



Leopoldina  
Nationale Akademie  
der Wissenschaften

# Leopoldina news

5 | 2019

Deutsche Akademie der Naturforscher Leopoldina –  
German National Academy of Sciences

Halle (Saale), 11 October 2019

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# Editorial

Dear Members  
and Friends of the Leopoldina,



Climate protection has entered the public consciousness. After decades in which the focus was more often on demanding proof that climate change results from hu-

man activity than on seeking causes and solutions, political debate has finally shifted to consider what we must do to preserve the basis of existence for future generations.

Members of the Leopoldina have long addressed the subject of climate change in lectures, events and statements. As part of the most recent debate, scientists at the Academy once again came together to summarise the current state of knowledge and present immediate climate protection measures which can be rolled out quickly and which promote both social responsibility and innovation. The ad hoc statement "Climate goals 2030: Towards a sustainable reduction of CO2 emissions" was compiled in just a few weeks under the direction of working group spokespersons Gerald Haug and Antje Boetius and has attracted a great deal of public interest (see also p. 7).

One of the key recommendations is a call for a standard price on greenhouse gas emissions that would apply across all sectors, the proceeds of which would be used to support low-income households, thus drafting a plan to protect the climate while also promoting innovation and social responsibility. While the package of measures recently adopted by the German federal government's Climate Cabinet has incorporated several of the ideas outlined in our statement, it has set a very low price on CO2. It remains to be seen whether such a price is sufficient to reach CO2 targets, and there is reason to be sceptical. To me, these developments show that the Leopoldina must continue to provide in-depth advice on the subject of climate protection. The Academy will be very involved in this discussion as it proceeds, because it is imperative that we preserve the basis of life for future generations.

I hope you find this issue an interesting and inspiring read.

G. Haug

## On the concept of time in physics, biology, medicine and music

Annual Assembly of the Leopoldina offers a wealth of insights



Nearly 300 scientists attended this year's Annual Assembly of the National Academy of Sciences in Halle.

Image: Markus Scholz | Leopoldinar

*Under the heading "Time in Nature and Culture", members and invited guests of the National Academy of Sciences Leopoldina gathered in Halle on 20 and 21 September. The event was an impressive display of the cross-disciplinary contributions that science has made to our understanding of time.*

Spanning the fields of physics, chemistry, biology, psychology, cultural sciences, mathematics, chronomedicine and chronobiology, the 18 presentations made clear that time plays an important role in a broad range of scientific disciplines.

This was particularly evident in the presentation by Prof. Dr. Felicitas Pauss ML, Geneva/Switzerland, who took the audience on a journey through time into the history of the universe. An experimental physicist at CERN (European Organization for Nuclear Research), Pauss explained how the 27-kilometre-long,

circular particle accelerator known as the Large Hadron Collider (LHC) can be used to recreate the conditions of the cosmos ten to twelve seconds after the Big Bang. Today, 13.7 billion years after the Big Bang, this time machine located 100 metres below ground helps scientists study the physical principles that governed the creation of material, space and time.

### ANNUAL ASSEMBLY 2020

Next year, the Leopoldina is dedicating its Annual Assembly to the topic of "Biodiversity". From 25 to 26 September, scientists will gather in Halle to discuss the importance of biodiversity, the opportunities for its preservation and the consequences of further loss. The event will take both a Central European and a global view.

In contrast, Prof. Dr. Helga Nowotny, Vienna/Austria, turned her focus to the future, warning that massive computing power and deep learning algorithms as well as the associated improvements in forecasting methods could lead to a rigid view of fu-

ture society. While digital time machines open up new possibilities, Nowotny cautioned against society's fall back into determinism, which was thought to be a thing of the past. On the contrary, humankind must remain convinced of its role in shaping its own future and thus also learn to embrace certain uncertainties.



Guests from the scientific community and secondary schools came to the headquarters of the Leopoldina on Jägerberg in Halle for the Annual Assembly.

Image: Christoph Rieken | Leopoldina

With a view to the Leopoldina's latest statements, President of the Leopoldina Prof. Dr. Jörg Hacker ML spoke of time constraints and thanked the German Federal Ministry of Education and Research (BMBF) and the federal state of Saxony-Anhalt for their dependable cooperation and generous financial support. With this year's papers entitled "Climate goals 2030" and "Clean air", the Academy developed two core statements including recommendations for action within a period of just a few weeks. Hacker also highlighted the activities of the Leopoldina as a member of the Alliance of Science Organisations to mark the 70th anniversary of Germany's constitution, known as the Basic Law, and pointed to the relevance of scientific freedom and responsibility in the current moment.

The keynote lecture by Prof. Dr. Reinhard Merkel ML, Hamburg, addressed the question of the limits of scientific freedom. Merkel argued that a stable system of ongoing communication between science, politics, society and the media is needed in order to negotiate the boundaries of scientific freedom. In addition, international treaties must be adopted at the global level to continuously redefine scientific freedom and its limits.

