



# Leopoldina

news



Deutsche Akademie der Naturforscher Leopoldina –  
German National Academy of Sciences

Halle, 30 August 2013

03 | 2013

## Five years of advice for policymakers and society

**President Jörg Häcker on the Leopoldina's five-year jubilee as the  
German National Academy of Sciences**

Scientists at CERN confirm the existence of the Higgs Boson; US researchers use somatic cell nuclear transfer to produce human embryonic stem cells; and government agencies raise concerns about the publishing of research findings about the H5N1 flu virus...

These are just three scientific topics that have attracted great media and public attention in the past five years. And these examples show how quickly research is progressing. Five years ago, concepts like "open access", "big data" and the "Energiewende" (Germany's switch to renewable energies) didn't exist or were considered niche subjects at best; now they are shaping debate within a rapidly evolving scientific community because they bring together a whole range of social and scientific issues.

The Leopoldina has also undergone enormous change in recent years. On 14 July 2008, the Leopoldina was officially appointed the German National Academy of Sciences by the Joint Science Conference (GWK) of Germany and its states. Since then, it has been more active in providing science-based policy advice – like its counterparts in other countries, such as the US National Academy of Sciences, the British Royal Society, and the French Académie des sciences. The Leopoldina is thus responding to a clear need, with public debate and political decision-making increasingly relying on innovative, reliable, comprehensible advice from science experts.

The Leopoldina was well equipped to

take on its new role in 2008, thanks to the scientific excellence of its members, its large degree of independence from external influences, its global contacts, and its focus on lively interdisciplinary debate. The Leopoldina built on this strong foundation to quickly develop into a modern working academy that can meet society's expectations of good science-based policy advice - both within Germany and at international level.

Ensuring scientific findings are used for the benefit of society means thinking and acting globally. The Leopoldina is collaborating with other national academies to set up an international network for the joint provision of science-based policy advice across the globe. It also plays an active role in multinational academy associations such as the Inter Academy Panel (IAP), the InterAcademy Medical Panel (IAMP), and the European Academies Science Advisory Council (EASAC). The recommendations we publish in the run-up to the G8 summit provide important impetuses for policymakers and scientists; this year our recommendations highlighted the urgent need for new kinds of antibiotics. The cooperation agreements that we have concluded or extended over the past five years with other academies, including the national academies of Poland, Russia, South Korea, India, France and South Africa, are another important step towards providing scientific advice for the whole world.

Continued on page 2.

Dear Members and Friends  
of the Leopoldina,

this year, the Leopoldina's Annual Assembly will take place for the first time in our new main building on the Jägerberg in Halle. From 20



to 22 September, over 400 people will come together to discuss topics related to the theme "Mind, brain, genome and society. How do we become the person we are?" The aim of the

event is therefore to explore the fundamental question of what makes us human. To a certain extent, we can say that this question is the driving force behind all science - the question that prompts our quest for knowledge and led to the founding of our academy in 1652.

Questioning how the mind, brain, genomes and society interact is highly relevant today, and presents opportunities and challenges whose magnitude we cannot yet ascertain. The interdisciplinary nature of the theme of this year's Annual Assembly is an excellent example of how the Leopoldina operates as a whole. In this spirit, the event will feature a wide range of speakers from the humanities and natural sciences. For a detailed description of the programme, please turn to page three.

I am particularly delighted to be welcoming our patron, Federal President Joachim Gauck, to this year's Assembly. I invite you all to join us in Halle from 20 to 22 September, and hope that the event will offer plenty to interest and inspire you!

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Science affects all areas of life, from providing healthcare for individuals to securing our country's economic prosperity. Scientific knowledge and social realities are closely interlinked, and since its appointment as the National Academy of Sciences, the Leopoldina has increasingly acted as a mediator between science and society. The Academy's task and mission are to incorporate scientific findings into the complex task of shaping opinion and decision-making within a pluralistic knowledge-based society. This

### LEOPOLDINA ACTS AS A MEDIATOR BETWEEN SCIENCE AND SOCIETY

process begins with communicating the hard scientific facts as they stand and recommending possible courses of action. We must also clarify why certain courses of action have been recommended over others. This includes ensuring transparency when it comes to ethical and legal parameters. The aim is to create as objective and rational a basis as possible for political decision-making.

