



Leopoldina

news

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Nationale Akademie der Wissenschaften

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Leopoldina Vice-President Martin J. Lohse welcomed the participants at the start of the three-day Annual Assembly of the Leopoldina in Halle. Photo: Markus Scholz

Leopoldina Annual Assembly 2011 explored questions about life

“What is life?” – the Leopoldina’s Annual Assembly, which took place from 23 to 25 September in the Kongress- und Kulturzentrum in Halle, put this question at the heart of its academic discussions. At the start of his welcome address, Leopoldina Vice-President Prof. Dr. Martin J. Lohse ML, said that there were no simple answers to the question. He explained that disciplines vary widely in their approaches to the topic, and that the question can even mean entirely different things to scientists and scholars from different fields. The comprehensive programme for the Annual Assembly reflected this diversity. The topics covered a wide range of issues and discussed the

various perspectives adopted by the natural sciences, life sciences and humanities. The spectrum stretched from the origins and development of life, to the diversity and limits of life, to the possibilities of creating artificial life. Over 600 guests attended the three-day Annual Assembly. Among them were 100 pupils and several Thai students, who had been invited by the Society of German Natural Scientists and Doctors (GDNÄ) and had the opportunity to speak to the outstanding researchers during the event.

(mab)

► Detailed reports are available on the following pages.

Dear members

and friends of the Leopoldina,

we can look back on a highly successful Annual Assembly in Halle. I am extremely grateful to all members who showed their dedication



to the Leopoldina and helped to generate such a high level of academic discussion. I would like to say a special thank you to Vice-Presidents Prof. Dr. Bärbel Friedrich ML and Prof. Dr. Michael

Hecker ML, who were responsible for preparing the academic side of the assembly. I was pleased to see how many people attended the event and followed the interdisciplinary dialogue between the humanities, the natural sciences and the life sciences. The speeches given by Federal Chancellor Angela Merkel and Minister-President of Saxony-Anhalt, Reiner Haseloff, also attracted large audiences. However, as we all know, after the Annual Assembly is before the Annual Assembly! So I’d like to take a peek into the future and look ahead to the next Annual Assembly, which will be held in Berlin from 22 to 24 September 2012. The topic of this inspiring event will be “The role of science in global change”.

Kind regards,

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Impressions

Jörg Hacker, President of the Leopoldina, welcomed Chancellor Angela Merkel and Minister-President of Saxony-Anhalt, Reiner Haseloff, at the Kongress- und Kulturzentrum in Halle (from left to right).

Photo: David Ausserhofer



View of the banquet hall on the opening day of the Annual Assembly 2011. The Leopoldina welcomed well over 600 international guests to the three-day event in Halle.

Photos (3): Markus Scholz



New members – including Prof. Dr. Heidi Pfeifer ML, shown here – received their diploma from the President.



The Junge Akademie, which was founded by the Leopoldina and the Berlin-Brandenburg Academy of Sciences and Humanities, also participated in the Annual Assembly with its “vita-bios-chaim” event. State Secretary Cornelia Quennet-Thielen (center) attended a plenary session of the members of the Junge Akademie.

“There are plenty of topics on which policymakers need expert advice.”

In her speech, Chancellor Merkel underlined the importance of the Leopoldina. Jörg Hacker, President of the Leopoldina, and Reiner Haseloff, Minister-President of Saxony-Anhalt, also spoke about the Academy's role in the research sector in Germany and around the world.

This year, the German Chancellor, Dr. Angela Merkel visited the Leopoldina Annual Assembly for the first time. In her speech on the opening day, she talked about the importance of scientific advice for policymakers and about the Leopoldina's role as the German National Academy of Sciences in Germany and worldwide. At the start of her speech, Chancellor Merkel said: “There is now one voice that speaks for the German scientific community as a whole.” She went on to say that the Leopoldina represents the entire range of the sciences and humanities and promotes cooperation between different scientific and academic institutions. “As a result,” she said, “the public is listening more to what science has to say,” and its voice is being heard internationally. Germany had closed a gap by designating the Leopoldina as its National Academy of Sciences.

The Chancellor emphasised the value of the science-based policy advice that the Leopoldina provides: “There are plenty of topics on which policymakers need expert advice.” In this context, Merkel specifically mentioned the statements and recommendations on Preimplantation Genetic Diagnosis and on energy research provided by experts this year: “I ask the Leopoldina to continue to intervene and advise us in this way.” In Merkel's opinion, scientific advice serves as an essential basis for sustainable decisions: “We need the facts to be compiled, analysed and evaluated in order to make sound decisions.” And while such decisions can never be based solely on scientific facts, they should never run contrary to them, either.

In his words of welcome, the Minister-President of Saxony-Anhalt, Dr. Reiner Haseloff, said that as politicians today cannot possibly keep abreast of all the latest developments, they have to rely on the advice of independent experts. “But the findings of science and research



Chancellor Angela Merkel at the Annual Assembly 2011.

Photo: David Ausserhofer

must reach the political sphere and must not be ignored there. The Leopoldina takes its scientific responsibility – which is always also a responsibility towards society – very seriously.”

In his speech, Prof. Jörg Hacker ML, President of the Leopoldina, focused finally on the future role of the Leopoldina in the German and international scientific sphere, in light of the fact that politicians, academics and representatives of other relevant groups plan to develop Germany into a “Republic of Science”.

Hacker asserted that while science certainly requires reliable funding, “a science republic cannot be built on financial support alone; intangible factors such as legal framework conditions are just as important in making a location attractive.” Here too, in creating conditions that are favourable to science, the Leopoldina has an important advisory function. Hacker made particular reference to legislation on stem-cell research and the implementation of the EU Directive on animal experiments in this

context. He went on to say that the third main factor for Germany's development into a Republic of Science is continuous and open communication between science and society, as Germany is a sceptical and difficult nation “when it comes to new technologies and living with risks and uncertainties.” “Public debate on scientific topics is especially important in times of increasing uncertainty and where ever more complex issues – from combating acute infections, to problems on the financial markets, to questions of educational policy – demand well-considered and sometimes fast responses. In addition, Hacker stated that science can only thrive in an international context and a Republic of Science must be an international beacon. “That's why we want to become a key partner who helps define the agenda of international science and research, both through our work in the large associations of science academies and in a bilateral context.” (mab)

At the Annual Assembly, the Leopoldina honoured outstanding researchers with awards and medals

Cothenius-Medals: Bert Hölldobler, Anna M. and Ulrich Wobus



The ethologist and evolutionary biologist Bert Hölldobler (right) received the Cothenius Medal from Leopoldina President Jörg Hacker for his research on the social organization of insects.