Minister President of the federal state of Saxony-Anhalt Dr. Reiner Haseloff discussed the role of time in politics, explaining that as everything picks up speed in a digitalised world, decision-making processes become more and more complex. According to Haseloff, this increases the risk of poor political decisions, making it imperative that science focus on plausi-

bility, seriousness and reproducibility. He believes that the Leopoldina has a key role to play by publishing statements intended to serve as policy advice.

Thomas Rachel, Parliamentary State Secretary to the Federal Minister of Education and Research, adopted a personal tone in his welcoming address. He reminded the audience that even the presidency is a temporary office and that after two five-year terms, President of the Leopoldina Jörg Hacker's tenure will come to an end in February. Rachel praised his leadership, under which the National Academy has established itself as a voice of science and as a place for well-founded and research-based policy advice both in Germany and beyond. With his calm, compassionate and level-headed approach, Hacker knew how to promote substantive debates and strengthen the cohesion of the scientific community. (bh)



Thomas Lengauer, Scientific Coordinator of the Annual Assembly, in conversation with Reinhard Wilhelm.

Image: Christoph Rieken | Leopoldina

## HUMANS AND MUSIC

Why do humans move to music? This is a key question for Prof. Dr. Jessica Grahn, who runs the Music and Neuroscience Lab at Western University in London, Ontario/Canada. In a lively evening lecture at this year's Annual Assembly of the Leopoldina, the Canadian scientist shared her findings on what happens in the brain when we hear music. A neuropsychologist and pianist, Grahn also discussed her experiences combining very two different interests in a single career path. She encouraged young guests in particular to remain open to similar opportunities over the course of their own lives.

Grahn began by explaining that everyone has a sense for the steady pulse of musical rhythms. In the laboratory, she and her team use magnetic resonance imaging to



Canadian neuroscientist Jessica Grahn spoke about musical rhythms.

Image: Christoph Rieken | Leopoldina

identify the various areas of the brain that are activated when rhythm is perceived. Grahn turned to video footage of patients with Parkinson's disease to demonstrate that their gait can become significantly faster or more fluid as soon as they hear music or a steady beat.

However, since the sense of rhythm can vary greatly from one individual to another, this observation cannot be generalised. Nevertheless, her field offers up fundamental knowledge on neurodegenerative diseases and the therapeutic potential of music. (jt)

## Thomas Krieg is Vice President of the Leopoldina

In its session on 19 September, the Senate elected physician Prof. Dr. Thomas Krieg ML (Cologne) as the newest Vice President of the Leopoldina. The dermatologist succeeds Prof. Dr. Martin Lohse, who has completed his two terms in office.

Thomas Krieg was elected to the Leopoldina in 1997 and was a member of the Senate from 2011 to 2015. Since 2016, he has served as spokesperson for Class III – Medicine. He is the Chair of the Member Selection Committee, which was established in 2015 and recommends scientists engaged in highly interdisciplinary research for election to the Leopoldina.



Thomas Krieg

Image: Markus Scholz | Leopoldina

Thomas Krieg studied medicine in Berlin, receiving his doctorate in 1973. In 1982, he completed his postdoctoral qualification (Habilitation) at the Ludwig Maximilian University of Munich (LMU Munich). Following an appointment as a visiting scientist at the National Cancer Institute, Bethesda/USA, he was engaged in research at LMU Munich before being appointed to a professorship in the university's Department of Dermatology and Allergology. In 1991, he was named Professor and Chair of the Department of Dermatology and Venereology at the University of Cologne. From 1995 to 2003, Krieg led the Center for Molecular Medicine Cologne (CMMC). From 2011 to 2019, he held the office of Dean of the Medical Faculty in Cologne. (jk)

## Leopoldina awards prizes and medals



Researchers were honoured as part of the Annual Assembly. From left: Dr. Linda Richter (Frankfurt am Main) received the Georg Uschmann Award for the History of Science; Dr. Monika Neupert (Martinsried) accepted the Cothenius Medal on behalf of her husband Walter Neupert ML, who was posthumously honoured for his lifetime of scientific achievement; President of the Leopoldina Prof. Dr. Jörg Hacker ML (Halle) presented the prizes and medals; Prof. Dr. Klaus Müllen ML (Mainz) was also awarded a Cothenius Medal for a lifetime of scientific achievement; Prof. Dr. Elena Conti ML (Martinsried) received the Schleiden Medal for her outstanding achievements in the field of cell biology; Prof. Dr. Carl-Philipp Heisenberg ML (Klosterneuburg) was awarded the Carus Medal for his important contributions to research; Dr. Moises Exposito-Alonso (Stanford/USA) received the Leopoldina Prize for Junior Scientists; Prof. Dr. Monika Henzinger (Vienna/Austria) was honoured with a Carus Medal for her important contributions to research; and Monika Schönauer (Princeton/USA) received the second Leopoldina Prize for Junior Scientists awarded this year.