The Leopoldina's standing committee coordinates the work of German scientific academies on providing science-based advice to policymakers and the public. The academies use the committee as a forum to discuss current issues. Each aca-



The official document by which the Leopoldina was appointed the German National Academy of Sciences in 2008.

Photo: Leopoldina

demy brings its own specialist knowledge into the discussion, ensuring that all scientific disciplines are included. Over the past five years, the Leopoldina has concentrated its work and its recommendations on four main areas - advances in the life sciences and biomedical research; the transformation of our energy supply; the challenges presented by demographic change; and the sustainable development of the scientific system itself. The inter-

disciplinary and multidisciplinary cooperation within the standing committee underscores the continuing relevance of the words of the Leopoldina's very first President, Johann Laurentius Bausch. He said that the diversity of nature cannot be understood by a single individual, "however industrious and perseverant he be, even if blessed with a long life." This kind of understanding, he said, could only be achieved by unhindered exchange within the scientific community.

Over the past five years the Leopoldina's work has been based on principles like valuing tradition, ensuring the sustainable development of a knowledge-based society, guaranteeing freedom of knowledge, and promoting responsible scientific practice. Five years may seem like a mere bat of an eyelid in the Academy's long history, but the challenges and successes of this latest phase have shown that the exciting new beginning has also represented a continuation of the path that the Leopoldina has followed since its founding back in 1652 – and a continuation of its goal of applying scientific excellence to benefit society and shape tomorrow's world. (Jörg Hacker)



Recommendations in the run-up to G8 summits (pictured 2010 in Canada) are an important part of the Leopoldina's joint provision of science-based policy advice across the globe. Photo: The Academy of the Arts, Humanities, and Sciences of Canada

You can find more background information on Leopoldina's anniversary as German National Academy of Sciences at <http://www.leopoldina.org/en/about-us/5-years-national-academy-of-sciences/>

# 400 people expected at the Annual Assembly

## Federal President Joachim Gauck to attend opening ceremony / Keynote speech by Onur Güntürkün

Around 400 people have already confirmed that they will attend the Leopoldina's Annual Assembly, a major scientific event that takes place every two years in Halle. Prof. Onur Güntürkün ML is responsible for the scientific organisation of this year's event, which will take place from 20 to 22 September. Speakers working in a hugely diverse range of fields will take an interdisciplinary approach to exploring a hot topic of great relevance to society: "Mind, brain, genome, society. How do we become the person we are?" is the title of the event.

The traditional evening lecture will be given by a very distinguished guest: Nobel prize laureate Prof. Daniel Kahneman will speak about his latest book, „Thinking, Fast and Slow“.

Prof. Güntürkün will give his keynote speech on the opening day, 20 September, in the presence of Federal President Joachim Gauck. The title of his speech is "How the brain creates the mind and how



For the first time the Annual Assembly will take place in the Leopoldina's new main building in Halle (pictured is an event in 2012).

Photo: Markus Scholz

the mind shapes the brain".

Awards in a total of nine categories will be presented during the opening ceremony. These awards will include the Leopoldina Prize for Junior Scientists, the Thieme Award of the Leopoldina for Medicine, the Carus Medal, and the Cothenius Medal. The Carus Medal is awarded for outstanding research, while

the Cothenius Medal is a lifetime achievement award. The prizes will be handed over by Leopoldina President Prof. Jörg Hacker ML, who has also experienced the ceremony from the other side – in 2001 he received the Carus Medal. (igo)

More information: <http://www.leopoldina.org/en/events/event/event/2082/>

## „It is important to engage people's intuitions“

### Daniel Kahneman will give the evening lecture at this year's Annual Assembly

Nobel prize laureate Prof. Daniel Kahneman will give the evening lecture at this year's Annual Assembly. Caroline Wichmann asked him about his book „Thinking, Fast and Slow“, identifying two modes of thought that influence human decision-making. System 1 can be identified with associative memory, and System 2 with the function of executive control.