Photo: David Ausserhofer



President Jörg Hacker and the General Secretary Jutta Schnitzer-Ungefug presented the Medal to Anne M. Wobus and Ulrich Wobus (center) for their works in the field of cell biology and genetic research.

Photo: Markus Scholz

The Leopoldina members Prof. Dr. Bert Hölldobler ML (Würzburg), Prof. Dr. Anna M. Wobus and Prof. Dr. Ulrich Wobus (both Gatersleben) received the golden Cothenius Medal for their scientific life's work.

Prof. Dr. Bert Hölldobler (born 1936) is highly-regarded internationally as a behavioural scientist and evolutionary biologist. After professorships in Frankfurt am Main, at Harvard University and Cornell University, he took over the Chair for Behavioural Physiology and Social Biology at the University of Würzburg in 1989. Bert Hölldobler studies the diversity of social organization in insects, in particular ants, which primarily served as models for his ground-breaking work in the fields of behavioural physiology, behavioural ecology, evolutionary biology, social biology and chemical ecology. The work of this multi-faceted top researcher has resulted in many new discoveries about chemical communication and orientation behaviour in animals, the dynamics of social structures and the evolution of animal communities.

He has received numerous high-level awards including the German Research Foundation's Leibniz Prize and the Körber Prize. Bert Hölldobler has always understood how important it is to formulate his scientific findings for a wider audience. In 1991 he received the American Pulitzer Prize for his book "The Ants", a joint collaboration with Edward Osborne Wilson. Even since becoming professor emeritus in 2004, he has continued his pioneering scientific research at the University of Würzburg and has worked as a research professor at Arizona State University in the US. Bert Hölldobler has been a member of the Leopoldina's Zoology Subsection since 1975.

Prof. Dr. Anna M. Wobus (born 1945) and Prof. Dr. Ulrich Wobus (born 1942) have been carrying out exceptional work in the field of cell research, in particular stem cell research (Anna M. Wobus) and structure and function of animal and plant genes (Ulrich Wobus) at the Academy Institute of Plant Genetics and Crop Plant Research, Gatersleben since the 1970s and 1980s respectively. The work has continued with great success after

the institute was re-founded and became part of the Leibniz Association. Anna M. Wobus is a pioneer in stem cell research in Germany. She is also committed to the social aspects of stem cell research and is today a leading figure internationally in her branch of research. Her name is also linked to the establishment of embryonic stem cells in mice and the development of functional cardiomyocytes and insulin producing cells. The work of Ulrich Wobus has contributed greatly to the understanding of gene structures, gene expression, gene regulation and molecular physiology of seed development and storage substance formation in legumes and grains. In 1992 Ulrich Wobus became the founding director of the institute evaluated by the German Council of Science and Humanities which, under the new name of Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), was developed into a centre for cutting-edge plant research with an emphasis on cultivated plants. The Gatersleben Gene Bank has been given the status "Federal ex situ collection of agricultural and horticultural plants". At the same time genome

research on grain and high-performance bioinformatics have been established.

A special trademark of the Gatersleben initiatives of Anna and Ulrich Wobus was their success in conveying science to the community and in unifying it with artistic as well as literary aspects. Meetings, referred to as the “Gaterslebener Begegnungen” have been held since 1986 and give natural scientists, social scientists, writers, artists, publishers, politicians and ordinary people the opportunity to exchange ideas about numerous scienti-

fic aspects and their social implications. Anna M. Wobus has been a member of the Leopoldina’s Human Genetics and Molecular Medicine Section since 2001. Ulrich Wobus has been a member of the Leopoldina’s Genetics/Molecular Biology Subsection since 1993.

The golden Cothenius Medal goes back to an endowment made by the Leopoldina member Christian Andreas von Cothenius (1708-1789) who was also the private physician of Friedrich II, King of Prussia. It was awarded for the first time

in 1792. Originally, the medal was bestowed for work in the field of medicine. Since 1954 the Leopoldina has awarded this medal for excellent scientific life’s work, mainly to members of the Academy.

Carus Medals: Liqiu Meng and Moritz Kerz



The cartographer Liqiu Meng (left photo) received the Carus Medal from Jörg Hacker for her research on the visualization of geodata; the mathematician Moritz Kerz received it for his theoretical works.

Photos: Markus Scholz

The Leopoldina awarded the Carus Medal to mathematician Dr. Moritz Kerz (Duisburg-Essen) and cartographer Prof. Dr. Liqiu Meng (Munich) for their outstanding research work.

Dr. Moritz Kerz (born 1983) is a junior scientist leader in the Emmy Noether Programme of the German Research Foundation DFG at the University of Duisburg-Essen. Even before finishing his diploma thesis Kerz had already published his first scientific-mathematical paper. He graduated with a “Diplom” after six semesters in Frankfurt am Main and Mainz. His thesis was on the Gersten’s conjecture for Milnor K theory. He also published a collaborative paper together with his mentor Prof. Dr. Stefan Müller-Stachin which improved upon the latter’s earlier findings. Following this, Moritz Kerz did his PhD with Prof. Dr. Uwe Jannsen in

Regensburg receiving his doctorate at age 25. In his highly-regarded dissertation, he proved an assumption by the Russian mathematician Alexander Beilinson on Milnor K theory for the case that the rings investigated contained a field. This was followed by papers on higher dimensional class field theory which were highly esteemed by experts. In later papers, Moritz Kerz published spectacular results based on the assumptions of the Japanese mathematician Kazuya Kato on the so-called Hasse Principles. Moritz Kerz has already produced fundamental work at a young age. He has accepted a professorship for the coming semester at the University of Regensburg.