Image: Christoph Rieken | Leopoldina

## Senate session focuses on new elections and future Annual Assemblies

In the run-up to the Annual Assembly, the Leopoldina Senate convened according to schedule on 19 September for its annual session in Halle (Saale). The Academy's Executive Board informed the senators and guests in detail about current developments in the Academy and important topics in the areas of political and social policy advice, international activities and press and public relations.

Along with ratifying the actions of the Executive Board for the 2018 financial year, the Senate decided on the admission of a new member to the Leopoldina Presidium, electing Prof. Dr. Thomas Krieg ML (Cologne) from the medicine class as the newest Vice President. He follows Prof. Dr. Martin Lohse ML (Berlin), who is leaving office after completing his two terms. In addition, Prof. Dr. Hans-Peter

Zenner ML (Tübingen) was elected Secretary of Class III – Medicine – and Prof. Dr. Martin Quack ML (Zurich/Switzerland) was re-elected to a second term as Presidium Member for the adjunct territory of Switzerland.

The Executive Board also reported on the status of preparations for the next Annual Assembly taking place from 25 to 26 September 2020 in Halle, which is being organised under the working title "Biodiversity". At the suggestion of Prof. Dr. Lothar H. Wieler (Berlin), "Global health" was selected as the topic for the 2021 Annual Assembly. A programme committee will develop a wide-ranging programme based on anthropological, epidemiological, medical, economic and clinical research findings. (jb)

# Nobel Prize Laureates discuss the topic of health

Nobel Prize Dialogue comes to Germany for the first time / Leopoldina is an event partner

How can we ensure a healthy life and responsible healthcare for all? How will climate change affect our health? Could changes to working conditions reduce inequalities in life expectancy? These are just some of the questions that will be at the heart of the Nobel Prize Dialogue “Towards Health: Equality, Responsibility and Research” on 8 November in Berlin.

Five Nobel Prize Laureates will come together to discuss the future of health research and policy with researchers and political decision-makers. The National Academy of Sciences Leopoldina has joined forces with Sweden’s Nobel Media AB to organise the first Nobel Prize Dialogue held in Germany.

Guests include the economist Prof. Alvin E. Roth, PhD, of Stanford University, Stanford/USA, who received the Nobel Prize in Economics in 2012. Roth developed a model for a kidney exchange for

live donor transplants and will discuss the possibility of implementing this model in Germany. His algorithm is already being used to handle admissions to schools and universities in the USA and Canada.

Prof. Dr. Peter Agre, who received the Nobel Prize in Chemistry in 2003, is engaged in the fight against malaria in various African countries. He will discuss how healthcare can be organised locally and will also address health in the context of climate change.

As the Earth continues to warm, the malaria-carrying species of mosquito could reintroduce this disease in Europe. The negative consequences of climate change have also been addressed in detail by the Intergovernmental Panel on Climate Change (IPCC), winner of the 2007 Nobel Peace Prize.

Prof. Dr. Heyo Kroemer ML, Chief Executive Officer of the Executive Board of

the Charité – Universitätsmedizin Berlin, will take up the topics of health policy, the provision of healthcare and the promotion of research. (kp)

## NOBEL PRIZE DIALOGUE

The Nobel Prize Dialogue is an event organised by the Swedish Nobel Media AB. The dialogue on 8 November in Berlin is the first of its kind in Germany. Along with the Leopoldina, the German Federal Ministry of Education and Research, the Volkswagen Foundation and the Robert Bosch Stiftung are serving as partners for the event. The event will be held in English with simultaneous interpreting into German. Register at:

WWW.NOBELPRIZEDIALOGUE.DE

*Nobel Media has held the Nobel Prize Dialogue already several times in different parts of the world. Leopoldina news interviewed Laura Sprechmann, CEO of Nobel Media, about the aims of the series, how the events were received and which topics were discussed.*

*This will be the first time that the Nobel Prize Dialogue has come to Germany. What is special about the event format? What do you hope to achieve with it?*

**Laura Sprechmann:** Nobel Prize Dialogue is an interdisciplinary dialogue dealing with the greatest challenges we are facing today. The events provide an independent platform for Nobel Laureates and other scientists, policy-makers and industry decision-makers to discuss these challenges. In Berlin, we will discuss the Future of Health. We will not only talk about drug development and the training of physicians and other healthcare professionals, but also about the impact of a healthy environment and an intact planet on every individual.

*In which countries have you already held these dialogues and what were the*

## Providing an independent platform

*topics? How were they received?*

**Sprechmann:** In Japan, Korea and India, for example, we have held Nobel Prize Series covering a broad range of topics: the Future of Learning, the Future of Ageing and the Future of Food. These events were all very well received and we had a full house and high media attention. And we are asked to come back. The feedback from the previous venues helps us to continuously develop the concept of our



Laura Sprechmann

Image: Alexander Mahmoud

Nobel Prize Dialogues.

