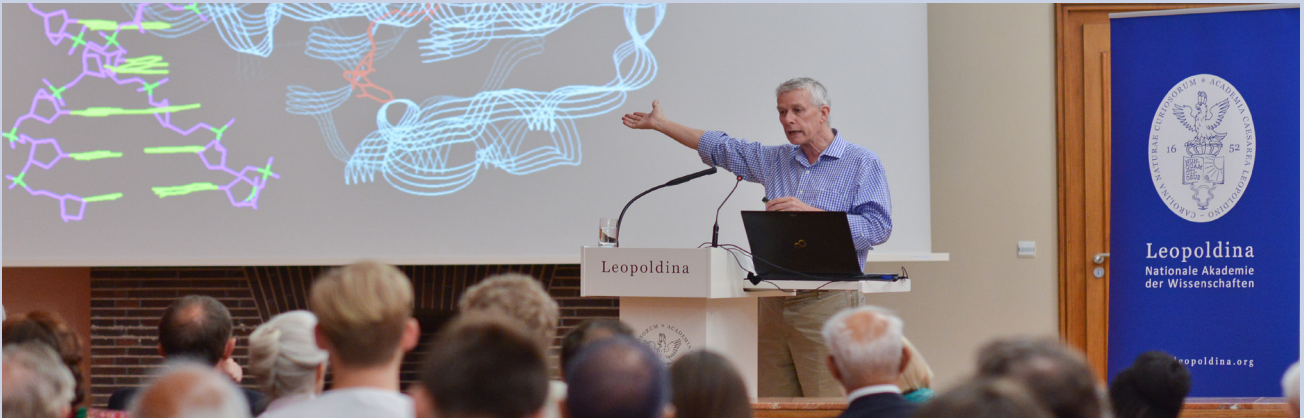
In his Leopoldina Lecture “Do science and politics mix?”, Lord John Krebs came to the conclusion that not only do they mix, they in fact often depend on one another.

Photo: Markus Scholz

The next day, six of the newly elected members of Class II – Life Sciences gave brief presentations about their work. In addition to giving interesting insights into the structure and growth mechanisms of pili in bacteria, into the innate immunity of plants, and into interactions between plants and animals, the symposium covered the latest findings from research into eye diseases.

Prof. Martin Biel ML of Ludwig Maximilian University in Munich reported on ways of treating diseases of the ion channels of the retina, especially retinitis pigmentosa, which causes degeneration of the retina, and colour blindness. His working group is currently developing a gene therapy for both diseases, which is soon to be tested in an initial clinical trial. (hst)

Nobel laureate Sir Richard J. Roberts gives Leopoldina Lecture



Recent developments in biotechnological research are facilitating profound insight into how bacteria function. In his Leopoldina Lecture on 26 May, Nobel laureate Sir Richard J. Roberts used DNA methyltransferase enzymes to demonstrate the possibilities that the new developments are opening up and to suggest research topics that will emerge as a result. DNA methyltransferase enzymes transfer methyl groups to specific DNA substrates. Roberts received the Nobel Prize in Physiology or Medicine with his colleague Prof. Phillip Allen Sharp. (jn)/Photo: Markus Scholz

Scientific Advisory Board gives first recommendations

Conference on sustainable development in New York / Fundamental importance of science

Leopoldina President Prof. Jörg Hacker ML was appointed ad personam to the UN Secretary-General's Scientific Advisory Board (SAB) at the end of 2013. The advisory board's working group "Science and the Sustainable Development Goals", which he now heads as co-chair, has just presented its first recommendations (the very first of the board, in fact), which emphasise the fundamental importance of science for sustainable development.

The paper forms part of the UN's current efforts to produce new development goals that will come into force in 2016,

once the Millennium Development Goals have reached their deadline.

Irina Bokova, Director-General of UNESCO, which functions as the board's secretariat, forwarded the paper to Ban Ki-moon. Furthermore, these recommendations were channelled directly into the discussion process at the UN's High Level Political Forum on Sustainable Development that took place at ministerial level from 7 to 9 July in the UN headquarters. Here, Bokova announced the central aspects of the statement in the large assembly room, while SAB member Prof. Lau-

rence Tubiana and Jörg Hacker presented the content to an audience of around 50 government representatives in the form of a ministerial roundtable.

