



Leopoldina  
Nationale Akademie  
der Wissenschaften

# Leopoldina news

1 | 2020

Deutsche Akademie der Naturforscher Leopoldina –  
German National Academy of Sciences

Halle (Saale), 7 February 2020



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# Editorial

Dear Members and Friends  
of the Leopoldina,



It was nearly ten years ago on 2 June 2010 that I first addressed the readers of Leopoldina news. Back then, the first page of the newsletter included a re-

port on the symposium “Perspektiven der Energieforschung in Deutschland” (Perspectives of Energy Research in Germany). Further towards the back of that edition, we introduced our new corporate design, which has acted as the face of all Leopoldina publications since.

I also used that editorial as a platform to give thanks for the support I had received in my first weeks in office and to ask for continued collaboration. Looking back, I can now say that this cooperation has been a success, proving particularly fruitful in the years that followed. Initial plans for science-based policy advice and the representation of the German Academies at an international level eventually resulted in publications, events, contacts and projects. For this, I would like to take this opportunity once again to thank the employees involved, the Members of the Leopoldina and our partners at German academies of science and in the Alliance of Science Organisations, at various partner foundations, at universities and at non-university institutions.

This introduction, however, is not just a place for me to give thanks, but also for me to take my leave as the incumbent President of the Academy. In December, the Senate elected climate researcher Gerald Haug as my successor – a scientist who has an excellent grasp on communicating research topics to politicians and society, and who is well-connected in the national and international scientific communities. I am confident that the Leopoldina will continue to fulfil its tasks as National Academy with him guiding the way. Read more in this issue of Leopoldina news. On that note, I hope you enjoy reading this new edition.

*Jörg Hacker*

## Leopoldina 2020: A preview of what's to come this year

Change of office, Leopoldina Night, Annual Assembly



The Long Night of the Sciences attracts many visitors to the Leopoldina in Halle each year.

Photo: Christoph Rieken | Leopoldina

*Biodiversity, sustainability, artificial intelligence, innovation – these are just a few of the topics the Leopoldina will be concentrating on in the coming months. Here is a selection of the upcoming events in 2020:*

The year's first event on 20 February will feature a very special guest. German Chancellor Dr. Angela Merkel will deliver a ceremonial address in Halle in celebration of current Leopoldina President Prof. Dr. Jörg Hacker ML officially turning over the presidency to his successor Prof. Dr. Gerald Haug ML of the ETH Zurich.

Also taking place in Halle is the Academy's largest annual event, the Annual Assembly, which will be held on 25 and 26 September. The scientific impetus for the assembly entitled “Biodiversity and the Future of Variety” originated from Section 8, Organismic and Evolutionary Biology, under the leadership of Prof. Dr. Ulf-Ingo Flügel ML. On 27 and 28 June, the Silbersalz film festival will be hosted at the Leopoldina in Halle, where scientists will enter into a dialogue with film-makers on this same topic of biodiversity, nature and sustainability.

Another important event to remember is the Research Summit in Berlin. Organised by the Stiftverband (Donors' Association for the Promotion of Humanities and Sciences in Germany), the Leopoldina and the Commission of Experts for Research

and Innovation, the conference will be taking place on 6 May for the sixth year in a row, this time under the title “Innovation and diversity – between creative destruction and social participation”. This will give scientists, economists and politicians the chance to come together with civil society to discuss why innovation potential in different regions, companies and population groups is to a certain extent so profoundly inconsistent.

With regard to international cooperation, the Leopoldina will once again offer its counsel on scientific topics at the G7 and G20 summits. This year's G7 summit will be taking place in the US and the G20 summit will be hosted by Saudi Arabia in November. In addition, there are multiple symposia with partner academies in the pipeline, including the seventh Inter-Academy Symposium between Germany and Israel entitled “Recent Advances in Neuroscience” taking place in Jerusalem/Israel on 19 and 20 May. Artificial intelligence and the digital era are the focus of the Leopoldina's joint symposium with the Korean Academy of Science and Technology in Seoul/South Korea, from 24 to 26 February.