*What motivates Nobel Prize Laureates to attend these events?*

**Sprechmann:** The Nobel Laureates are committed to learn and are interested in the work of the other participants. They greatly appreciate the contribution of their colleagues from other disciplines, for example when a Nobel Peace Laureate meets a Nobel Laureate in Physics, as was the case when we discussed the Future of Learning in India. The Laureates are also motivated by the opportunity to talk to young people and meet important opinion leaders and decision-makers.

*What kinds of inspiration can attendees gain from the events?*

**Sprechmann:** Hopefully, the participants will find new questions and develop new interest in all disciplines in which Nobel Prizes are awarded. I hope they will be motivated to learn, progress and help to find ways to meet the challenges of today’s world. Ideally, they are inspired by the Nobel Laureates who follow their passion in what they do.

THE INTERVIEW WAS CONDUCTED BY JULIA KLABUHN

# Artificial intelligence in cancer treatment

Presentation at the Class III symposium focuses on the role of imaging in treating tumours

This year's Class III – Medicine symposium kicked off on 10 July with a presentation by Prof. Dr. Anca-Ligia Grosu ML of the University of Freiburg on the power of images in radiation oncology. Rapid developments in imaging have led to fundamental changes in the planning, implementation and monitoring of radiation therapy in cancer patients. In future, artificial intelligence will be used to provide images furnished with data that describe the form, structure, function and biology of tumours and of healthy tissue. The goal is to completely eradicate tumours while protecting healthy tissue.

The symposium continued the following day with further presentations by new members of Class III: Surgeon Prof. Dr. Christiane Bruns ML (Cologne) spoke about personalised tumour surgery. The presentation by neuroanatomist Prof. Dr. Thomas Deller ML (Frankfurt/Main) shone a spotlight on the structural protein synaptopodin, which plays an important role in the plasticity of synapses in the hippocampus. The anatomist Prof. Dr. Ernst Tamm ML (Regensburg) discussed his research on the retina. Paediatrician Prof. Dr. Georg Hoffmann ML (Heidelberg) presented approaches to and challenges of genetic screening of newborns in Germany – one of the most effective preventative measures medicine has to offer.

The ophthalmologist Prof. Dr. Ursula Schlötzer-Schrehardt ML (Erlangen) discussed new stem cell-based approaches to treating diseases of the ocular surface.

## New members of Class III



On 10 July the new members of Class III – Medicine received their membership certificates. Back row, from left: Secretary-General of the Leopoldina Prof. Dr. Jutta Schnitzer-Unggefug (Halle), Prof. Dr. Martin Hrabě de Angelis ML (Munich), Prof. Dr. Christiane Bruns ML (Cologne), Prof. Dr. Frank Heppner ML (Berlin), Prof. Dr. Simone Fulda ML (Frankfurt/Main), Prof. Dr. Thomas Deller ML (Frankfurt/Main), Prof. Dr. Thomas Gasser ML (Tübingen), Prof. Dr. Anca-Ligia Grosu ML (Freiburg), Prof. Dr. Georg Hoffmann ML (Heidelberg); front row: Prof. Dr. Ursula Schlötzer-Schrehardt ML (Erlangen), Prof. Dr. Ernst Tamm ML (Regensburg), President of the Leopoldina Prof. Dr. Jörg Hacker ML (Halle), Prof. Dr. Susanne Hartmann ML (Berlin).

Image: Markus Scholz | Leopoldina

Prof. Dr. Thomas Gasser ML (Tübingen) spoke about the shift in our understanding of Parkinson's disease from a simple disorder to a syndrome with a complex genetic architecture and a multitude of risk factors. Prof. Dr. Frank Heppner ML (Berlin) explained the importance of immune processes in Alzheimer's disease. Prof. Dr.

Martin Hrabě de Angelis ML (Munich) presented on the genetics and epigenetics of diabetes mellitus. The symposium concluded with a presentation held by veterinarian Prof. Dr. Susanne Hartmann ML (Berlin), who discussed interactions between nematodes and their host organisms. (kh)

## Fourth Worldwide Meeting of Young Academies

In July, more than 30 national young academies and academic initiatives from around the world gathered in Da Nang/Vietnam. The networking event hosted by the Vietnam Young Academy and co-organised by the Global Young Academy (GYA) was already the fourth of its kind, but was held in Asia for the first time.

Participants discussed current topics of interest to Young Academies, including gender justice and collaboration with existing national science academies as well as with policy makers and the gener-

al public. Building on the 2017 meeting, the event also addressed the question of how Young Academies can contribute to the UN's Sustainable Development Goals. This included a discussion of the recommendations outlined in the InterAcademy Partnership report "Improving Scientific Input to Global Policymaking", which was expressly directed at the GYA and the Young Academies.