Daniel Kahneman

that I associated with System 1 processing is not capable of. However, intuitive and emotional thinking play an important part in both the passion and creativity of scientific research.

*Scientific knowledge is subject to constant review and, as a matter of principle, can be refuted at any time. With regard to topics such as climate change or predicting volcanic eruptions, we have to identify and evaluate the issues, and communicate any associated risks. But does this stretch even your System 2 to its limits? And what role does System 1 then play?*

**Kahneman:** It is important for scientists to realize that their ideal of knowledge that is based exclusively on objective evidence is not the only way by which people

achieve the sense of subjective certainty that is associated with "knowing." The subjective experience of certainty is associated with a state in which no alternatives to one's beliefs are considered, and where the very possibility of ambiguity is denied. People can achieve subjective certainty with beliefs that they share with other people whom they trust and love.

The certainty with which religious and political beliefs are held derives from this source, not from evidence, and the coherence of their belief is associative and emotional, not logical. Evidence has little hold on beliefs that are anchored in community norms. At least in the United States, the existence of man-caused climate change is perceived by the public as a matter of faith, not evidence. To achieve coordinated public action in that domain, it will be necessary to engage people's intuitions and emotions – System 1 – and that change is unlikely to be achieved by evidence alone.

*Professor Kahneman, the German National Academy of Sciences Leopoldina provides science-based policy advice. The scientific knowledge we prepare and make available should therefore offer politicians the most objective and rational basis possible for their decisions. Is this approach diametrically opposed to your System 1 thinking?*

**Kahneman:** Science is defined by clear rules of objective, public evidence and logical inference. Conforming to these rules requires careful and deliberate reasoning of a kind that the more intuitive thinking

## Agreement with the Academy of Science of South Africa

Memorandum of Understanding signed in Pretoria



Leopoldina President Jörg Hacker (left) and Daya Reddy, President of the Academy of Science of South Africa, at the signing of the partnership agreement. Photo: Jan Nissen

South Africa is one of Germany's most important scientific partners on the African continent, and the Leopoldina and the Academy of Science of South Africa (ASSAf) are planning to develop their collaboration further. Leopoldina President Prof. Jörg Hacker ML and ASSAf President Prof. Daya Reddy signed a Memorandum of Understanding to this effect in Pretoria on 5 August.

In his speech, Prof. Reddy underlined the strategic significance of the partnership agreement, and acknowledged the great value to ASSAf of collaborating with the Leopoldina within international academy networks. Prof. Hacker highlighted the importance of the cooperation between the two academies during the German-South African Year of Science and said that their joint projects had enhanced the relationship between them.

As part of the German-South African Year of Science 2012/2013, the Leopoldina and ASSAf held the "Socio-Ecological Novelty – Frontiers in Sustainability Re-

search" symposium in collaboration with the Junge Akademie, the South African Young Academy of Science and the Global Young Academy. The two academies also organised a second symposium on "Technological Innovations for a Low Carbon Society". During the ceremony in Pretoria to mark the signing of the memorandum of understanding, scientific coordinators Prof. Sigmar Wittig ML and Prof. Roseanne Diab (ASSAf) presented a publication on the main outcomes of the event. (jn)

► *The Proceedings Report of the „Technological Innovations for a Low Carbon Society“ symposium can be found at <http://www.assaf.co.za/wp-content/uploads/2013/08/Technological-Innovations-Inners.pdf>*



The proceedings of the "Technological Innovations for a Low Carbon Society" symposium were also presented in Pretoria. Photo: Jan Nissen

## EASAC holds General Assembly at the Leopoldina

The biannual general assembly of the European Academies Science Advisory Council (EASAC) took place at the Leopoldina in Halle on 6 and 7 June.