Finally, the topic of Science Year 2020 is bioeconomics, serving as a central theme of the Leopoldina Night in Halle on 3 July as well as the Leopoldina Science Course for Journalists taking place from 3 to 5 September. (jk)

# Climate researcher Gerald Haug takes office at the Leopoldina succeeding Jörg Hacker

*Gerald Haug is the new President of the Leopoldina. The Academy Senate voted him in back in December as Jörg Hacker's successor. The climate researcher, geologist and paleoceanographer will assume office on 1 March, becoming the 27th President of the Leopoldina. Haug is the Director of the Max Planck Institute for Chemistry in Mainz as well as a professor at the Swiss Federal Institute of Technology (ETH) Zurich in Switzerland. Microbiologist Jörg Hacker has been heading the Academy since 2010 and is retiring at the end of two terms. The change in office will be officially celebrated on 20 February.*

"I would like to take up where Jörg Hacker left off in his very successful ten-year period as Academy President. As the National Academy of Sciences, the Leopoldina has the opportunity to play an active role in shaping opinions in politics and society," Gerald Haug remarked upon election. He backs "fact-based, balanced and transparent scientific advising that integrates the considerations of different societal groups. This allows the Leopoldina to contribute to the general consensus on current topics as well as future issues. This task is becoming more and more important in our quickly changing and increasingly complex world – on the national level, across Europe and worldwide."

Gerald Haug was elected as a member of the Leopoldina's Earth Sciences Section in 2012. As an elected representative of this section, he has been a member of the Academy Senate since 2015. Since 2016, he has served as spokesperson for Class I: Mathematics, Natural Sciences and Engineering. Haug contributed to multiple science-based policy advice publications, most recently in 2019 as one of the two speakers of the working group "Climate Goals 2030", which released the statement "Climate goals 2030: Towards a sustainable reduction of CO<sub>2</sub> emissions". In 2015, Haug co-authored the statement on the future of Earth's oceans developed by the G7 countries' academies of sciences in preparation for the summit in Elmau and ultimately submitted to the heads of state and government of the G7 countries.



Jörg Hacker (left) and Gerald Haug after the election in December..

Photo: Markus Scholz | Leopoldina

"Gerald Haug has an excellent grasp on communicating research topics to politicians and society. Moreover, he is very well-connected in the national and international scientific communities. I am therefore confident that he is ideally prepared to lead the National Academy of Sciences Leopoldina and head off its tasks in science-based political and societal advising as well as in preserving relations with other science academies worldwide," Jörg Hacker said of his successor. "With Gerald Haug, the Senate elected a scientist to the head of the Academy who proved remarkable early on thanks to his exceptional research," he added.

In his ten years in office, Jörg Hacker established the Leopoldina as a well-recognised counsellor on societal challenges and a prestigious partner in the global dialogue between academies. Many statements on future issues such as bioenergy, climate protection, preimplantation genetic diagnosis and genome editing were published during his tenure and garnered much attention. It was also during this time that G7 countries' science academies gained more traction in providing their counsel at the G7 summits, in turn strengthening the counsel offered at G20 meetings. The Leopoldina also expanded its global reach and entered into more partnership agreements with national science academies. (jk)

## ABOUT GERALD HAUG

Gerald Haug studied geology in Karlsruhe and completed his doctorate at Kiel University. He subsequently worked as a post-doc at the University of British Columbia in Vancouver/Canada, and at the Woods Hole Oceanographic Institution in the USA followed by a period as Research Assistant Professor at the University of Southern California in Los Angeles/USA and as a Senior Assistant at the ETH Zurich in Switzerland, where he earned his qualification to become a professor in 2002.