Prof. Dr. Liqiu Meng (born 1963) from Technische Universität München is one of the world’s leading experts in cartographic modelling and geodata visualisation. Liqiu Meng studies the forma-

lisation of cartographic knowledge and its application. Among other things, she has designed a series of new methods for pattern recognition and geodata generalisation. Today many of these methods and algorithms are a standard component of cartographic software packages and are used in geodata integration. An important focus of her work over the past years was to develop cartographic visualisation methods for mobile services. Liqiu Meng has primarily made a name for herself with context-independent personalisation, taking the visual cognition and cartographic communication theories into account. Her work is of fundamental importance for multimodal navigation systems and services. Many of today’s mobile applications are based on the groundwork of Liqiu Meng and her working group. Liqiu Meng has been a member of the Leopoldina’s Geography

Subsection since 2011.

The Carus Medal goes back to an endowment made on the 50th anniversary of the professorship of Carl Gustav Carus (1789-1869), XIII President of the Le-

opoldina. It was first bestowed in 1896. The Carus Medal is presented by the Leopoldina to younger scientists for their distinguished work in the area of scientific or medical research. Since 1961 the

Carus Medal has been linked to the Carus Award endowed by the city of Schweinfurt where the Leopoldina was founded.

Schleiden Medal: Tom A. Rapoport

The Leopoldina honoured the scientific work of Prof. Dr. Tom A. Rapoport ML, Boston (USA) by awarding him the Schleiden Medal. He receives this award for his formative work in the area of protein transportation.

Prof. Dr. Tom Rapoport (born 1947) is a leading molecular cell biologist active in the field of protein transportation through membranes of the endoplasmic reticulum (ER). Over many years he has made pioneering and internationally recognised contributions to science. Starting in 1985 Tom Rapoport worked at the Central Institute for Molecular Biology, part of the Academy of Sciences of the GDR in Berlin-Buch, and later at its successor institution The Max Delbrück Centre for Molecular Medicine. He has been a professor of cell biology at Harvard Medical School (USA) since 1995. During his time in Berlin, Tom Rapoport and his colleagues were able to demonstrate that signal sequences of newly-synthesised secretory proteins integrate with a subunit of the signal recognition particle (SRP54) in the ribosome. After transferring to Harvard, he was able to shed light on the crystal structures of various components in the translocation pathways of proteins. In addition to the structure of the protein conducting channel, Tom Rapoport and his colleagues also identified the structure of the ATPase, SecA which actively pushes proteins secreted in bac-



Tom A. Rapoport is one of the leading international cell biologists and was presented the Schleiden Medal for his research in the field of the protein transport from the President Jörg Hacker.

Photo: David Ausserhofer

teria through the membrane.

In a new project he is studying the mechanism by which secretory and membrane proteins, which are not correctly folded, are transported back into the cytoplasm to degrade there. Another new project which Tom Rapoport's group is working on pertains to the questions of how the ER assumes its various shapes. Tom Rapoport successfully established a cell-free system with which the formation of ER tubes and networks can be reconstructed. His working group has identified

membrane proteins needed for the formation of ER tubes and has discovered GTPases that fuse these tubes into networks. Tom Rapoport has been a member of the Leopoldina's Biochemistry Subsection since 2003.

The Schleiden Medal, named after Academy member Matthias Jacob Schleiden (1804-1881), a botanist and co-founder of cell theory, has been awarded since 1955 by the Leopoldina for outstanding findings in the field of cell biology.

Mendel Medal: Regine Kahmann

The scientific work from Prof. Dr. Regine Kahmann ML, Marburg was honoured by the Leopoldina with the Mendel Medal. She received the award for her pioneering work in the field of genetics.

Regine Kahmann (born 1948) is professor of genetics at the University of Marburg and a director at the Max Planck Institute for Terrestrial Microbiology in Marburg. She has produced groundbreaking work in two areas of genetics. Firstly she created the foundations for understanding sequence-specific recombination in phage *Mu*. Secondly her work on the parasite fungus *Ustilago maydis* was decisive in understanding the interaction between this fungus and its host plant on a molecular level.

In her work on phage *Mu* – a virus that attacks an entire series of bacteria – Regine Kahmann could show, among other things, that determining which host is infected is regulated by the inversion of a specific DNA section. This inversion is accomplished through so-called site-specific recombinations. Regine Kahmann was able to prove that this process is stimulated by the FIS protein of the host bacteria as well as the actual recombinase. The discovery of the stimulation mechanism is considered worldwide to be a major scientific achievement.

The smut fungus *Ustilago maydis*



For her pioneering works in the field of genetics President Jörg Hacker awarded the Mendel Medal to Regine Kahmann.

Photo: David Ausserhofer

causes corn smut in corn plants. How this pest and related fungi are able to infect their respective crops is still not fully understood today. However Regine Kahmann and her working group were finally able to uncover fundamental mechanisms after continuous efforts. The decoding of the genome sequence has enabled gene clusters for new types of proteins, which the fungus discharges, to be identified. These so-called effectors play a central role during the colonisation of the plants. Meanwhile, such gene

clusters have also been detected in related fungi. This sparks hope that new strategies will be developed in fighting crop pests in the future.

Regine Kahmann has been a member of the Leopoldina's Genetics/Molecular Biology Subsection since 2008.

The Mendel Medal, endowed in 1965 in honour of Gregor Mendel (1822-1884), is awarded by the Leopoldina for pioneering work in the area of general and molecular biology and genetics.

Medal of Merit: Eberhard Hofmann

The biochemist Prof. Dr. Eberhard Hofmann ML, Halle (Saale) gets the Medal of Merit for his exemplary activities in his research discipline and his commitment to the Leopoldina scholarship programm.

The Presidium of the Leopoldina recognised Eberhard Hofmann's work for the Academy as well as his dedication, ideas and expertise in the field of biochemistry by honouring him with the Medal of Merit. In his research, Hofmann (born 1930) intensively examined various enzymes in energy metabolism and their



Eberhard Hofmann received the Medal of Merit of the Academy for his commitment to the Leopoldina.