The agenda included the state of play on current projects involving EU-level science-based policy advice within EASAC's Energy, Environment and Biosciences programmes, as well as the planning of new activities. There was also discussion of EASAC's report on sustainable crop development, *Planting the future*, and a presentation of the findings of EASAC's working group on the issue. The presentation was held by members of the working group who had been nominated by the Leopoldina: Prof. Ralph Bock ML (Potsdam) and Prof. Joachim Schiemann (Quedlinburg).

Prof. Anne Glover, Chief Scientific Advisor to the President of the European Commission José Manuel Barroso, also attended the meeting. While in Halle, she took the opportunity to meet with Leopoldina President Prof. Jörg Hacker ML. (csd)

### Great interest in EASAC's report „Planting the Future“

„Planting the future“, a report by the European Academies Science Advisory Council (EASAC) on sustainable crop development using genetic engineering, has generated discussion worldwide. The world's most frequently quoted scientific journal, *Nature*, asked EASAC for a summary of the most important recommendations, which it subsequently published. The recommendations were presented in a public discussion in Brussels on 27 June. Panel speakers focused on explaining the situation in Europe and discussing the impact of European policy on the agricultural and research policies of African nations. (csd)

► *The report's summary is available here <http://www.nature.com/news/europe-should-rethink-its-stance-on-gm-crops-1.13265>*

## Academy representatives and science ministers meet at the Royal Society in London

### Preparations for the G8 summit / Key point on the agenda: drug-resistant pathogens

On 12 June, the Presidents of the national academies of G8 states met with science ministers from all participating nations at the Royal Society in London to discuss the global challenges facing science. Drug-resistant pathogens were a particular focus. On 29 May, the science academies released a joint statement two weeks before the meeting.

Leopoldina President Prof. Jörg Hacker ML said that “the open and constructive discussion among G8 science ministers and representatives of the academies has shown us that science – and thus the academies – plays a vital role in overcoming global challenges. Once again, it was made clear that the increasing resistance of infectious agents presents a particularly urgent problem. To solve it, we must coordinate research with political and societal processes. I am delighted that the Leopoldina has already made key



Participants at the event in London.

Photo: Royal Society

recommendations regarding this issue at the national level. It is now a question of implementing those recommendations – both nationally and globally.”

The meeting served as preparation

for the G8 summit on 17 June in Lough Erne, Northern Ireland. Other topics covered included the global research landscape, open data, and open access for research findings. (mkk)

## Young German and Russian scientists meet

### The Young Researchers Forum features six days of workshops and science talks

From 21 to 26 July, more than 30 young researchers from Germany and Russia met with representatives of scientific and funding institutions at the Haus Humboldtstein conference centre to reflect on the different scientific perspectives

across Europe. Organised by the Leopoldina, the Russian Academy of Sciences (RAN), the RAN Council of Young Scientists, and the Junge Akademie, the forum was initially launched as part of the 2011 German-Russian Year of Education,

Science and Innovation. The event was held in partnership with the University of Cologne and Forschungszentrum Jülich.

The forum has three principle aims: to create a platform for interaction, exchange and network building; to present some of the latest research projects being conducted by young researchers; and to promote discussion between scientific organisations on key issues relating to scientific development.

The event featured three workshops: “Progress in Science and Challenges for Future Research”, “Transition, Change, Cooperation” and “Science Embeddedness”. There were also three science talks addressing current issues in the fields of scientific policy and management, excellence in the scientific system, internationalisation and cooperation, brain drain and circulation, prospects in basic and applied research, innovation and transfer, and innovative networking between science and business. (lb)



More than 30 young researchers from Russia and Germany met in Remagen.