In 2003, he accepted the position of Section Head at the GFZ German Research Centre for Geosciences in Potsdam and was appointed as a professor at the University of Potsdam. He was hired as a full professor at the ETH Zurich in 2007. Since 2015, he has been Director of the Climate Geochemistry Department at the Max Planck Institute (MPI) for Chemistry in Mainz and a Scientific Member of the Max Planck Society. He will continue to head his department at the MPI part-time. Gerald Haug has received many awards for his research, including the Leibniz Prize conferred by the German Research Foundation (DFG) in 2007, prior to which the DFG had already awarded him the Albert Maucher Prize in Geoscience in 2001.

LEOPOLDINA PROFILE GERALD HAUG

# Ben Feringa: “Being elected means a lot to me”

Class I: Election of new members, Leopoldina lecture and symposium on March 25 to 26

*On 25 March, the new members of Class I: Mathematics, Natural Sciences and Engineering who were elected to the Leopoldina in 2019 will receive their certificates. This elite group includes Prof. Dr. Ben L. Feringa, the 2016 Nobel Laureate in Chemistry, who will then speak about research in the area of molecular nanotechnology at the evening lecture entitled “The Art of Building Small”. He will detail the tenets of this field in an interview prior to the event.*

*Your molecular machines are inspired by nature. What kind of machines do organisms build?*

**Ben Feringa:** The fact that I can speak to you, the fact that you can move your arms and legs, that substances are transported in your body – all this is due to tiny motors and machines, billions and billions of them. ATP, the most important fuel in your body of which we produce up to 40 kilograms per day, is made by a rotary motor. If you want to know if something is alive or dead, one of the first things a child will say is: „Oh, it's moving, so it's alive!“

*Mechanics is normally a discipline of physics. Why is chemistry so important at the molecular level?*

**Feringa:** In his famous lecture “There’s Plenty of Room at the Bottom” the physicist Richard Feynman developed the first ideas of technology on a molecular scale. That was 60 years ago. What happened since then was mainly a scaling down of macro-technology. We built smaller and smaller devices – look at your laptop and your smartphone. But what Mother Nature does is to build bottom up instead of top down, from nanoscale to larger scale dimensions. And that’s typically what chemists and materials scientists do.

*Are you trying to imitate Nature’s constructions?*

**Feringa:** Once the stage for life was set, nature had a very limited set of materials to work with. Most of the essential parts of your body are built of 20 amino acids, that’s it. But we are not limited at all by this because we can make endless materials. A Boeing 747 is not an upgraded pigeon, and our constructions are not modi-



*Ben Feringa will give the Leopoldina lecture on March 25.*

Photo: University of Groningen

fied natural machines, although I admire the beautiful design of Mother Nature.

*The conditions at the molecular scale are very different from what we experience in the macro world.*

**Feringa:** That’s right. There is a phenomenon called Brownian motion – molecules move like crazy. Some people have compared it to constantly walking in a hurricane.

*What are the main obstacles when working under these conditions?*

**Feringa:** Chemistry is extremely good at building all the materials that sustain modern society, but we are not very good at making anything that moves. Think about an artificial muscle, think about a piece of

plastic that can change shape or can repair itself. But this is what happens in your body – if you have a scratch on your finger it heals itself. Now for the first time we can make things that can move autonomously. We have made the first motor in the world which is less than one nanometer in size.

*You also built a little nano-car.*

**Feringa:** Yes, and the scientific challenge was of course not to build an actual car, but to transform rotation into translational motion.

*What are the applications of this technology?*

**Feringa:** The main application we are looking at now is controlling surface properties, for example when growing stem cells. We also published work on a molecular muscle last year. We organized millions of our molecular motors in water, and when we hit them with light, the energy makes them move so that we can grab a piece of paper.

*We have heard a lot of stories about nanobots. Is this coming?*

**Feringa:** This is of course still science fiction. But I predict that 50 years from now a doctor will inject these nanobots in your bloodstream to go search for a tumor cell or to deliver a drug. But I think the first applications will be self cleaning windows and self-repairing materials. There is already a kind of plastic that you can cut and then it heals within ten minutes. The nanorobotics, that’s a little bit further away. But looking at the possibilities, it is fantastic what is waiting for us in the future – if we do it in the proper way.