Photo: Markus Scholz

regulation. Since 1954 he has published around 250 original scientific papers. He is also the author of the textbook “Medizinische Biochemie” which has so far been republished ten times.

As a member of the review panel of the Leopoldina Fellowship Programme for junior scientists, and as an officer representing the field of medicine on the Preselection Committee (2002-2008), Hofmann was instrumental in establishing the Fellowship Programme in the Academy’s Medical sector.

Eberhard Hofmann studied biology and chemistry from 1948 to 1956 at Ernst Moritz Arndt University in Greifswald. He received his doctorate at Humboldt University in Berlin in 1956. In 1961 he received a professorship at the Medical Academy of Magdeburg and he was offered the Chair for Physiological Chemistry (Biochemistry) at the University of Leipzig in 1967. He took over as head of the Institute of Physiological Chemistry two years later and held this post until his retirement in 1997. He was

chairman of the Biochemistry Society of the GDR (1967-1971 and 1989-1991) and a member of the Academy of Sciences of the GDR. He has been a member of the Leopoldina since 1980.

The Presidium of the Leopoldina awards the Medal of Merit for outstanding services on behalf of the Academy. Every medal is unique. One side bears the portrait and name of the of the person honoured. The medal for Eberhard Hofmann was designed by Professor Bernd Göbel, a sculptor from Halle

Thieme Award of the Leopoldina for Medicine: Ronald Wolf

The “Thieme Award of the Leopoldina for Medicine” went this year to Ronald Wolf. He was awarded the prize, worth 15,000 €, for his work in discovering the disease-causing mechanisms in psoriasis. The prize was jointly awarded by the Leopoldina and the Thieme Publishing Group Stuttgart.

Dermatologist PD Dr. Ronald Wolf (born 1973) is a junior scientist group leader at the Klinik und Poliklinik für Dermatologie und Allergologie at Ludwig Maximilians University in Munich. He contributed early on in his career to the field of neuro-pharmacology and to decoding important mechanisms for developing tolerance to opiates with his dissertation (summa cum laude). In his subsequent work on differential gene expression in psoriasis, Ronald Wolf made a decisive discovery: the psoriasis candidate gene S100A15 that clearly plays an important role in causing psoriasis. The protein encoded by this gene has been named Koebnerin as suggested by Ronald Wolf. Its significance in inflammation and tumour development was discovered during his many years of research with Dr. Stuart H. Yuspa at the National Cancer Institute at the National Institutes of Health. After his return from the US, this was investigated further through the establishment of the Junior Scientist Research Group at the Skin Clinic in Munich. The work of Ronald Wolf has been decorated and supported many times including by the Emmy Noether Excellence Programme of



Ronald Wolf received the “Thieme Award of the Leopoldina for Medicine”. Photo: Markus Scholz

the German Research Foundation DFG.

Ronald Wolf recognised that the genes for Koebnerin (S100A15) and the related Psoriasin (S100A7) are active in the skin of psoriasis patients before the outbreak of the disease. His psoriasis mouse model, which he himself developed, enabled this activation to be reconstructed and the important mechanism to be decoded which explains the genetic predisposition to psoriasis and the outbreak of the disease through external influences (the Köbner phenomenon). Ronald Wolf’s scientific work impressively links disease genetics with mechanisms for the disposition for psoriasis and its

manifestation. His work opens up new intervention strategies for preventing and treating psoriasis and other chronic-inflammatory diseases.

The “Thieme Award of the Leopoldina for Medicine”, endowed with 15,000 € by the Thieme Publishing Group, has been awarded every two years since 2007 to young scientists who have contributed significantly to new discoveries in the areas of aetiology, pathogenesis, therapy and prevention of human diseases. It was endowed at the suggestion of Dr. Albrecht Hauff, publisher and personally liable partner of the Thieme Publishing Group.

Honoured young scientists: Marc Remke and Viola Kristin Balz



Outstanding young scientists: The physician Marc Remke (left photo) and the science historian Viola Kristin Balz receive the award, each time endowed with 2,000 €.

Photos: Markus Scholz

During its Annual Assembly the Leopoldina awarded young scientists the “Leopoldina Prize for Junior Scientists” and the “Georg Uschmann Prize for the History of Science” for their outstanding research.

Dr. Marc Remke (born 1981) from the Heidelberg University Hospital received the “Leopoldina Prize for Junior Scientists”. Marc Remke did his PhD at the German Cancer Research Centre DKFZ and graduated summa cum laude in 2009. At the research centre he did a genome-wide analysis of brain tumours and leukaemia in children. His outstanding scientific work on neoplasias in children has enabled Marc Remke to become firmly established in the field of paediatric neuro-oncology/haematology. Among other things, he has contributed significantly to developing molecular risk stratification models for paediatric and adult medulloblastoma patients. These findings have the potential of being incorporated into therapeutic applications such as individualised therapy.

The “Georg Uschmann Prize for the History of Science” was awarded to Dr. Viola Kristin Balz (born 1973). Her dissertation “Zwischen Wirkung und Erfahrung. Psychopharmaka neu denken. Eine historische Analyse der Wirksamkeitskonstruktionen der Neuroleptika in der Bundesrepublik Deutschland, 1950-1980” [Between effects and experience. Rethinking psycho-pharmaceuticals. An historical analysis of efficiency structures in neuroleptics in the Federal Republic of Germany, 1950-1980] set new standards and developed a new field of research in the history of science. Her work presented for the first time a study on the initial market launch of neuroleptics in West Germany – combined with an investigation into the correlation between self-experiments of participating scientists, their treatment of patients (examining numerous patient files at the University of Heidelberg) and the changing categorical framework of psychiatric diagnosis and the culture of medicine in the Federal Republic of Germany during the early post-war years. She combined systema-

tic elements of historical epistemology, the Actor Network Theory and gender research, uniting them under her own single approach. Underlying this was the intention of becoming more familiar with the history of psychiatrics which frees patients from the role of deviants.