Photo: Forschungszentrum Jülich

# Vaccination offers new hope for treating cancer

## Class III symposium on plasticity and regeneration / Leopoldina Lecture by Gerold Schuler

There are good reasons to hope that a cancer vaccination may soon be available. That was one of the key messages of the Leopoldina Lecture by Prof. Gerold Schuler ML of Universitätsklinikum Erlangen. Prof. Schuler described the development of a vaccination as a revolution in cancer treatment. However, the new treatment will not be a prophylactic vaccination, such as the influenza vaccine used each winter, but rather a therapeutic vaccination. This means that the vaccination can only be used when a patient has already contracted cancer. Cancer-vaccination research makes use of mechanisms of the

### THE IMMUNE SYSTEM IS ACTIVATED AGAINST THE TUMOUR

immune system and enables it to recognise tumours as foreign bodies. As every patient has a unique immune system and each cancerous tumour has specific characteristics, the treatment must be tailored to the patient. This means that a personalised vaccine is needed. This vaccine can then activate the immune system against the tumour. Schuler explained that knocking down the defences that shield tumours from the immune system was now a major task for the research community.

Prof. Schuler's lecture marked the start of the two-day meeting of Class III: Medicine, which concluded with the class symposium. The focus was on the plasticity and regeneration of the human body, from the brain to the sense organs and the musculoskeletal system.

Prof. Melitta Schachner ML of University Medical Center Hamburg-Eppendorf gave a presentation of her research into regeneration of the nervous system. She explained the role of certain molecules, particularly L1, in the regeneration of severed neural pathways and dendritic plasticity. These findings are used in research into treatment for Alzheimer's and Parkinson's disease.

How are memories manifested at cellular level in the brain? This question is being explored by Prof. Tobias Bonhoeffer ML of the Max Planck Institute of Neurobiology in Martinsried. He has shown that growth of dendritic spines is encouraged

## New members of Class III



The new members of Class III were welcomed by Leopoldina Secretary General Prof. Jutta Schnitzer-Ungefug (left) and President Prof. Jörg Hacker ML (fourth from right). Class III accepted the following new members (from left to right): Dr. Peter Forster ML (Cambridge), Prof. Bernd Gerber ML (Rostock), Prof. Ueli Braun ML (Zurich), Prof. Melitta Schachner ML (Hamburg), Prof. Norbert Pfeiffer ML (Mainz), Prof. Felix Eckstein ML (Salzburg) and Prof. Arndt Borkhardt ML (Düsseldorf).

Photo: Markus Scholz

by synaptic activity. Structural changes – i.e. the growth and contraction of dendritic spines, as well as their life span – are crucial factors in memory.

Prof. Marcella Rietschel ML of the Central Institute for Mental Health in Mannheim gave a lecture on mental illness, in which she explained the opportunities for

### SEQUENCING TECHNOLOGIES SHOW GENETIC FACTORS FOR MENTAL ILLNESS

research into mental illness that modern sequencing technologies present. Prof. Rietschel said that whole genome sequencing showed that the existence of certain genetic factors can cause mental disorders such as schizophrenia and mania.

We all know that muscles grow as a result of training and that bones become denser when they are constantly used. Prof. Felix Eckstein ML of the Paracelsus Medical University Salzburg (Austria) is investigating whether training can also develop the cartilage to help arthritis patients, for example. The latest findings show that long-term external fixation of the knee joint can lead to renewed and prolonged

development of the cartilage in this joint. Initial trials of the treatment method have already proved successful.

Prof. Brigitte Vollmar ML of the University of Rostock gave a lecture on the regeneration of the liver. When the liver's ability to regenerate itself is diminished, due to cirrhosis for example, this often leads to liver failure and loss of the organ. Prof. Vollmar showed that stellate cells play a major role in fibrosis and cirrhosis of the liver. New methods using anti-fibrotic genetic therapy aim to prevent the transformation of the stellate cells. There have already been some encouraging laboratory results in this field.

