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Leopoldina news

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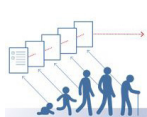
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Editorial

Dear members and friends
of the Leopoldina,

Science is not possible without communication: researchers discuss their findings with one another, give advice on new projects, and foster international contacts.



But communication among scientists is just one aspect. Another is communication between the scientific community and the public. The most important task facing the variety of initiatives involved in science communication is to ensure that the information communicated is subject to the same high quality standards as the scientific research itself.

In this issue, we report on the guidelines for good science PR published by a supra-institutional working group of science communicators (page 4). With these guidelines, the initiative led by the Bundesverband Hochschulkommunikation and Wissenschaft im Dialog acknowledges the fact that “reliable information from and about the realm of science is becoming ever more important”. In view of the diminishing significance of quality journalism and the expanding reach of social media, scientific institutions have an ever-greater responsibility to provide comprehensive, transparent, honest and factual information about their work. The Leopoldina has been committed to these criteria since 2015, first with its “Principles for Press Releases” and now also by adopting the guidelines for good Science PR.

It can be concluded, therefore, that the academies’ joint 2014 statement “On Designing Communication between the Scientific Community, the Public and the Media” (SPM 1) is just as relevant now as it was then. Because of that, a new statement with the acronym SPM 2 is currently being produced that also considers the impact of social media. I wish you a thought-provoking read.

Jörg Hacker

A wealth of data for policy decisions

Statement: Academies call for more reliable funding for population-based longitudinal studies



Working group spokespersons Johannes Siegrist (left) and Axel Börsch-Supan ML present the statement at the Saxony-Anhalt Representation to the Federation in Berlin. photo: Markus Scholz

The statement entitled “Wissenschaftliche und gesellschaftspolitische Bedeutung bevölkerungsweiter Längsschnittstudien” (The scientific and socio-political importance of population-based longitudinal studies) was presented in Berlin on 6 June. It was jointly developed by the German National Academy of Sciences Leopoldina, acatech – National Academy of Science and Engineering, and the Union of the German Academies of Sciences and Humanities and was thanks to an initiative of the Leopoldina’s Standing Committee on Demographic Change. In the statement, the academies analyse the current position of such studies and provide recommendations for their ongoing development.

At the public presentation of the statement, Leopoldina President Prof. Jörg Hacker ML stressed that the Leopoldina also depends on reliable long-term data in the fields of health and epidemiology, education, and demographic change when preparing its science-based advice for policymakers and society. Representative longitudinal studies are one way of obtaining the data required to provide such advice on the predominantly long-term issues in political decision-making. The Socio-Economic Panel, for example, provides findings on the health effects of long-term unemployment, while the German National Cohort investigates the cau-

ses of chronic illnesses.

According to working group spokespersons Prof. Axel Börsch-Supan ML and Prof. Johannes Siegrist, longitudinal studies are as important in their role as instruments for monitoring social change as large-scale facilities are for making progress in the natural sciences. The new statement shows that although population-based longitudinal studies have been receiving increased funding in Germany for several years, research funding is coming up against structural barriers, there is a lack of harmonisation of data collection and evaluation, and there are failings in the interdisciplinary training of the employees involved in the studies. Such shortcomings prevent the possibility to keep up with international research on a top-level.

The statement also reports that a stable research environment and sufficient professional management are not always guaranteed. The reasons for that include fixed-duration contracts and inconsistencies in funding approval. One recommendation given for overcoming these challenges is to launch a national funding initiative for interdisciplinary longitudinal studies. The statement also recommends securing more long-term funding instruments as well as improving coordination between European and German research infrastructures. (amg)

The Sciences in Intercultural Dialogue

Leopoldina Annual Assembly takes place in Halle (Saale) on 23 and 24 September

Exchange is crucial for science. But what happens when that exchange becomes a one-way street? At the Leopoldina's Annual Assembly on 23 and 24 September, scientists from various fields and disciplines will take a critical look at the global knowledge culture and discuss the accusation of cultural imperialism levelled at Western science. For it is clear that Western theories and methods are increasingly claiming universal validity. The event's coordinator, Prof. Otfried Höffe ML, Professor Emeritus in philosophy at Eberhard Karls Universität Tübingen, says: "We will take a look at non-Western influences, discuss the cases where non-Western knowledge cultures assert their right to be different, and examine where this conflicts with the universalistic claim of science and where it is compatible with it, in the sense of a right to otherness."