Another central issue was the collaboration on a statement intended to more clearly define the guiding principles and

key characteristics of Young Academies and which is to be presented at the World Science Forum in November. The GYA supports the founding of new academies and serves as a platform for the global network of Young Academies, which has experienced dynamic growth over the past 20 years.

There are currently more than 40 such academies around the globe with additional academies in the works in countries such as Colombia, Zambia, Croatia and Nepal. (amg)

# Leopoldina calls for climate protection measures

“Climate goals 2030” statement identifies socially responsible measures to help slow global warming while also promoting innovation.



Emissions of harmful greenhouse gases remain too high to achieve the goal of limiting global warming to two degrees Celsius. Consequences such as unusually dry weather are already being felt today.



Images: fotolia - Gina Sanders/ fotolia - Sunny Forest

*The only way to achieve the goal of limiting global warming caused by human activity to less than two degrees Celsius is to adhere to national and international agreements such as the Paris Agreement without delay. On 23 July, the Leopoldina outlined immediate measures for protecting the climate in its statement “Climate goals 2030: Towards a sustainable reduction of CO<sub>2</sub> emissions”.*

*“Every day the chasm widens between the looming existential threat posed by climate change and the repeated delays in taking political action.”*

Statement “Climate goals 2030: Towards a sustainable reduction of CO<sub>2</sub> emissions”, p. 12

According to the authors of the paper, we are currently experiencing a “tragedy of long-term goals: Every day the chasm widens between the looming existential threat posed by climate change and the repeated delays in taking political action.” In light of this, the working group led by marine researcher Prof. Dr. Antje Boetius ML (Bremen) and climate researcher Prof. Dr. Gerald Haug ML (Mainz) endorses the call included in current expert reports to impose a standard price for greenhouse gas emissions across all sectors.

They argue that the initial CO<sub>2</sub> price must be set well above the current price in European emission trading and should gradually increase over the coming years.

In addition, policy makers would need to regularly review CO<sub>2</sub> prices and make adjustments as necessary. The authors contend that CO<sub>2</sub> pricing must become a clear and inviolable part of climate policy.

However, the statement also points out that CO<sub>2</sub> pricing alone is insufficient to achieve the 2030 climate goals. The proceeds from CO<sub>2</sub> pricing should be transparently reinvested in low-carbon infrastructure, a relative reduction in energy prices and social justice in the form of “climate dividends”, amongst other measures. The goal is to create incentives for climate-friendly behaviour and economic activity.

According to the authors of the statement, effective CO<sub>2</sub> pricing would increase the likelihood of phasing out fossil fuels more quickly.

Germany already has the technology to take this step, especially in conjunction with European partners. Prerequisites include investments in renewable energies,

a modern power grid and storage technologies.

The statement recommends extensive electrification in the transportation sector, which is responsible for around 20 percent of all CO<sub>2</sub> emissions. Local public transport, long-distance rail service and rail freight service must all be significantly expanded and improved. With regards to private passenger vehicles, the transition to hybrid and battery electric vehicles is considered to be an effective short-term strategy. In cities, local public transport, bicycle traffic and pedestrians should take priority.

The statement was very well received by policy makers and the press. On 31 July, the German newspaper DIE ZEIT wrote on its title page: “The statement on German climate policies that the Leopoldina, the National Academy of Sciences, presented on Tuesday should certainly not just be filed away. Its tone is especially noteworthy: at once clear, critical and encouraging.” (ca, kh, jm, jk)

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German newspaper DIE ZEIT on 31 July 2019, p. 1

# Education and science for sustainable development

Leopoldina organises high-level panel discussion at UN forum on sustainable development

The Leopoldina held a panel discussion on the role of education and science for sustainability on 11 July in New York/USA as part of the United Nations High-level Political Forum on Sustainable Development (HLPF). More than one hundred guests took part in the event “Mind Matters More Than Money” held at the Permanent Mission of the Federal Republic of Germany to the United Nations.

Summing up the central claim of the scientists on the panel, the psychologist Prof. Dr. Frank Rösler ML explained, “Education is the lynchpin for achieving the 2030 Agenda and the Sustainable Development Goals. It is not just formal education that is crucial, but also the promotion of cognitive skills in all phases of life, from early childhood education through lifelong learning.”

The Leopoldina published a brief statement entitled “Brain Power for Sustainable Development” for the event in New York. The statement addresses the question of how to empower and motivate people to change their behaviour to support sustainable development. General cognitive abilities such as abstract thinking, planning and problem-solving skills as well as the ability to gauge the consequences of one’s own actions are key.