The final lecture of the symposium was given by Prof. Norbert Pfeiffer ML of the University of Mainz who explained why people are still contracting glaucoma in Germany. Some of the patients even go blind. A major problem is that the disease is often only recognised at a very late stage. New tests have revealed the existence of autoantibodies in glaucoma patients. Identifying such antibodies could therefore lead to very early diagnosis and effective treatment in the future. (hst)

# “An exceptional time for basic and clinical research into vaccinations”

## The Modern Vaccination Strategies symposium in Berlin / Talks by Hoffmann and zur Hausen

Breakthroughs in infection research have enabled scientists to halt the spread of many infectious diseases like smallpox, mumps and poliomyelitis. While there have been many successes, vaccinations are still needed for common diseases like HIV/AIDS, rheumatic fever and malaria.

The joint symposium focused on the opportunities and risks in infection research and discussed how vaccination strategies might develop in the future. The symposium was presented by the Leopoldina, the Académie des sciences, and the Max Planck Institute for Infection Biology in Berlin as part of the celebrations to mark 50 years since the signing of the Elysée Treaty. The programme included talks by Prof. Andreas Radbruch ML (Berlin), Prof. Matthew Albert (Paris), Prof. Jean-François Bach (Paris), Prof. Stefan H. E. Kaufmann ML (Berlin), Dr. Armelle Phalipon (Paris), Prof. Peter Palese ML (New York), Prof. Gilles Riveau (Lille), Dr. Laurence Zitvogel (Villejuif), Prof. Georg Stingl ML (Vienna) and Prof. Reinhard Hohlfeld ML (Munich).

Themes included vaccination acceptance; new strategies for understanding and minimising side effects; and new areas



*Nobel prize laureate Harald zur Hausen talked about new discoveries relating to infectious diseases and cancer.*

Photo: Michael Deutsch

of application such as vaccinations against allergies, autoimmune diseases and cancer.

Prof. Jules Hoffmann ML (Strasbourg), winner of the 2011 Nobel Prize in Medicine, said during his talk that this is an exceptional time for basic and clinical research into vaccinations.

Prof. Harald zur Hausen ML, who won

the Nobel Prize for Medicine in 2008, presented new discoveries relating to infectious diseases and cancer. Around 20 percent of cancers can be linked to infections. Successfully treating existing infections triggered, for example, by the Hepatitis C virus or Helicobacter pylori bacteria is therefore an important step towards achieving primary prevention of cancers. (kh)

## Events

### September

#### 6 to 8 September, from 6 P.M.

**WORKSHOP:** “Stress and Ageing: from Molecular Biology to Clinical Perspectives”. Joint workshop of the German Society of Gerontology and Geriatrics, the German Society for Thoracic and Cardiovascular Surgery, the Interdisciplinary Centre on Ageing Halle, the European Section of the International Academy of Cardiovascular Sciences, and the Leopoldina

**Martin Luther University Halle-Wittenberg, Lion Building, Universitätsplatz 11, 06108 Halle, Germany**

#### 8 September, from 10 A.M.

**GERMAN HERITAGE DAY:** Tours to

mark German Heritage Day (Tag des offenen Denkmals) start at 10:30 a.m., noon, and 2 p.m.

**Leopoldina, Jägerberg 1, 06108 Halle, Germany**

#### 10 to 13 September, from 6 P.M.

**LEOPOLDINA-SYMPOSIUM:** “Spectroscopy and Molecular Dynamics at the Limit” **ETH Zurich, Campus Science City (Hönggerberg), Building HIL, Lecture Hall E3, Wolfgang-Pauli-Str. 15, 8093, Zurich, Switzerland**

Scientific organisation: Jürgen Troe ML (Göttingen), Frédéric Merkt ML (Zurich), Georg Seyfang (Zurich), Urs Hollenstein (Zurich)

#### 12 to 13 September

**FOURTH HUMAN RIGHTS AND SCIENCE SYMPOSIUM:** Joint symposium of the Polish Academy of Sciences and the Leopoldina’s Human Rights Committee (HRC)

**Staszic Palace, Zakład Działalności Pomocniczej UL, Nowy Swiat, 00-330, Warsaw, Poland**

Scientific organisation: Hans-Peter Zenger ML (Tübingen)