By selecting this topic, the Leopoldina is responding to a conflict situation within the sciences that is similar to the economic, political and religious conflicts that are arising with globalisation. "As in other spheres of life, the sciences, too, should engage in intercultural dialogue as a way of countering the supposed clash of civilisations," said Höffe. "We want the Annual Assembly to help promote awareness of this important topic, to pinpoint the problems involved in intercultural exchange, and to discuss strategies for overcoming these."

The two-day meeting will itself constitute an intercultural dialogue, featuring lectures from scientists from places as far flung as Israel, Saudi Arabia, China and Senegal. The speakers come from a wide range of fields including engineering, law, history and medicine. "We all want to learn from one another in a way that transcends national and disciplinary boundaries." Two of the 14 lectures will be dedicated to the topic of Islam. Saudi Arabian medical scientist Dr Hayat Sindi will present a female Muslim researcher's perspective on the role of science in the Islamic world. Martin Thomas Riexinger, a professor of Islamic studies at Aarhus University in Denmark will analyse the debate on evolutionary theory in Islamic countries, where the majority of the population take a sceptical view of evolution or



Science calls for international collaboration. But how intercultural is scientific dialogue? This question was the focus of the 2016 Leopoldina Annual Assembly.

photo: pressmaster - Fotolia.com

discount it entirely. Turkey, for example, is experiencing a particularly strong Islamic creationism movement as a reaction to the previous policy of secularisation. "This shows how important it is to be aware of the cultural and political contexts in which scientific theories are received," says Riexinger.

On the evening of the first day of the conference, historian Prof. Jürgen Osterhammel ML of the University of Konstanz will explore where the limits of intercultural dialogue lie, looking at cases where resistance is so great it can only be described as hostility. Prof. Jürgen Renn ML of the Max Planck Institute for the History of Science in Berlin will take a look far back in time and ask how many times in human history the natural sciences have emerged as a branch of knowledge.

Prof. Andrea Bréard, a science historian at Heidelberg University, will show how even mathematics, often regarded as a universal language, has various cultural characteristics. Throughout the history of maths, differences have developed not

just in how mathematical problems are formulated but in the kind of problems addressed. "The Greeks and Arabs wanted to know how they could best construct geometric configurations, while the Indians and Chinese were interested in how to calculate specific values within them," says Bréard. Even today, cultural mathematical traditions prevail and continue to develop between the poles of individual creativity and the global circulation of knowledge.

For Bréard, exploring intercultural issues in science is also an important tool against its instrumentalisation for nationalistic or patriotic purposes, as can currently be observed in India and China, for example, as well as in Europe: "We need to keep talking about interculturality in order to dispel the notion of the presumed uniqueness of purely European achievements in science." (mil)

■ [CLICK HERE TO REGISTER FOR THE ASSEMBLY](#)

Guidelines for good science PR

Guest article: Working group publishes quality criteria for science communication

ELISABETH HOFFMANN UND MARKUS WEISSKOPF*

Many of today's political decisions on topics such as climate protection, healthcare and the energy transition are made on the basis of expert scientific opinion. Increasingly, the research findings themselves also trigger public debate and political and societal decision-making processes. Developments in fields like genome editing or synthetic biology can lead to tremendous progress, but they can also have undesired social and ethical consequences.