About the awards: the “Leopoldina Prize for Junior Scientists” has been awarded since 1993 and is funded by the Karl Lohmann Stiftung. The prize recognises junior scientists under the age of 30 who have done outstanding work in the areas of science, medicine or the history of science. The Leopoldina awards the “Georg Uschmann Prize for the History of Science”, which bears the name of science historian Georg Uschmann (1913-1986), to an outstanding dissertation on the subject of the history of science. The prize was donated by Ilse and Eugen Seibold (Freiburg im Breisgau) in 1996. Both prizes are endowed with 2,000 €.



Bärbel Friedrich, Christiane Nüsslein-Volhard, Gerhard Börner (top, from left to right) und William Martin, Ada E. Yonath, Eckard Wimmer (bottom, from left to right)

Photos: Markus Scholz

A host of different answers to the question of “What is life?”

The academic presentations covered a broad spectrum of topics and bridged the natural sciences, the life sciences and the humanities

Eighteen presentations given by top-level researchers from a variety of disciplines addressed the question of “What is life?” from very different perspectives. Here is a summary of the lectures:

The keynote speech was entitled “Leben aus Sicht der molekularen Biologie“ (“Life from the point of view of molecular biology”) and was given by Vice-President Prof. Dr. **Bärbel Friedrich** ML (Berlin) on the first day of the assembly. It focused on the most fundamental unit of life, cells, and their defining characteristics, such as their metabolic and reproductive processes and the way they exchange genetic information. Friedrich, a molecular biologist, showed that DNA sequencing techniques, proteomic analysis and metabolomic analysis now allow scientists to explore life-forms that were previously almost inaccessible. The technologies also provide information on family relationships between organisms, the origins of organisms, and the way they interact with other life-forms. The findings from this study of complex life processes have opened up a new research

field known as “synthetic biology”.

After the keynote speech, Session I, entitled “Herkunft des Lebens“ (“The origin of life”), got underway. Prof. Dr. **Gerhard Börner** (Garching) spoke about “Die Entwicklung des Kosmos: Vom Urknall zum komplexen Universum“ (“The development of the cosmos: from the Big Bang to a complex universe”), while Prof. Dr. **William Martin** (Düsseldorf) focused on “Chemische Energie, Kompartimentierung und Leben“ (“Chemical energy, compartmentation and life”). Börner explained that, on the basis of precise observations and theoretical considerations, astronomers now have a well-founded model of how the universe developed. According to this Big Bang model, the universe began steadily expanding and cooling around 13,7 billion years ago. Equally steady cosmic background radiation in the microwave region provides information on this. What is striking about the development of the universe is the coordination with which the forces active in physical elementary processes led to the creation of planets, complex molecules and, finally, life. Ac-

ording to Börner, one could say that “the universe is a welcoming place for life.” William Martin looked at life from a chemical perspective. He said that life was a chemical reaction made up of reduced organic compounds. Once this reaction expires, it is very difficult to get it started again. Martin went on to say that life is a process that has little to do with equilibrium. For life to come into existence, a mechanism must be present that brings reagents together at the point of their synthesis. One of the most popular theories of the origins of life is based on the idea that either lightning discharges in the early Earth’s atmosphere or organic substances from space could have created an organic “primordial soup”. However, deep-sea hydrothermal vents are increasingly featuring in discussions on the origins of life. Scientists have found that some of these vents, which are densely populated with microbes, present chemical conditions that are particularly favourable to transforming carbon dioxide into organic substances.

Session II, which was also held on the opening day, focused on “Elementare



Nediljko Budisa, Petra Schwille, Rudolf Amann (top, from left to right) und Christian Körner, Bernd Simon, Eckhard Wolf (bottom, from left to right)

Photos: Markus Scholz, Thomas Meinecke

Lebensprozesse – Synthetisches Leben“ (“Elementary life processes – synthetic life”). First to speak was Nobel laureate Prof. Dr. **Ada Yonath** (Haifa/Israel), whose presentation was entitled “Ribosomes – factory of life”. Her ribosome research has made a decisive contribution to our understanding of how resistances to antibiotics develop. Ribosomes are the “universal machines in a cell”; they translate genetic code into proteins extremely efficiently, thanks to their spectacular architecture and high level of mobility.

In his lecture on synthetic biology, Prof. Dr. **Eckard Wimmer** ML (New York) asked, “Sind chemisch zusammengesetzte Organismen lebendig?“ (“Are chemically produced organisms alive?“). He showed that the molecular-biological revolution in the natural sciences has helped to explain many biological systems and to support Darwin’s theory of evolution – but has not produced a generally accepted definition of life. Nonetheless, the question of “when does life begin?“ is an important one. Reconstructing a living bacterium, as US scientist Craig Venter did, does not constitute the creation of new life, Wimmer explained. Neither do the genetically modified genomes, recently proposed by American molecular geneticist George Church, that alter the basic characteris-

tics of organisms. To date, Wimmer said, approaches in synthetic biology have (at least in part) always drawn on natural building blocks. Thus, natural ribosomes have always been used for translating the genetic information contained in DNA. Because ribosomes have a highly complex structure, Wimmer explained that it is currently almost impossible to predict when scientists will be able to build these components themselves.

In the evening Prof. Dr. **Christine Nüsslein-Volhard** ML, winner of the Nobel Prize in Physiology or Medicine, spoke about “Evolution der Schönheit“ (“The evolution of beauty“). Using the zebrafish as an example, she explained how colourings and patterns develop from stem cells. “To understand evolution, it is important to know how colour patterns come about during development,” said Nüsslein-Volhard. “Which genes are involved, how do they function, what do they produce?“ In fish, colour patterns are formed by three different types of pigment cells. On the very first day of embryonic development, neural crest cells, which will later develop into pigment cells, migrate to the body and lead to the production of stem cells that will eventually provide the pattern for the fully grown fish. Migration processes and interactions between the individual cell

types play a big role here. The aim of the research is to identify the genes and corresponding functions that lead to pattern variations in the course of evolution.