*What does the membership in the Leopoldina mean for you?*

**Feringa:** I value these communities of the best scientists like the Leopoldina a lot. I think it is more important than ever that the academies raise their voice to politicians and to society to tell fact from fiction and to propagate quality of thought. So being elected as a member of this prestigious academy means a lot to me.

## SYMPOSIUM CLASS I

At the end of March, Class I: Mathematics, Natural Sciences and Engineering will be meeting at the Leopoldina. On 25 March, the Leopoldina’s new members will receive their certificates and at 6:30pm, Prof. Dr. Ben Feringa will hold the Leopoldina Lecture. The meeting will continue on 26 March with the symposium on the Energy System and its Storage Systems.

- LEOPOLDINA LECTURE
- SYMPOSIUM CLASS I

THE INTERVIEW WAS CONDUCTED BY CHRISTOPH DROESSER

# Acceptance of genome editing for cultigens

## Academies of sciences and German Research Foundation call for new European genetic engineering legislation

*Thanks to genome editing, cash crops can be researched and improved on much more quickly and precisely than ever before. However, gene-edited organisms are generally subject to the European Union's particularly restrictive, undifferentiated as well as time- and cost-intensive authorisation processes which apply to classically genetically modified organisms (GMOs).*

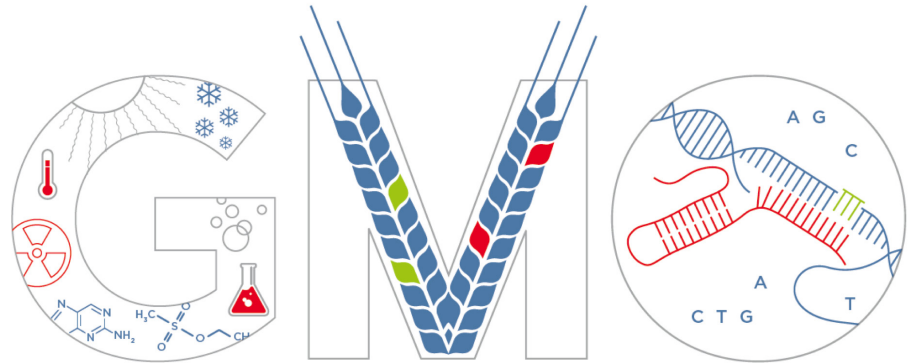
Yet this regulation does not take into account the type of genetic modification nor whether it could have occurred randomly or via conventional breeding methods. Moreover, it is often impossible to retrospectively attribute the origin of a genetic modification by means of genome editing to a specific breeding method.

Meanwhile, there are over one hundred known (potentially) market-ready gene-edited cash crops worldwide which can offer advantages for productive, low-pesticide and resource-saving agriculture as well as for food security. These include bacteria-resistant rice, mould-resistant types of wine grape, wheat and cacao as well as drought-tolerant strains of corn, wheat and soya beans. In many countries outside of the EU, including Canada, Argentina and the US, gene-edited plants that can also be created via traditional breeding methods have already been exempted from GMO regulations.

### Scientific backing for a regulation for gene-edited plants

In their December 2019 statement entitled "Paths toward a science-based, differentiated regulation of gene-edited plants in the EU", the academies of sciences and the DFG came to the conclusion that the European regulatory approach based on the procedure by which plants are bred thus cannot be rationally justified. In fact, it is said to hamper research, development and application of improved cash crops which are urgently necessary to support productive, climate-adapted and sustainable agriculture.