Such developments must be communicated in a reliable and trustworthy manner to the various target groups. Meanwhile, however, the significance of the regional and national newspapers that have traditionally been key to communicating this type of information is dwindling. Scientific topics tend to be addressed less frequently, and their reporting is not always as differentiated as it should be.

Today, the internet and social media influence the way users respond to information. The fact that anyone can quickly and easily retrieve, post, or leak large amounts of data has brought forth a whole new dimension of transparency. Social media have enabled science to communicate directly with the public, who are making use of the opportunity to ask questions and give feedback. Organising ways in which the public can let scientists know its opinions of their work is another important task for science. But in order to usefully initiate dialogue and participatory processes, we need much more than new communication channels; we need new structures and new ways of thinking in science and science PR.

These days, much more is expected of science communicators in PR departments, of the scientists themselves, of editorial teams, and of science managers. Science communication is becoming a broker for all the most important information in the 21st century as this information is increasingly published and consumed outside the realm of the quality media. Science communication is thus a seismometer that measures public mood and needs and that allows citizens to give feedback on and participate in research – for instance, through public debate and citizen science projects. This increa-



The guidelines were presented in Berlin this April. The presentation was followed by a panel discussion with Antje Boetius, chairwoman of WiD's steering committee, Reinhard Hüttel, President of acatech – National Academy of Science and Engineering, Ulrike Beisiegel, Vice President of the German Rectors' Conference, and Manuel Hartung, head of the "Chancen" department at newspaper Die Zeit, and moderator Nicola Kurth (from left).

photo: WiD

ses the responsibility of science communication with regard to the outcomes of its work and the quality of its processes.

With this in mind, a cross-institutional working group developed guidelines for good science PR over the course of the last year, based on the findings of the Siggenger Kreis. These guidelines reflect the requirements of good communication in the 21st century, focusing on the perspective of institutional communication professionals. The guidelines call for respectful cooperation between all those active in science communication: scientists, journalists, citizens and the PR professionals themselves. They emphasise that the public must be actively incorporated into dialogue on the opportunities and risks involved. They call for more transparency in the financing, methodology and reach of current research. They strongly discourage communicators from exaggerating research successes and downplaying potential risks and "side effects".

The guidelines highlight scientists' central role in science communication. They are, after all, the ones who are in a position to provide factually accurate and authentic scientific information; PR workers are obliged to offer them pro-

fessional assistance, advising them and helping them personally communicate their research progress and findings in the best possible way. Of course, the guidelines also address the work of science communication itself. They point out that professional, strategic and self-reflective methods must become a self-evident part of the way all organisations work. Continuous further development, including through international exchange, is as important here as it is in science.

The guidelines were presented to the public in Berlin on 15 April this year and their implementation discussed by representatives of the German Rectors' Conference, acatech, Wissenschaft im Dialog and the media. Before that, members of idw scientific information service had examined and approved the guidelines during their general assembly. The guidelines should now be further discussed within the individual universities and research institutions as well as academies and funding agencies.

* Markus Weißkopf is Managing Director of Wissenschaft im Dialog (WiD). Elisabeth Hoffmann heads the Corporate Communications and Press Service at TU Braunschweig.

From plant physiology to applications for human

Wolf Frommer gives Leopoldina Lecture at the Class II – Life Sciences symposium

The path from basic research to practical application is rarely predictable; it is usually only clear looking back which steps were important in bringing you to your final destination. This is the point that Prof. Wolf Frommer ML illustrated in his evening lecture for the Class II – Life Sciences symposium held at the end of May.

Frommer has conducted research into how sugar in plants is transported from its site of production – the leaves – to its place of storage in the seeds or roots. To find this out, he searched for ways to pinpoint the exact moment when sugar molecules leave the cell. He used a particular characteristic of porins – a class of protein that forms channels through cell membranes – to achieve this, as for a sugar molecule to be channelled through the cell membrane, it must first bind itself to one of these porins.