In Session III, “Leben – Modelle – Maschinen“ (“Life – Models – Machines“), held on Saturday, Prof. Dr. **Nediljko Budisa** (Berlin) spoke about “Die genetische Firewall für das künstliche Leben“ (“The genetic firewall for artificial life“). In his lecture Budisa, a chemist, combined fundamental considerations on the definition of life as a unique form of organising matter with concrete insight into his research on incorporating non-canonical amino acids into the proteins of living cells. He presented conceptual, methodological and empirical aspects of what is known as astrobiology. One focus of this field is dedicated to finding out to what extent an integration of “foreign“ components – i.e. those that do not naturally occur in organisms – can generate new characteristics in living systems and increase biodiversity. Scientists are particularly interested in exploring the conditions under which these kinds of altered life-forms can interact with organisms that have evolved naturally.

Prof. Dr. **Petra Schwille** ML (Dresden) gave a talk entitled “Biologische Selbstorganisation im Reagenzglas – ein Weg zur künstlichen Zelle?“ (“Biological



Heinz Saedler, Hans R. Schöler, Karl O. Stetter (from left to right)

Photos: Markus Scholz

self-organisation in the test tube – the road to artificial cells?”). From Schwille’s perspective, synthetic biology is a discipline that combines research approaches from biology and engineering. This makes it possible to explain the complexity of living systems as the interplay of functional elements that are simple, but can be linked as modules. Her research tries to understand the cell division process in *E. coli*, which is controlled by oscillations in the distribution of different proteins in the cell. Schwille has succeeded in developing a minimal inhibitor-activator model of this regulatory process. The model can be used in the lab to generate astounding pattern-formation processes.

In Session IV – “Vielfalt des Lebens” (“The diversity of life”) – microbiologist Prof. Dr. **Rudolf Amann** ML (Bremen) spoke about “Von der unermesslichen Vielfalt der Mikroorganismen und ihrer Erforschung mit genombasierten Methoden” (“The immeasurable diversity of microorganisms and their investigation using genome-based methods”). He discussed how organisms that are invisible to the naked eye are actually extremely important to biomass and biodiversity on Earth. Prokaryotes, single-cell organisms with no nucleus, account for around 50 percent of global biomass. At the very least, there are thought to be several hundreds of thousands of species of these organisms, perhaps even billions. However, Amann explained, only around 9,000 have been described to date. In his research on these organisms and the effects of their metabolism, for example on the global climate, Amann applies methods of quantitative descriptive ecology. He focuses particularly on metagenomics, which explores the genetic material of all organisms interacting in a biocoenosis.

In his talk on Saturday, “Vielfalt, die

Basis des Lebens” (“Diversity, the foundation of life”), Prof. Dr. **Christian Körner** ML (Basel, Switzerland) also looked at ecological systems. He used the ways in which plants interact to show how biodiversity helps to keep ecosystems functioning. Körner focused particularly on mountains as habitats that are particularly rich in species. During his lecture, Körner warned of the dangers of transferring the agricultural concept of limitation (restricting growth for environmental reasons) to assessments of the biodiversity of a habitat. For example, a human evaluating a high-altitude habitat might classify the situation as stressful for certain plants. But in fact, the plants could be living in precisely the environmental conditions that they need to flourish.

Social psychologist Prof. Dr. **Bernd Simon** (Kiel) gave a lecture entitled “Kultureller Pluralismus: Zwischen Respektzumutung und Politisierung” (“Cultural pluralism: between politicisation and expectations of respect”). He explored the diversity of life-forms – not in nature but in social interactions between people. The cornerstone of his theoretical considerations and empirical studies was the term “respect”. In modern and enlightened societies, how do minorities attain recognition of their defining characteristics from the majority? How do declarations and refusals of respect change the political views and actions of members of these minorities? Simon posits that recognition of cultural diversity can only truly be realised when people accept limitations on the actions of their own cultural group: “If diversity is to be more than just folklore, then it has to hurt.”

On Saturday afternoon, Session V explored “Beeinflussung des Lebens” (“Influencing life”). Prof. Dr. **Eckhard**

Wolf ML (Munich) spoke about “Tier-Biotechnologie – Perspektiven für die Landwirtschaft und die biomedizinische Forschung” (“Animal biotechnology – perspectives for agriculture and biomedical research”). The veterinary scientist focused on the opportunities for using biotechnological methods in animal breeding and in biomedicine. In addition to finding ways to make breeding more efficient, an important area of his work involves generating large animal models for biomedical research. Wolf used a pig model to explain the advances in research on type 2 diabetes, the most common form of the disorder in humans. Because humans and pigs are physiologically very similar, his research group’s unique model is ideal for developing and testing new therapies and diagnostic procedures for type 2 diabetes.

Plant geneticist Prof. Dr. **Heinz Saedler** ML (Cologne) gave a lecture entitled “Biologische Revolutionen im Pflanzenbau. Mutationen verändern die Welt” (“Biological revolutions in crop farming – mutations change the world”). In it he presented historical developments in crop farming, from the Neolithic Era around 12,000 years ago, right up to the present day. In human development, the selection and use of a mutant of einkorn wheat, where the seeds sat tight against the spindle, was a decisive step in the path from hunter-gatherer to sedentary farmer. Another important step towards today’s efficient agriculture was the Green Revolution of the 1960s. Back then, a mutant of wheat with a short stalk significantly reduced crop failure. Similar successes were later achieved with rice. In the 1960s around a third of the world population went hungry. In 1999, said Saedler, that figure was down to just one sixth – even though the world population had meanwhile doubled. Saedler also



Otfried Höffe, Ursula M. Staudinger und Richard Schröder (from left to right)

Photos: Markus Scholz

discussed the opportunities of genetic engineering and the counterproductive developments in the field of renewable resources.

Stem-cell researcher Prof. Dr. **Hans R. Schöler** ML (Münster) spoke in Session V about “Das Potential induzierter pluripotenter Stammzellen in der Medizin” (“The potential of induced pluripotent stem cells in medicine”). He explored the use of stem cells in basic research, in applied research and in medicine. Schöler explained that the advantage of induced stem cells was that due to their origins, the ethical conflicts that exist with the use of embryonic stem cells is avoided. He showed that induced pluripotent stem cells have great potential in supporting tissue transplantations, in developing mouse models for researching human illnesses, and in finding active ingredients for new medicines. However, most of the work being done in this field is still at the basic research stage. Schöler said that in the foreseeable future, increased international efforts are expected to contribute to the development of stem-cell therapies.