Among other suggestions, the scientific organisations recommend reworking the definition of GMOs in the European release directive as a short-term meas-



*Leopoldina, Union of the German Academies of Sciences and Humanities and German Research Foundation offer recommendations on how the European genetic engineering legislation can be amended in the short term and completely reworked in the long term.*

Graphic: Sisters of Design

ure – gene-edited organisms should no longer be considered GMOs if they contain a combination of genetic information which could also occur in nature or by way of conventional breeding methods, unless they contain genetic information which is foreign to the species. In the long term, however, a completely new legal framework would have to be established

which would concentrate on new traits in modified organisms in assessing the risks involved for people, the environment and nature, since potential risks can only arise from the modified attributes of an organism as a product of breeding and not from the method of breeding employed.

### Strengthening sustainability and innovation in agriculture

The scientific organisations point out that gene-edited plant varieties can offer a valuable contribution to the resolution of existing resource shortages which are further exacerbated by climate change. Likewise, they are capable of strengthening agricultural sustainability when properly combined with other ecologically relevant innovations and practices. This is said to reopen opportunities for outdoor research as quickly as possible, a critical resource for understanding the genetic fundamentals of attributes such as salt, drought and heat tolerance.

A differentiated regulatory practice is also expected to afford small and medium-sized enterprises easier access to these new methods of breeding, counteracting already highly concentrated monopolisation in the international plant breeding and seeds market. (jf)

#### REGULATING GMOS

The Leopoldina, the German Ethics Council and the German Research Foundation discussed developments in plant breeding and the resulting ethical and legal questions at the February 2017 joint event "Brauchen wir eine neue Gentechnikdefinition?" (Do we need a new definition of genetic engineering?). A large portion of attendees from the scientific and political fields as well as society as a whole expected the European Court of Justice to exempt gene-edited organisms with modifications that could have occurred naturally or through traditional breeding practices from the legal regulations for the release, placing on the market, labelling and traceability of GMOs.

However, in July 2018, the European Court of Justice ultimately decided that all gene-edited organisms are subject to the GMO regulation irrespective of the specific genetic modification.

■ STATEMENT "REGULATION OF GENOME EDITED PLANTS IN THE EU"

## “Air Pollution and Health” statement submitted to the UN

“Politicians must act quickly in order to be able to combat global air pollution and the negative health impact it entails for humans.” Prof. Dr. Jean Krutmann ML turned to political representatives from over 30 countries at a United Nations conference on 12 December 2019 in Geneva/Switzerland with this appeal. Together with his Brazilian colleague Prof. Dr. Paulo Saldiva, he presented the statement “Air Pollution and Health”, which evinces the effects of air pollution on human health and lays out ways of handling the issue on a political level. The United Nations Economic Commission for Europe (UNECE) organised the conference on the occasion of the 40th anniversary of the Convention on Long-Range Transboundary Air Pollution.

In 2019, the Leopoldina focused its attention on air pollution, jointly authoring the statement “Air Pollution and Health” with partner academies in South Africa, Brazil and the US and submitting it to the UN high representatives in June. (jn)

Photo: Kathrin Happe | Leopoldina



## Machine learning and 3D scanners in archaeology

Joint symposium from the Leopoldina and the Israeli Academy

When the Dead Sea Scrolls were uncovered in the Qumran Caves in the West Bank in the mid-twentieth century, it was found that only a handful of the approximately 2000-year-old parchment and papyrus scrolls had remained intact. However, about 950

different manuscripts have been reconstructed from the fragments, including the oldest known Bible scriptures.

Today, digital methods contribute greatly to the careful research of these historic scrolls. The Israel Antiques Authority’s Pnina Shor drew attention to this project at the Computational Archaeology symposium, which was jointly organised for the first time by the Leopoldina and the Israel Academy of Sciences and Humanities on 12 and 13 November 2019 in Jerusalem/Israel.



*The delegations from the Leopoldina and Israel Academy of Sciences and Humanities at the symposium.*

Photo: Israel Academy of Sciences and Humanities

help of 3D scanners, digital cataloguing of artefacts and machine learning in archaeology. With machine learning, an artificial intelligence system learns from examples and can apply them to more general situations at the end of the learning phase.