Frommer realised that the protein's form changes when this process occurs – a change that can be detected under a microscope, as it also involves a change in the fluorescence of the protein molecule. Using this method, the researchers could therefore see the exact moment when the sugar molecules left the cell. This mechanism helped Frommer and his colleagues identify an entirely new class of sugar transporters. It also allowed them to develop other sensors – e.g. for glutamate, phosphate and nitrate.

So what is the relevance of this basic plant biology research? Its scope of application in plant breeding is clear. This greater understanding of transport mechanisms will now enable plants to be specifically bred to produce seeds with a higher sugar and/or starch content. But these findings from basic plant research may also be relevant for human medicine, as the development of sugar sensors could help advance treatment of diabetes. Diabetes patients rely on a dose of insulin that is as closely tailored to their individual needs as possible to prevent their blood sugar levels becoming too high or too low. New sugar sensors could be used in the future to ascertain a patient's blood sugar levels in real time, allowing insulin dosage to be administered more precisely and quickly.

The second day of the Class II symposium

New Members of Class II



The new members of Class II were presented with their membership certificates on 26 May: From left: Prof. Jürgen Ruland ML (Munich), Prof. Christian Hertweck ML (Jena), Leopoldina Secretary-General Prof. Jutta Schnitzer-Ungefug (Halle), Prof. Wolf B. Frommer ML (Stanford), Prof. Jan O. Korbelt ML (Heidelberg), Prof. Beat Keller ML (Zurich), Prof. Susan E. Trumbore ML (Jena and Irvine, CA), Prof. Dieter Ebert ML (Basel), Prof. Eva Kondorosi ML (Szeged), Leopoldina President Prof. Jörg Hacker ML (Halle), Prof. Emmanuelle Charpentier ML (Berlin), Prof. Xuetao Cao ML (Shanghai), Prof. Elisabeth Knust ML (Dresden), Prof. Stephan Becker ML (Marburg), Prof. Katrin Böhning-Gaese ML (Frankfurt am Main), Prof. Carl-Philipp Heisenberg ML (Klosterneuburg), Prof. Peer Bork ML (Heidelberg), Prof. Andreas Weber ML (Düsseldorf), Prof. Rainer Matyssek ML (Munich), Prof. Matthias Mann ML (Martinsried), Prof. Bernd Fritzsche ML (Iowa City).
(jk)/photo: Markus Scholz

sium saw more presentations from new members of the Leopoldina. Prof. Emmanuelle Charpentier of the Max Planck Institute for Infection Biology in Berlin spoke first, presenting new methods of genome editing. She was followed by Prof. Jan O. Korbelt of the European Molecular Biology Laboratory (EMBL) in Heidelberg, who explained the selection mechanisms of structural variations in the human genome and their potential role in the development of cancer. Prof. Eva Kondorosi of the Hungarian Academy of Sciences in Szeged demonstrated how new antibiotics have been discovered in the tubers of certain plant species. In her presentation, Prof. Katrin Böhning-Gaese of the Senckenberg Biodiversity and Climate Research Centre in Frankfurt am Main outlined the impact of global change on biodiversity and eco-

system services. Prof. Martin Eilers of the University of Würzburg provided insight into the role of individual proteins in the development of tumours in humans. Prof. Matthias Mann of the Max Planck Institute of Biochemistry in Martinsried introduced a method that can be used to characterise all proteins. Prof. Beat Keller of the University of Zurich described the latest findings to come out of research into plant resistance to fungi. Prof. Susan Trumbore of the Max Planck Institute for Biogeochemistry in Jena presented her latest findings from research into soil carbon. Finally, Prof. Jürgen Ruland of the University Hospital Klinikum rechts der Isar in Munich rounded off the presentations by explaining signal pathways in the innate and adaptive immune system and their role in the development of tumours. (hst)

Strategies to combat brain drain

Second Joint Science Conference on the Western Balkans Process held in Vienna

How can the performance and competitiveness of the science systems in Western Balkan states be improved? How can a “brain drain”, i.e. the emigration of highly trained individuals, be reduced and replaced by “brain circulation”, which involves workers spending a limited time abroad before returning to their country of origin? How can education, research and development drive socioeconomic growth? These and other questions were at the heart of the second Joint Science Conference on the Western Balkans Process in Vienna from 22 to 24 May.