Finally, Session VI, held on Sunday, was dedicated to exploring the “Grenzen des Lebens” (“Limits of life”). Prof. Dr. **Karl O. Stetter** ML (Regensburg) reported on “Leben an der obersten Temperaturgrenze” (“Life at the upper temperature limit”). He explained that, although Louis Pasteur discovered that heat can kill bacteria living in human environments, scientists have long known about the existence of bacteria that thrive in heat. For example, volcanic areas on land and in the sea are home to heat-loving bacteria and archaea that are perfectly designed for life at temperatures between 80 and 113° C. Called hyperthermophilic bacteria, these microorganisms have extremely simple nutritional requi-

rements and can exist without sunlight. These characteristics mean that similar organisms could exist in any high-temperature area containing water – including on other planets and moons.

Prof. Dr. **Otfried Höffe** ML (Tübingen) gave the next talk, which asked “Lässt sich eine Hierarchie des Lebendigen rechtfertigen?” (“Can we justify a hierarchy of the living?”) He offered two approaches to finding an answer to the question. The first is an anthropocentric one, where living things are judged according to their utility, harmfulness, or utility indifference for humans. The second is a biocentric approach, which adopts a holistic perspective of everything living and is concerned with things like fitness and the ability to adapt and survive. From this point of view, insects would be superior to humans. However, humans are the only life-forms that can purposefully and systematically use (and over-use) other life-forms. On the other hand, humans also have a moral capacity and can cooperate. This means they can also bear responsibility. So the question is, do they only bear it for their species? Do they bear it for future generations or even for sub-human life-forms?

Psychologist and Vice-President of the Leopoldina Prof. Dr. **Ursula M. Staudinger** ML (Bremen) then spoke about the “Möglichkeiten und Grenzen des menschlichen Lebens” (“Opportunities and limits of human life”). She emphasised that there is a vast amount of individual leeway at every stage of human development. Humans can exploit this potential to varying degrees, depending on their upbringing and individual behaviour. Thus, neither human development nor ageing are biologically determined. Staudinger has been doing research for many years on how different lifestyles affect the ageing process, for example.

Regular physical activity, like Nordic walking, has a measurable effect on mental abilities. This, Staudinger said, shows the extent to which culture can influence biological processes. Numerous studies show that it would be more appropriate to speak of a “society of prolonged life” rather than of an ageing society.

Finally, theologian and ethicist Prof. Dr. **Richard Schröder** (Berlin) gave a presentation entitled „Ab wann ist der Mensch ein Mensch? Zum Status des menschlichen Embryos vor Beginn der Schwangerschaft“ (“When is a person a person? On the status of the human embryo before pregnancy begins”) that explored the question of whether human life already begins in vitro. He spoke about the current situation of the debate that causes much controversy in society, most recently in the context of legislation on preimplantation genetic diagnosis. Schröder noted that the meanings of many terms – including “human” – are often left blurry in discussions on the subject. Vague definitions, however, can lead to uncomfortable conclusions: For example, anyone who says a fertilised egg has the same legal status as a born person would also have to agree with the sentence, “Most people are never born”, as around 70 percent of fertilised eggs are lost to natural causes before the onset of pregnancy. Schröder says that the term “person” has never been properly understood, and is calling for a review of definitions in the debate.

(sa, kh, ca, hst, sms, mab, mba)

► A new issue of *Nova Acta Leopoldina* will be published to accompany the Annual Assembly 2011. It will contain full documentation of all presentations.

Events 2011/2012

October

22 October

10.00 a.m.

CONFERENCE:

“INTENSIV- UND PALLIATIVMEDIZIN“

COOPERATION OF THE FEDERAL MINISTRY OF EDUCATION AND RESEARCH AND THE LEOPOLDINA, (“BÜRGERKONFERENZ“)

Georg-Friedrich-Händel-Halle, Salzgrafentplatz 1, 06108 Halle (Saale)/Germany

24 October

12.00 a.m.

LEOPOLDINA SYMPOSIUM:

“BERLIN MEETS MOSCOW“

GERMAN-RUSSIAN YEAR OF SCIENCE 2011

Deutsche Kreditbank Aktiengesellschaft, Taubenstr. 7-9, 10117 Berlin/Germany

25 October

6.00 p.m.

LEOPOLDINA FISHBOWL:

“ARBEITEN IN EINEM LÄNGEREN LEBEN: WIE WIR GESUND UND AKTIV BLEIBEN“

COOPERATION OF THE LEOPOLDINA AND THE HAUS DER WISSENSCHAFT BRAUNSCHWEIG

Kulturzentrum Schlachthof, Findorffstraße 51, 28215 Bremen/Germany

31 October

3.00 p.m.

LEOPOLDINA LECTURE:

PROF. DR. OTFRIED HÖFFE ML:

“IMMANUEL KANT - DER WELTBÜRGER AUS KÖNIGSBERG“

GERMAN-RUSSIAN YEAR OF SCIENCE

Immanuel Kant Baltic Federal University, ul. Newskogo 14, Hörsaal „Aquarium“, 236000 Kaliningrad/Russia

“GOETHE. DIE SCHRIFTEN ZUR NATURWISSENSCHAFT“

Stadtschloss Weimar, Festsaal, Burgplatz 4, 99423 Weimar/Germany

7 November

1.00 p.m.

EASAC ANNIVERSARY:

10TH ANNIVERSARY CELEBRATION OF THE EUROPEAN ACADEMIES SCIENCE ADVISORY COUNCIL (EASAC)

Palais des Académies, Rue Ducale 1, 1000, Brussels/Belgium

8 November

4.30 p.m.

SEMINAR ON THE HISTORY OF SCIENCE

PROF. DR. WOLFGANG ECKART ML, HEIDELBERG: “EIN DEUTSCHER HUNGER: ERNÄHRUNGSKRISEN, ERNÄHRUNGSPHYSIOLOGIE UND ERNÄHRUNGSPOLITIK IM KONTEXT DES KRIEGES 1914-1918“

Leopoldina, Emil-Abderhalden-Straße 36, Auditorium, 06108 Halle (Saale)/Germany

22 November

2.30 p.m.