The lectures were followed by animated discussion sessions with the audience. The symposium was coordinated by Prof. Dr. Israel Finkelstein, Tel Aviv University/Israel, and Prof. Dr. Reinhard Förtsch, German Archaeological Institute. (jn)

Computational archaeology is an interdisciplinary field which seeks to understand and solve research problems using modern information technology. To this end, the speakers focused on the documentation of archaeological cultural goods with the

## EASAC welcomes Christina Moberg as new president

The Swedish chemist Prof. Dr. Christina Moberg assumed the presidency of the European Academies Science Advisory Council EASAC at the start of the year. She previously served as Vice President of the association and, from 2015 to 2018, as President of the Royal Swedish Academy of Sciences. She is now taking up the mantle of the Swiss astrophysicist Prof. Dr. Thierry Courvoisier, who had held the presidency since 2017.

At the same time, EASAC found two new Vice Presidents in Prof. Dr. Wim van Saarloos, President of the Royal Netherlands Academy of Arts and Sciences, and Prof. Dr. Olivier Pironneau, international relations delegate at the French Académie des Sciences.

Christina Moberg is an expert in synthetic organic chemistry. She is also actively involved in issues of research integrity and holds doctoral seminars in Sweden and elsewhere, among other activities.

EASAC brings together the National Academies of Science of the EU Member States, Norway and Switzerland to provide independent science-based advice on important challenges for Europe.

(jmo)

## Strong turnout for the ninth World Science Forum in Hungary

EASAC, IAP and Global Young Academy represented in Budapest



*The declaration of basic principles that the Global Young Academy presented at the World Science Forum was adopted by the members of numerous Young Academies in November 2019.*

Photo: James Curtiss | Global Young Academy

*The ninth World Science Forum (WSF) took place in November 2019 in Budapest/Hungary and was attended by representatives of the European Academies' Science Advisory Council (EASAC) and the InterAcademy Partnership (IAP) global network as well as the Global Young Academy. The Forum – one of the largest international scientific policy conferences worldwide – focused last year on the issue of "Science, Ethics and Responsibility".*

EASAC and IAP both held several sessions as part of the extensive 2019 programme. They gave a joint presentation on the findings of a global study which looked at ways to make greater use of science-based innovation in order to reduce carbon emissions in the global food system and increase its resilience in the face of climate change.

Another EASAC session highlighted the dangers of regenerative medicine treatments which lack a sufficiently scientific basis. Meanwhile, a session on the concept of Avoid-Shift-Improve looked at the recommendations for decarbonising transport in Europe. A third session presented EASAC's analysis of climate change and health in Europe. The central demand of this analysis is a concerted effort by policymakers to prevent a

deterioration of public health in Europe as temperatures rise. Finally, EASAC set out the key points of a global project on this issue which is being overseen by the Leopoldina.

The Global Young Academy, meanwhile, used the WSF as a platform to present its "Declaration on the Guiding Principles of Young Academies". The Declaration sets out a series of core principles held by the Young Academies, including the academic excellence of their members and the breadth of different disciplines covered in order to enable interdisciplinary dialogue. It also emphasises their active role at the interface between science and politics as well as wider society. The Young Academies are being encouraged to begin orienting all of their activities around the newly codified guiding principles of diversity and inclusivity, responsibility, knowledge-based evidence, and independence and transparency.

The Declaration was initiated in response to the founding of new Young Academies worldwide. While Germany's Die Junge Akademie was the first of its kind when it was established in 2000, there are now more than 40 such academies in total, and there is a need for a consensus on shared principles and values to support the future development of this active community. (jmo, csd, amg)

## Tribute to former President Benno Parthier

"An academy is shaped by its Presidents" – these words marked the beginning of Minister-President of Saxony-Anhalt Dr. Reiner Haseloff's tribute to the former President of the Leopoldina and founding director of the Leibniz Institute of Plant Biochemistry in Halle, who passed away on 25 August last year. This sentiment was also reflected in a joint memorial held by the two institutions on 27 January. Many former colleagues, companions and friends shared their memories of a revered figure.