“These skills have positive impacts on health, poverty reduction, economic devel-



*Frank Rösler, Member of the Leopoldina Presidium, and Eeva Furman of the Finnish Environment Institute discuss the role of education and science in achieving the global Sustainable Development Goals.*

Image: Thomas Kleitecka

opment and coping with the consequences of climate change or natural disasters. As a result, this previously neglected approach has enormous potential as part of the coordinated efforts to implement the UN’s Sustainable Development Goals,” observed Prof. Dr. Wolfgang Lutz ML in emphasising the added value of the Leopoldina’s contribution to the UN High-level Political Forum on Sustainable Development.

The HLPF is the UN’s central platform for evaluating the 2030 Agenda. It convenes annually and serves as a platform for exchanging experiences and discussing the challenges of implementing the Sustainable Development Goals. The Leop-

oldina held the panel discussion together with the Independent Group of Scientists. The UN Secretary-General has tasked this group with preparing the Global Sustainable Development Report, which summarises the current situation with regard to the achievement of the Sustainable Development Goals from the perspective of the scientific community. Additional event partners were the Finnish Environment Institute SYKE, the University of the West Indies and the International Science Council as well as the governments of Germany, Jamaica and Finland. (chw)

■ BRAIN POWER FOR SUSTAINABLE DEVELOPMENT STATEMENT

## Conclusion of the “Freedom is Our System” campaign

“Shine a light on our democracy!” – German Federal President Frank-Walter Steinmeier directed this appeal to the scientific community at the conclusion of the “Freedom is Our System” campaign conducted by the Alliance of Science Organisations in Germany. At the ceremony held at the Futurium in Berlin on 26 September, Steinmeier warned that scientific freedom must be protected against habitual oversimplification, propaganda and populism.

Over the previous months, the Alliance of Science Organisations held numerous events addressing scientific freedom and the resulting obligations for the scientific community to mark the 70th anniversa-

ry of the German constitution, known as the Basic Law. The campaign resulted in a memorandum identifying “Ten principles for freedom of science”. Although the principles are presented as a voluntary commitment, the memorandum also urges government and society to safeguard the necessary conditions.

In his speech, the Federal President explained that there is no need to travel to other continents to witness restrictions on scientific freedom, which is why he finds it all the more important that the scientific community come together in support of the freedom of science. Even though scientific freedom is enshrined in the German Basic Law, Steinmeier sees no harm in re-

peatedly reminding the state of its responsibility. He also underscored the fact that scientific findings are essential for overcoming challenges such as climate change. At the same time, he warned that scientists are not necessarily the better politicians. Representatives from science and politics built on this point in their subsequent discussion of the “Future of scientific freedom”. In light of the relationship between science, politics and society, the panellists argued that the scientific community has a clear responsibility to communicate its findings in a comprehensible manner. They agreed that stakeholders such as the Leopoldina are especially suited to perform this task. (nhm)



## Leopoldina mourns former President Benno Parthier



### Prof. Dr. Dr. h.c. Benno Parthier

... was born on 21 August 1932 in Holleben, Saalkreis. He studied biology at Martin Luther University Halle-Wittenberg in Halle from 1952 to 1957, completing his degree under Prof. Dr. Kurt Mothes ML in 1958. He subsequently worked as an assistant at the Institute of General Botany, where he earned his doctorate in 1961 and served as a senior assistant. After studying at the University of Stockholm, Stockholm/Sweden, he joined the Institute of Plant Biochemistry in Halle, which was part of the Academy of Sciences of the German Democratic Republic (AdW). He headed the Department of Molecular Biology at the Institute from 1967 and 1990 and was elected its director in 1990. He completed his postdoctoral qualification (Habilitation) in 1967 and was appointed Professor of Molecular Biology at the AdW in 1975. In 1993 he was named a C4 professor at Martin Luther University Halle-Wittenberg in Halle. He became a member of the Leopoldina in 1974, serving as Secretary from 1978 to 1987, as Vice President from 1987 to 1990 and as President of the Academy from 1990 to 2003. He was a member of the Science Council from 1991 to 1997. In 1997, Benno Parthier was awarded a German Federal Cross of Merit, First Class; in 2002, he received an honorary doctorate from the University of Würzburg and in 2003, he was awarded the Cothenius Medal by the Leopoldina. In recognition of his outstanding contributions to science in the federal state of Saxony-Anhalt, he was honoured with the Order of Merit of Saxony-Anhalt in 2018.

BY PROF. DR. GUNNAR BERG ML\*

On the strength of his scientific achievements, in particular his research on the molecular biology and biochemistry of chloroplasts and specifically RNA protein synthesis, Benno Parthier was elected to the Leopoldina in 1974 at 42 years of age and from 1978 onwards, he served as a member of the Presidium. Thus, he was well aware of the challenges that the Academy faced under a totalitarian regime, having experienced firsthand the difficulties that Presidents Prof. Dr. Kurt Mothes ML and Prof. Dr. Heinz Bethge ML faced in protecting the institution's independence.