The Joint Science Conference forms part of the Western Balkans Process, also known as the “Berlin Process”, a supranational initiative initiated by Federal Chancellor Angela Merkel in 2014 to bring the Western Balkans closer to the EU. Three fields form the framework for this political process: efforts towards reconciliation; the economic and infrastructural ability to network; and strengthening regional cooperation, particularly in science, education and youth exchanges. At the suggestion of the Federal Government, the Leopoldina has taken the helm in the area of science and education.

There are currently 13 parties involved in the process: the six Western Balkan states (Albania, Bosnia and Herzegovina, Kosovo, the Republic of Macedonia, Montenegro, and Serbia), six EU Member States (Austria, Croatia, France, Germany, Italy and Slovenia), and the European Commission as a representative of the EU.

The first Joint Science Conference took place in Halle and Berlin from 15 to 17 July 2015. This year’s conference was hosted by the Austrian Academy of Sciences in collaboration with the Leopoldi-



The Second Joint Science Conference on the Western Balkans took place at the Austrian Academy of Sciences in Vienna.

photo: ÖAW

na and with the support of the Alexander von Humboldt Foundation, the Austrian government, and Swiss organisation Helvetas. Around 50 scientists and experts took part in the event, including representatives from national science academies, rectors’ conferences, the European Commission, and other institutions. The next conference will be held in Paris in 2017 in partnership with the French Académie des sciences, with subsequent conferences in the series being held in subsequent years.

The conference focused on how independent research funding could be secured and how international quality standards at universities and in research and development could be met. Recommendations were drawn up for the creation of an institutional, participatory framework

for shaping national science policy and ensuring sustainable prospects for junior scientists and students.

The results of the conference have been summarised in a joint statement. They will be included as independent recommendations at the third Western Balkans Summit (involving heads of state and government and the European Commission) in Paris on 4 July 2016. The final act of the Paris Summit will substantiate these recommendations and call for funding mechanisms to be developed promptly for young, outstanding scientists, with the aim of improving “brain circulation” within the Western Balkans and between them and the EU. (ljb)

■ FOR FURTHER INFORMATION, CLICK HERE

UN Secretary-General Scientific Advisory Board meets in Trieste

The Scientific Advisory Board set up by UN Secretary-General Ban Ki-moon met in Trieste for the fifth time in late May. A statement on “Science and the 2030 Agenda” was drawn up under the leadership of Leopoldina President Prof. Jörg Hacker ML, who was appointed ad personam to the interdisciplinary board in 2014.

The statement asserts that science must not only be seen as an instrument for implementing and further developing existing solutions but also as a driver for sustainable development. The statement was drawn up and voted on by the secretariat that supports Prof. Hacker’s position on the advisory board. The secretariat is

funded by the German Federal Ministry of Education and Research. Irina Bokova, chairwoman of the advisory board and Director-General of UNESCO, will forward the statement to Secretary-General Ban. (chw)

People

New Members of Class II

■ **Aaron Ciechanover ML**, Haifa, Technion – Israel Institute of Technology, Cancer and Vascular Biology Research Center, Rappaport Faculty of Medicine and Research Institute (Biochemistry and Biophysics Section)

■ **William E. Evans ML**, Memphis, USA, St. Jude Children's Research Hospital, Department of Pharmaceutical Sciences (Physiology and Pharmacology/Toxicology Section)