Photo: Markus Scholz | Leopoldina

President Prof. Dr. Jörg Hacker ML spoke about the 24th President Benno Parthier's place among the ranks of the Leopoldina's Presidents in the second half of the 20th century. He underscored in particular the important role Parthier played for the Academy during the transition from a dictatorship to a free society.

He went on to reminisce about their collaboration at the Leopoldina and their contact in the founding city of Schweinfurt and permanent host city of Halle, as well as at Martin Luther University Halle-Wittenberg. Close former colleagues also paid tribute to Parthier's scientific work. He was admirably described as a man of integrity and great determination. (gb)

# People

## Deceased members

### ■ Karl Heinz Büchel ML

**10 December 1931 - 11 January 2020**  
**Chemistry**

Karl Heinz Büchel was a board member at Bayer AG from 1977 to 1994 and led the board committee on research and development during this time. He became an honorary professor at RWTH Aachen University in 1975 and at the University of Bonn in 1989. His scientific work focused on topics within small molecule chemistry, particularly plant protection and pharmaceuticals. Büchel was a member of many different expert committees as well as chair of the board of the German chemical industry's charitable fund FCI. He received a number of awards including the American Chemical Society's Burdick and Jackson International Award for Research in Pesticide Chemistry (1983), the German Federal Cross of Merit, First Class, for services to new technology (1989), and the Order of Merit of the State of North Rhine-Westphalia (1993). He became a member of the Leopoldina in 1994.

### ■ Dietfried Jorke ML

**19 February 1926 - 11 December 2019** | Jena

**Internal Medicine and Dermatology**

Dietfried Jorke spent many years at the Friedrich Schiller University Jena, as a full professor of internal medicine from 1975 to 1992 as well as director of the clinic for internal medicine from 1980 onwards. He had previously served as medical director and head physician at Jena's city hospital (now part of Jena University Hospital) beginning in 1962. He founded the action group Demokratische Erneuerung der Hochschule (Democratic Renewal of the University) in 1989 in the midst of Germany's reunification and served as the group's spokesperson until 1993. The Friedrich Schiller University Jena made him an honorary senator in 1993. He received many awards including the Ernst-von-Bergmann-Plakette (1996), the Order of Merit of the Free State of Thuringia (2003), and the Dr. Ludwig Pfeiffer Medal from the Thuringian state medical associ-

ation (2011). He became a member of the Leopoldina in 1974.

### ■ Sir Hans Leo Kornberg ML

**14 January 1928 - 16 December 2019** | Falmouth/USA

**Microbiology and Immunology**

Sir Hans Leo Kornberg had taught at Boston University in Massachusetts/USA as a Professor of Biology since 1995. He had previously held the post of Professor of Biochemistry at the University of Cambridge in the UK from 1975 to 1995, and was also Master of Christ's College from 1982 onwards. His research focused on the regulation of carbohydrate transport in microorganisms. His most important scientific works include the description of the glyoxylate cycle and of the mechanisms behind anaplerotic reactions. He received the Otto Warburg Medal from the German Society for Biochemistry and Molecular Biology (GBM) in 1973 and was knighted in 1978. He joined the Royal Society in 1965 and the Academia Europaea in 1989. He had been a member of the Leopoldina since 1982.

### ■ Stephan Marcel Perren ML

**7 October 1932 - 21 November 2019** | Davos/Switzerland

**Surgery, Orthopaedics, Anaesthesiology**

Stephan Marcel Perren was one of the founders of the AO Research Institute Davos in Switzerland and served as director there from 1967 to 1996. In 1980, he was made Professor of Experimental Surgery at the University of Basel in Switzerland, where he taught until his retirement in 1998. Perren earned international renown for his research in biomechanics and bone healing. He worked extensively on surgical techniques for bone fractures and developed the scientific basis for compression osteosynthesis (the AO method). He was awarded numerous prizes including the International Society of Surgery's Robert Danis Prize in 1983, the Dieffenbach bust of the German Society for Trauma Surgery (DGU) in 1993, and the AO Prize for lifetime achievements in 2004. He joined the Leopoldina in 1990.