When he was elected the 24th president in 1989, he prepared to follow in their footsteps – but things took a different course as the Berlin Wall fell and reunification was imminent when he took office the following year. Looking back, Benno Parthier recalled with a grin that “the outgoing President [...] paid the last invoices [...] in East German marks, [...] as his successor, I had to pay in D-Mark for the first time.” As a result, he found himself facing the unexpected challenge of strengthening the Academy to ensure its survival in the new scientific system. He was thrown into the deep end learning to deal with entirely new and unfamiliar conditions at his age. In this, Parthier's inquisitive and industri-

ous nature combined with his perseverance served him well: He quickly familiarised himself with the new requirements and mastered them with ease. His successful work on the Science Council provides but one example.

The son of an established, down-to-earth farming family from near Halle, Parthier was hardly destined to follow an academic career. At the urging of a prescient teacher in his village, he attended secondary schools in Halle. Cycling 13 kilometres to and from school every day no matter the weather – and even during the occasional air raid – was certainly a test of his determination, a characteristic that distinguished him throughout the rest of his life.

While studying biology at the university in Halle, he was “captivated by Kurt Mothes, [...] a charismatic and courageous individual,” as Parthier recalled his influential teacher decades later. After a tenacious battle with East German bureaucracy, Mothes obtained approval – very unusual for the GDR – for Parthier to spend 18 months studying in Stockholm following the completion of his doctorate in 1961, a stay which did much to promote his scientific development. However, Parthier was unwilling to compromise his character – in 1974, there was mention of Parthier's “unshakeable objectivity and

absolute scientific honesty” and Mothes emphasised “his fearlessness in questions of principle”; Parthier explicitly refused an offer of membership in the Socialist Unity Party (SED). Thus, while he flourished at the Leopoldina, his academic career stalled, even though he had by this time established himself as a leading expert in the field of biosynthesis and the mechanisms of jasmonates. It wasn't until the peaceful revolution that Parthier achieved a breakthrough in Germany, when he was elected director of what is now the Institute of Plant Biochemistry by its employees and oversaw its incorporation into the Leibniz Association.

But his achievements as President of the Leopoldina deserve special mention. It was not without resistance that he ensured that the humanities and social sciences became a permanent part of the Academy. He reformed the election procedures and initiated the first statements on climate and food security, all of which were prerequisites for the Leopoldina's subsequent designation as a National Academy. He was a strong advocate for understanding the history of the Academy, an issue that was very near and dear to him. The Leopoldina will remember its esteemed President with honour and gratitude.

\* Gunnar Berg has served as Vice President of the National Academy of Sciences Leopoldina since 2010.

# People

## Deceased members

### ■ Dieter Enders ML

17 March 1946 – 29 June 2019 |

Aachen

Chemistry

Dieter Enders was appointed Professor and Director of the Institute of Organic Chemistry at RWTH Aachen University in Aachen in 1985, positions which he held until 2014. From 1984 onwards, he served as editor of the scientific journal SYNTHESIS. From 2008 to 2014, he was a member of the Senate of the German Research Foundation (DFG). Enders had a profound influence on organic chemistry research in Germany. His research focused on the development of selective new methods in the area of asymmetric synthesis and their application in the synthesis of natural and bioactive compounds. He received numerous awards for his work, including the DFG's Gottfried Wilhelm Leibniz Prize in 1993 and the Max Planck Research Award for Chemistry in 2000. In 2014, he was awarded the Ryoji Noyori Prize by the Japanese Society of Synthetic Organic Chemistry. Enders was elected a member of the Leopoldina in 2007.

### ■ Manfred Göthert ML

12 December 1939 – 28 June 2019

Physiology and Pharmacology/Toxicology

From 1985 to 2006, Manfred Göthert served as Professor and Director of the Institute of Pharmacology and Toxicology at the University of Bonn. He served as Dean of the university's Faculty of Medicine from 1998 to 2002. Göthert's research focused primarily on the neurobiology of the serotonergic system as well as the targets and mechanisms of action of ethanol and general anaesthetics. He became a member of the Drug Commission of the German Medical Association in 1996 and served on the Executive Committee of the European Society of Pharmacology beginning in 1997. From 1997 to 1999, he held the office of President of the German So-

ciety for Experimental and Clinical Pharmacology and Toxicology. He became a member of the Leopoldina in 1998.

### ■ Helmut Koch ML

17 May 1938 – 25 July 2019 |

Schweinfurt

Internal Medicine and Dermatology

In 1978, Helmut Koch was named chief physician of the Department of Internal Medicine at what is now the Leopoldina Hospital in the city of Schweinfurt. He was a respected international expert in the field of internal medicine and especially in gastrointestinal diseases. He rose to prominence for his work in advancing endoscopic examinations of the gastrointestinal tract, in particular through the use of endoscopic papillotomy in humans. In 1977, he was awarded a Distinguished Lectureship, a special honour bestowed by the American Society for Gastrointestinal Endoscopy. Koch was also an honorary member of the Endoscopy Division of the Deutsche Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten (German Society for Gastroenterology, Digestive and Metabolic Disorders, DGVS). He was elected to the Leopoldina in 1982.