#### 20 to 22 September, from 9 A.M.

**LEOPOLDINA ANNUAL ASSEMBLY:** “Mind, brain, genome, society. How do we become the person we are?” Includes an evening lecture by Daniel Kahneman,

winner of the 2002 Nobel Memorial Prize in Economic Sciences, Princeton/USA  
**Leopoldina, Jägerberg 1, 06108 Halle, Germany**

Scientific organisation:  
 Onur Güntürkün ML (Bochum)

## October

14 to 15 October

**FIRST JOINT CONFERENCE BY THE LEOPOLDINA AND THE KOREAN ACADEMY OF SCIENCE AND TECHNOLOGY:** “Current Trends in Stem Cell

Research and Regenerative Medicine”

**K Seoul Hotel, 70, Baumoe-Ro 12-GIL, Seocho-Gu, Seoul, Korea**

## December

1 to 2 December

**THIRD JOINT INTER-ACADEMY SYMPOSIUM:** “Stability and Plasticity: Advances in Understanding Neuronal Representations”. Joint symposium of the Israeli Academy of Sciences and Humanities and the Leopoldina.  
**Israeli Academy of Sciences and Hu-**

**manities, Albert Einstein Square, 43 Jabotinsky Street, P.O.B. 4040, Jerusalem, Israel**

9 December

**LEOPOLDINA-MEETING:** Meeting of the 2013 Leopoldina scholars and a presentation of the outcomes of the Leopoldina Fellowship Programme VIII

**Leopoldina, Jägerberg 1, 06108 Halle, Germany**

# People

## Deceased members

### Eduard Gitsch ML

3 August 1920 – 19 May 2013 Vienna, Austria

Section Gynaecology and Paediatrics

Gitsch's work focused on malignant gynaecological tumours and the surgical treatment of cervical, endometrial, ovarian and breast cancer. He improved cancer treatment outcomes through his pioneering radioisotope radical operations. Alongside oncology, endocrinology and research on placental insufficiency were other important aspects of his work. He was named a Member of the Leopoldina in 1986 in recognition of his work.

### Leopold G. Koss ML

2 October 1920 – 11 September 2012 New York, USA

Section Pathology and Forensic Medicine

Koss's research in the field of pathology concentrated on cancer in various organs, particularly the development of tumours in the cervix, endometrium and urinary bladder. As a pioneer in the field of diagnostic cytology, Koss also combined histological with cytological approaches in order to further diagnostic procedures. The Leopoldina elected him as a Member in 1989 in recognition of his scientific achievements.

### Helmut Rische ML

12 June 1921 – 26 June 2013 Wernigerode,

Germany

Section Microbiology and Immunology

As a specialist on lysotypes, Rische examined the characteristics of typhus bacteria using bacteriophages. He expanded his research field by analysing other bacterial pathogens, such as Escherichia, salmonella and staphylococci. Resistance to antibiotics was also an important topic in his scientific work. The Leopoldina elected him as a Member in 1974.

### Christoph J. Scriba ML

6 October 1929 – 26 July 2013 Hamburg, Germany

Section History of Science and Medicine

The Leopoldina named science historian Scriba a Member in 1972. He specialised in the history of mathematics in the 17th century. His work was highly acclaimed for its innovative findings, which enabled him to establish his field internationally.

### Hans Dierck Waller ML

29 May 1926 – 23 July Tübingen, Germany

Section Internal Medicine and Dermatology

Haematology formed the scientific focus of Waller's work. He concentrated on examining the cellular metabolism and aging process of erythrocytes. His research led him to identify enzyme deficiency, metabolites and haemoglobinopathies as possible causes of anaemia. He also specialised in leukaemia research and established stem-cell transplants as a clinical treatment method for

leukaemia. The Leopoldina named him a Member in 1988.