### ■ Herbert Röller ML

**2 August 1927 - 31 October 2019**  
**Genetics/Molecular Biology and Cell Biology**

Herbert Röller had been Professor of Biochemistry and Biophysics and Director of the Institute of Developmental and Molecular Biology at Texas A&M University (College Station/USA) since 1973. His main focus was on endocrinology and developmental physiology, particularly the physiology and biochemistry of the juvenile hormone and the causal mechanisms of polarity in insect segments as well as the pheromone systems of Pyralidae. He was a member of many scientific societies, including the American Association for the Advancement of Science, the American Society of Zoologists, and the American Institute of Biological Sciences. He became a member of the Leopoldina in 1973.

### ■ Detlef Schlöndorff ML

**15 January 1942 - 16 October 2019** | New York/USA

**Internal Medicine and Dermatology**

From 1993 to 2007, Detlef Schlöndorff was Professor of Internal Medicine at the Ludwig Maximilian University of Munich as well as director of its city-centre medical polyclinic. He researched the molecular and cell-level biological principles of glomerular damage resulting from kidney diseases and the role of chemokines and chemokine receptors in inflammatory kidney diseases. Schlöndorff made significant contributions to nephrology in Germany, for instance serving as a board member of the national nephrological society DGfN from 1997 to 2007. He won the Irma T. Hirsch Career Scientist Award in 1979 and the DGfN's Franz Volhard Medal in 2005. Schlöndorff was elected to the Leopoldina in 2002.

## New members of Class IV

**Cederman, Lars-Erik ML**, Zurich/Switzerland, Swiss Federal Institute of Technology Zurich (ETH Zurich), Center for Comparative and International Studies (Economics and Empirical Social Sciences Section)



**Freund, Alexandra M. ML**, Zurich/Switzerland, University of Zurich, Department of Psychology, Developmental Psychology: Adulthood (Psychology and Cognitive Sciences Section)

**Gordin, Michael Dan ML**, Princeton/USA, Princeton University, Department of History (History of Science and Medicine Section)

**Klonk, Charlotte ML**, Berlin, Humboldt University of Berlin, Institute of Art and Visual History (Cultural Sciences Section)

**Lenger, Friedrich ML**, Giessen, Justus Liebig University Giessen, Historical Institute (Cultural Sciences Section)

**Schurz, Gerhard ML**, Düsseldorf, Heinrich Heine University Düsseldorf, Department of Philosophy (Epistemology Section)

**Wolf, Oliver T. ML, Bochum**, Ruhr-Universität Bochum, Faculty of Psychology, Cognitive Psychology (Psychology and Cognitive Sciences Section)

### Leopoldina Fellowship Programme

#### New fellows

Dr. Felix Grassmann, Leopoldina Fellow since October 2018, has had his funding extended to a total of two years. He is working with his mentor Prof. Kamila Czene at the Institution för Medicinsk Epidemiologi och Biostatistik at Karolinska Institutet in Stockholm/Sweden.

Dr. Philipp Stegmann, Faculty of Physics at the University of Duisburg-Essen, will be spending two years working with Prof. Dr. Jianshu Cao in the Department of Chemistry at the Massachusetts Institute of Technology in Cambridge/USA.

#### Former fellows

Prof. Dr. Karen Alim, Leopoldina Fellow from 2011 to 2014, was appointed Professor for Theory of Biological Networks in the Department of Physics at the Technical University of Munich in October 2019.



**Leopoldina**  
Nationale Akademie  
der Wissenschaften

## Imprint

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