In its recommendations, the Scientific Advisory Board highlights the fact that science is much more than an "implementation aid" for sustainable development; it claims that providing a wide segment of the population with timely and continuous scientific education forms the basis for sustainable development, and that this therefore deserves a corresponding investment. (rn)

German-French "Energy Roundtable"

On 26 June 2014, four academies from Germany and France – the Académie des sciences, the Académie des technologies, the Leopoldina, and the German Academy of Science and Engineering acatech – held an "Energy Roundtable" at the German Embassy in Paris. The Leopoldina was represented at the event by Prof. Sigmar Wittig ML (standing in for the president) and by experts Prof. Ferdi Schüth ML of Mülheim, Prof. Alexander Bradshaw ML of Garching, and Prof. Christian Rehtanz

of Dortmund.

The delegates started by establishing the status quo of various elements in the switch to renewables and the related implications at national level. The goal of the roundtable was to identify commonalities in the approach to the energy transition between Germany and France that could be tackled in a joint statement by the academies. The next meeting, slated to take place in Berlin in November, will focus on drafting the recommendations. (rn)

Report on water security

NASAC, the network of 19 African science academies, has now presented a report entitled "The Grand Challenge of Water Security in Africa". The Leopoldina has been working in cooperation with NASAC since 2011. The group of German experts who worked alongside African scientists to develop the recommendations was headed by Prof. Peter Fritz ML. (csd)

■ THE STATEMENT IS AVAILABLE AT:
www.nasaonline.org

EASAC General Assembly in Riga



On 22 and 23 May, representatives of the national science academies of the EU member states met at the Latvian Academy of Sciences in Riga for their 27th General Assembly. The representatives discussed their academies' joint activities as the European Academies Science Advisory Council (EASAC), providing science-based policy advice to EU institutions. Of all the work programmes discussed, particular attention was given to the following ongoing projects: "Nuclear Fuel Cycle", "Village-level Energy", "Marine Sustainability", "Space Exploration", "Ecosystem Services, Agriculture, Pollinators and Predators", and "Antimicrobial Resistance". In addition, all academies agreed on a joint letter in support of the appointment of a Chief Scientific Advisor to the President of the European Commission.

(csd)/Photo: Oskara Broks

Science in European dialogue

The fourth German-Russian Young Researchers Forum in St. Petersburg

Over 40 outstanding young researchers came together from 6 to 10 July in St. Petersburg to discuss developments within the scientific systems of Russia and Germany.

The latest research results were presented in a science slam, while workshops

and expert discussions were held under titles such as: "Ever-committed to the 'New'? Rethinking the Sciences and Humanities" and "Dynamics of the Science System: Solving the National and Cross-Border Equation".

The forum was organised for the

fourth time by the Leopoldina and the Russian Academy of Sciences; the event's partner this year was St. Petersburg State University. In light of the current political situation, the national academies felt it was important to actively strengthen scientific dialogue.

(lbb)

People

Deceased Members

■ **Jorgen Bendixen ML**
28 Nov. 1926 - 27 Jan. 2013
Veterinary Medicine

One of the achievements of Bendixen, a specialist in veterinary medicine, was his work on the control of leukosis in cattle in Denmark, which was among the reasons for his election as a member of the Leopoldina in 1972. In his scientific career, Bendixen worked in the field of epizootiology,

which explores the spread of diseases in animal populations.

■ **Walter J. Gehring ML**
20 March 1939 - 29 May 2014 | Basel
Biology

The Leopoldina elected Gehring as a member in 1987. A specialist in developmental biology, Gehring discovered the correspondence of various homeotic genes that are responsible for the identity of segments and whose mutation can

lead to changes in the structure of organs and body segments – genes containing a homeobox can influence the formation of a leg, for example.