■ **Ingrid Fleming ML**, Frankfurt am Main, Faculty of Medical Science, Goethe University Frankfurt, Centre of Molecular Medicine, Institute for Vascular Signaling (Physiology and Pharmacology/Toxicology Section)

■ **Veit Hornung ML**, Munich, Ludwig-Maximilians-Universität München, Gene Center and Department of Biochemistry (Microbiology and Immunology Section)

■ **Eicke Latz ML**, Bonn, University of Bonn, Institute of Innate Immunity (Microbiology and Immunology Section)

■ **Maria Leptin ML**, University of Cologne, Institute for Genetics (Biochemistry and Biophysics Section)

■ **Sabeeha Merchant ML**, University of California, Los Angeles, Department of Chemistry and Biochemistry (Organismic and Evolutionary Biology Section)

■ **Gero Miesenböck ML**, Oxford, UK, University of Oxford, Centre for Neural Circuits and Behaviour (Sektion Neurowissenschaften)

■ **Edvard Moser ML**, Trondheim, Norwegian University of Science and Technology, Kavli Institute for Systems Neuroscience / Centre for Neural Computation (Organismic and Evolutionary Biology Section)

■ **May-Britt Moser ML**, Trondheim, Norwegian University of Science and Technology, Kavli Institute for Systems Neuroscience / Centre for Neural Computation (Organismic and Evolutionary Biology Section)

■ **Rolf Müller ML**, Saarbrücken, Helmholtz Institute for Pharmaceutical Research Saarland, Microbial Natural Products (Microbiology and Immunology Section)

■ **Ekkehard Neuhaus ML**, TU Kaiserslautern, Department of Biology, Plant Physiology (Organismic and Evolutionary Biology Section)

■ **Albert Osterhaus ML**, University of Veterinary Medicine Hannover, Foundation (TiHo), Research Center for Emerging Infections and Zoonoses (Microbiology and Immunology Section)

■ **Alexander Pfeifer ML**, University of Bonn, Biomedical Center, Institute of Pharmacology and Toxicology (Physiology and Pharmacology/Toxicology Section)

■ **Christian M.T. Spahn ML**, Charité – Universitätsmedizin Berlin, Institute of Medical Physics and Biophysics (Biochemistry and Biophysics Section)

■ **Rajeev Kumar Varshney ML**, Patancheru, India, International Crops Research Institute for the Semi-Arid Tropics (Agricultural and Nutritional Sciences Section)

Deceased members

■ **Ilkka Hanski ML**
14 February 1953 – 10 May 2016 | Helsinki, Finland
Organismic and Evolutionary Biology

Ilkka Hanski was one of the leading representatives of population ecology. He was the originator of metapopulation research, a field that focuses on the connection between fragmented individual populations. Hanski received numerous prizes for his research, including the BBVA Foundation Frontiers of Knowledge Award at the start of this year. He was elected as a member of the Academy in 2002.

■ **Karl Maramorosch ML**
16 February 1915 – 9 May 2016 | Warsaw, Poland
Agricultural and Nutritional Sciences

Karl Maramorosch was an expert in the field of insect-borne diseases. A virologist, Maramorosch discovered that many plant diseases are not caused by viruses but by bacteria known as mycoplasma. In 1980, he was awarded the Wolf Prize in Agriculture, which is regarded as the Nobel Prize in agriculture. Maramorosch was appointed a member of the Leopoldina in 1971.

■ **Udo Schwertmann ML**
25 November 1927 – 10 January 2016 | Freising
Agricultural and Nutritional Sciences

Udo Schwertmann was a soil scientist who focused his research primarily on soil mineralogy. Schwertmann excelled in his field through his extensive research on minerals and iron oxides, and his colleagues named the mineral schwertmannite in his honour. From 1970 until his retirement in 1995, Schwertmann was a professor of soil science at TU München. He was admitted to the Academy in 1987.



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Abbreviations:

ML = Member of the Leopoldina