### Eberhard Wecker ML

4 June 1923 – 25 June 2013 Constance, Germany

Section Microbiology and Immunology

Wecker's extensive research included work on virology and immunology. In his early work, he explored the development and characteristics of infectious RNA viruses, for which he was elected a Member of the Leopoldina in 1983. With the discovery of the T-cell-replacing factor (TRF), Wecker was able to produce the first findings on how immune responses are managed through cytokines. Wecker proved both the development of spontaneous leukaemia and the effect of oncogenes on the activation of lymphocytes and also integrated HIV research into his work.

## Newly elected members, March 2013

**Katharina Al-Shamery ML**, Oldenburg, Professor of Physical Chemistry and Director of the Institute for Pure and Applied Chemistry at the Carl von Ossietzky University of Oldenburg (Section Chemistry)

**Peter Bäuerle ML**, Ulm, Professor of Organic Chemistry and Director of the Institute of Organic Chemistry II and Advanced Materials at Ulm University (Section Chemistry)



**Paul Biran ML**, Zurich, Professor of Analysis and Geometry at the Mathematics Department of the Swiss Federal Institute of Technology Zurich (Section Mathematics)

**Martin Bossert ML**, Ulm, Professor of Communications Engineering and Director of the Institute of Communications Engineering at Ulm University (Section Informatics)

**Manfred Curbach ML**, Dresden, Professor of Solid Construction at the Institute for Solid Construction at the Technische Universität Dresden (Section Engineering Sciences)

**Ewine F. van Dischoeck ML**, Leiden, Netherlands, Professor of Molecular Astrophysics at Leiden Observatory (Section Physics)

**Stefan W. Hell ML**, Göttingen, Director of the Nanobiophotonics Department at the Max Planck Institute for Biophysical Chemistry Göttingen (Section Physics)

**Marc Levine ML**, Essen, Professor of Algebraic Geometry and Arithmetic at the Mathematics Faculty of the Essen Campus,

University of Duisburg-Essen (Section Mathematics)

**Wolfgang Marquardt ML**, Aachen, Professor of Process Engineering with the Aachener Verfahrenstechnik group of chemical engineering institutes at RWTH Aachen University (Section Engineering Sciences)

**Klara Nahrstedt ML**, Illinois, Professor of Computer Science in the Department of Computer Science of the University of Illinois at Urbana-Champaign (Section Informatics)

**Frank Neese ML**, Müllheim an der Ruhr, Director of the Department of Molecular Theory and Spectroscopy at the Max Planck Institute for Chemical Energy Conversion, Müllheim an der Ruhr (Section Chemistry)

**Dierk Raabe ML**, Düsseldorf, Director of the Max-Planck-Institut für Eisenforschung, Düsseldorf (Section Informatics)

**Roland Sauerbrey ML**, Dresden, Scientific Director at the Helmholtz-Zentrum Dresden-Rossendorf (Section Physics)

**Peter R. Schreiner ML**, Giessen, Professor of Organic Chemistry and Director of the Institute of Organic Chemistry at the Justus-Liebig University Giessen (Section Chemistry)

**Michael Struwe ML**, Zurich, Professor of Mathematics at the Mathematics Department of the Swiss Federal Institute of Technology Zurich (Section Mathematics)

**Reinhard Wilhelm ML**, Saarbrücken, Professor of Programming Languages and Translation Systems at the Computer Science Department of the Universität des Saarlandes Saarbrücken (Section Informatics)

**Peter Westhoff ML**, Düsseldorf, Professor of Developmental and Molecular Biology of Plants and Leader of the Institute of Developmental and Molecular Biology of Plants at Heinrich Heine University Düsseldorf (Section Organismic and Evolutionary Biology)

**Christof Wöll ML**, Eggenstein-Leopoldshafen, Director of the Institute of Functional Interfaces at the Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen (Section Chemistry)



**Leopoldina**  
Nationale Akademie  
der Wissenschaften

**Deutsche Akademie der Naturforscher  
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**Abbreviations:**

ML = Member of the Leopoldina