■ **Platon G. Kostjuk ML**
20 Aug. 1924 - 10 May 2010
Physiology

Platon Kostjuk worked on the physiology of nerve cells. It was he who made the fundamental discovery of presynaptic inhibition, a control mechanism of the body

whereby the inhibitory synapse acts on the terminal bouton of the excitatory synapse, inhibiting release of the excitatory transmitter. This does not change the excitatory state of the downstream cell or of the systems downstream of it. Kostjuk was elected to the Leopoldina in 1966.

■ **Anton Mayr ML**

6 Feb. 1922 - 12 April 2014 | Starnberg

Veterinary Medicine

In his scientific work, Mayr, a veterinary virologist, was involved in research into virus diseases and the immunoprophylaxis of animal epidemics. He was particularly interested in smallpox viruses, the foot-and-mouth virus, teschovirus, and certain equine viruses. His achievements include the first electron microscopy study of the swine fever virus in 1967. It was for this that the Leopoldina elected him a member in 1970.

■ **Gerhard Reuter ML**

9 June 1921 - 26 June 2014 | Rostock
Agricultural and nutritional sciences

Reuter's work focused on soil science. His interests were wide: soils in various climate zones; clay minerals and organic mineral complexes; micromorphologies. His work in these fields earned him membership of the Leopoldina in 1969.

■ **Joachim-Hermann Scharf ML**

7 Nov. 1921 - 22 June 2014 | Nebra
Anatomy

In his scientific career, Scharf worked on the diencephalon / anterior pituitary gland / thyroid system from various perspectives in order to explore its function in

metabolic regulation. He was particularly interested in morphological and histochemical aspects. He was elected to the Leopoldina in 1961.

Newly elected Members, May 2014

■ **Ruedi Aebersold ML**, Zurich, Swiss Federal Institute of Technology, Institute of Molecular Systems Biology (Biochemistry and Biophysics Section)

■ **Peer Bork ML**, Heidelberg, European Molecular Biology Laboratory (Human Genetics and Molecular Medicine Section)

■ **Nils Brose ML**, Göttingen, Max Planck Institute for Experimental Medicine, Department of Molecular Neurobiology (Physiology and Pharmacology/Toxicology Section)

■ **Carmen Buchrieser ML**, Paris, Institut Pasteur, Biology of Intracellular Bacteria unit (Microbiology and Immunology Section)

■ **Angela M. Gronenborn ML**, Pittsburgh, University of Pittsburgh, Department of Structural Biology (Biochemistry and Biophysics Section)

■ **Karl-Peter Hopfner ML**, Munich, Ludwig Maximilian University of Munich, Gene Center (Biochemistry and Biophysics Section)

■ **Maarten Koornneef ML**, Cologne, Max Planck Institute for Plant Breeding Research, Department of Plant Breeding and Genetics (Organismic and Evolutionary Biology Section)

■ **Christian Kurts ML**, Bonn, University of Bonn, Institute of Experimental Immunology (Microbiology and Immunology Section)

■ **Ottoline Leyser ML**, Cambridge, University of Cambridge, Sainsbury Laboratory (Organismic and Evolutionary Biology Section)

■ **Frauke Melchior ML**, Heidelberg, Heidelberg University, Center for Molecular Biology (Biochemistry and Biophysics Section)

■ **Erika von Mutius ML**, Munich, Dr. von Haunersches Kinderspital of the Ludwig Maximilian University of Munich, city centre campus (Microbiology and Immunology Section)

■ **Klaus-Armin Nave ML**, Göttingen, Max Planck Institute for Experimental Medicine, Department of Neurogenetics (Human Genetics and Molecular Medicine Section)

■ **Mathias Rief ML**, Garching, Technical University Munich, Professor of Biophysics (Biochemistry and Biophysics Section)

■ **Matthias Schwab ML**, Stuttgart, Dr. Margarete Fischer-Bosch-Institute of Clinical Pharmacology (Physiology and Pharmacology/Toxicology Section)

■ **Martin Wikelski ML**, Radolfzell, Max Planck Institute for Ornithology, Vogelwarte Radolfzell (Organismic and Evolutionary Biology Section)



Leopoldina

Nationale Akademie
der Wissenschaften

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