### ■ Helmut Rauch ML

22 January 1939 – 2 September

2019

Physics

From 1972 until his retirement in 2007, Helmut Rauch was a professor of experimental nuclear physics at the Vienna University of Technology (TU Wien). In 1974, he successfully developed a perfect crystal neutron interferometer, which is used to split a neutron beam into two coherent sub-beams that are spatially separated by several centimetres and then recombined. This made it possible to perform countless fundamental experiments in quantum mechanics and laid the foundation for the development of the field of neutron quantum optics. From 1972 to 2005, Rauch headed the Atominstitut of the Austrian

University. He was the recipient of multiple awards, including the Ludwig Wittgenstein Award of the Austrian Research Association (2006) and the Walter Hälgl Prize of the European Neutron Scattering Association (2015), which is considered the most prestigious award in neutron physics. He became a member of the Leopoldina in 1995.

### ■ Walter Thiel ML

7 March 1949 – 23 August 2019

Chemistry

From 1999 until his retirement in 2018, Walter Thiel served as the director of the theoretical chemistry research department at the Max Planck Institut für Kohlenforschung (Max Planck Institute for Coal Research) in Mülheim an der Ruhr. In 2001, he was named an honorary professor at the Heinrich Heine University Düsseldorf. Thiel's research interests centred around the field of theoretical chemistry, and in particular quantum chemistry with a focus on the development of theoretical methods and computer programs. He made important contributions to combined quantum mechanical/molecular mechanical and semi-empirical approaches to describing large molecules. He was the recipient of many awards including the Schrödinger Medal of the World Association of Theoretical and Computational Chemists (2002), the Liebig Medal of the Gesellschaft Deutscher Chemiker (Society of German Chemists, GDCh) (2012) and the Kolos Medal of the Polish Chemical Society (2017). Thiel was elected a member of the Leopoldina in 2007.

### ■ Michael Trede ML

10 October 1928 – 11 May 2019 |

Mannheim

Surgery, Orthopaedics, Anaesthesiology

In 1972, Michael Trede was appointed Chair of Surgery at the Faculty for Clinical Medicine Mannheim (today the Medical Faculty Mannheim) at Heidelberg University and also named the Director of

the Surgical Clinic of the Municipal Hospitals in Mannheim (today the University Medical Centre Mannheim). Until his retirement in 1998, he dedicated himself to abdominal and vascular surgery as well as endocrine and thoracic surgery. Trede was considered a pioneer in the development and implementation of endoscopic surgery. He has held numerous offices and received many awards for his work. He served as President of both the German Society of Surgery (1993/94) and the International Society of Surgery (1993 to 1995), and in 1998 he was awarded the Cross of the Order of Merit of the Federal Republic of Germany. He was elected a member of the Leopoldina in 1989.

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**Monique M. B. Breteler ML**, Bonn, German Center for Neurodegenerative Diseases within the Helmholtz Association (Neurosciences Section)

**Gerd Hasenfuß ML**, Göttingen, Clinic for Cardiology and Pneumology, Heart Research Center, University Medical Center Göttingen (Internal Medicine and Dermatology Section)

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**Carien Niessen ML**, Cologne, Cluster of Excellence CECAD Cologne, University of Cologne (Internal Medicine and Dermatology Section)

**Aurel Perren ML**, Bern/Switzerland, Institute of Pathology, University of Bern (Pathology and Forensic Medicine Section)

**Lukas Radbruch ML**, Bonn, Department of Palliative Medicine, University Hospital Bonn (Surgery, Orthopaedics and Anaesthesiology Section)

**Gerhard Rogler ML**, Zurich/Switzerland, Department of Gastroenterology and Hepatology, University Hospital Zurich (Internal Medicine and Dermatology Section)

**Nicole Rotter ML**, Mannheim, Ear, Nose and Throat Department, Head and Neck Surgery, University Medical Centre Mannheim (Ophthalmology, Oto-Rhino-Laryngology and Stomatology Section)

**Nektarios Tavernarakis ML**, Heraklion, Crete/Greece, Institute of Molecular Biology and Biotechnology, Foundation for Research and Technology Hellas, School of Medicine, University of Crete (Neurosciences Section)

**Christian Weber ML**, Munich, Institute for Cardiovascular Prevention, LMU Medical Center (Internal Medicine and Dermatology Section)

**Alexander Zarbock ML**, Münster, Department of Anaesthesiology, Surgical Intensive Care and Pain Therapy, Münster University Hospital (Surgery, Orthopaedics and Anaesthesiology Section)



## Leopoldina

Nationale Akademie  
der Wissenschaften

## Imprint

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#### Abbreviations:

ML = Member of the Leopoldina