LEOPOLDINA SYMPOSIUM:

“STRUKTUREN DER RATIONALITÄT“

SYMPOSIUM OF THE LEOPOLDINA-CLASS IV

Leopoldina, New Main Building, Lecture Hall, Jägerberg 1/Moritzburggring 10, 06108 Halle (Saale)/Germany

22 November

7.00 p.m.

LEOPOLDINA LECTURE:

“INTELLIGENZ OHNE HIRNRINDE?“

LECTURE ON THE OCCASION OF THE SYMPOSIUM „STRUKTUREN DER RATIONALITÄT“ OF THE LEOPOLDINA-CLASS IV

Leopoldina, New Main Building, Lecture Hall, Jägerberg 1/Moritzburggring 10, 06108 Halle (Saale)/Germany

SYMPOSIUM OF THE PAUL-MARTINI-STIFTUNG AND THE LEOPOLDINA

Kaiserin-Friedrich-Stiftung, Robert-Koch-Platz 7, 10115 Berlin/Germany

Scientific organization: Peter Scriba ML (Munich), Torsten Strohmeyer (Berlin)

25 November

10.30 a.m.

LEOPOLDINA SYMPOSIUM:

“SEPSIS 2011 - A TRANSLATIONAL APPROACH“

Max-Planck-Institut für molekulare Biomedizin, Röntgen-Straße 20, 48149 Münster/Germany

Scientific organization: Dietmar Vestweber ML, Hugo Karel Van Aken ML (beide Münster)

December

6 December

4.30 p.m.

SEMINAR ON THE HISTORY OF SCIENCE

DR. JUTTA ECKLE (HALLE): “GOETHE ZWISCHEN PLUS UND MINUS“

Leopoldina, Emil-Abderhalden-Straße 36, 06108 Halle (Saale)/Germany

13 December

4.30 p.m.

LEOPOLDINA CHRISTMAS LECTURE:

PROF. DR. HANS JOACHIM MEYER: “VOM SINN WISSENSCHAFTLICHER MEHRSPRACHIGKEIT“

Leopoldina, New Main Building, Lecture Hall, Jägerberg 1/Moritzburggring 10, 06108 Halle (Saale)/Germany

January 2012

12 to 14 January

4.30 p.m.

LEOPOLDINA SYMPOSIUM:

“PERSONALISIERTE MEDIZIN“

Scientific organization: Georg Stingl ML, Patrick M. Brunner (Vienna/Austria)

November

4 November

5.00 p.m.

FESTIVITY ON THE OCCASION OF THE PUBLICATION OF THE LEOPOLDINA EDITION:

25 to 26 November

10.00 a.m.

SYMPOSIUM:

“INNOVATIVE THERAPIEN IN DER PALLIATIVMEDIZIN“

29 January to 25 March**4.30 p.m.****EXHIBITION:**

“GART DER GESUNDHEIT. BOTANIK IM
BUCHDRUCK VON DEN ANFÄNGEN BIS
1800“

**Franckesche Stiftungen zu Halle,
Historian Orphanage, House 1, 06108
Halle (Saale)/Germany**

22 to 23 March**LEOPOLDINA SYMPOSIUM:**

“THE CIRCADIAN SYSTEM: FROM CHRONO-
BIOLOGY TO CHRONOMEDICINE“

**Goethe-Universität, Campus Westend,
Audience Centre, Grüneburgplatz 1,
60323, Frankfurt (Main)/Germany**

🔵 Scientific organization Vorbereitung:
Horst-Werner Korf ML

Further information about all events can be found at www.leopoldina.org



Leopoldina
Nationale Akademie
der Wissenschaften

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Abbreviations

ML = Member of the Leopoldina

People

Deceased members

Prof. Dr. Hans-Werner Altmann ML,

7 June 1916 – 31 July 2011 in Würzburg
Section Pathology and Forensic Medicine
Prof. Dr. Altmann was admitted to the Leopoldina for his seminal work on the occurrence of lung cancer caused by the effects of radioactive substances. His further key areas included the question of how liver toxins change liver parenchyma.

Prof. Dr. Hans Grauert ML,

8 February 1930 – 4 September 2011 in Göttingen

Section Mathematics

The focus of Prof. Dr. Grauert's work included algebraic geometry, non-Archimedean functional theory, and mathematical physics. One of his greatest achievements was solving the "Mordell conjecture for characteristic p". He became a member of the Leopoldina in 1982.

Prof. Dr. Fritz Markwardt ML,

3 December 1924 – 10 September 2011 in Erfurt

Section Physiology and Pharmacology/
Toxicology

Prof. Dr. Markwardt's research work was dedicated to the search for animal and human anticoagulants. Using hirudin, he was able to identify blood-clotting disorders and treat them with Aminomethylbenzoic acid for the first time. This work earned him membership of the Leopoldina in 1965.

Prof. Dr. Rudolf L. Mössbauer ML,

31 January 1929 – 14 September 2011 in Grünwald

Section Physics

Prof. Dr. Mössbauer's discovery of the eponymous Mössbauer Effect earned him the 1961 Nobel Prize in Physics, and membership of the Leopoldina in 1970. The finding proved "recoil-free" emission and absorption of gamma rays from atomic nuclei bound in crystal lattices.

Prof. Dr. Harro Seyfarth ML,

6 February 1921 – 13 August 2011 in Leipzig

Section Surgery, Orthopaedics, Anaesthesiology

In 1974 the Leopoldina admitted Prof. Dr. Seyfarth to the Academy in honour of his work in the field of orthopaedics and general surgery. His key areas included

the treatment of congenital deformities, reconstructive surgery and traumatology.

Newly elected members

Leslie C. Aiello, New York/USA, Professor Emerita (Biological Anthropology) University College London, President of the Wenner-Gren Foundation for Anthropological Research (Section Anatomy und Anthropology)

Boris C. Bastian, New York/USA, Professor of Dermatology/Pathology, Department of Pathology, Memorial Sloan-Kettering Cancer Center New York (Section Internal Medicine and Dermatology)

Andreas Bockisch, Essen/Germany, Professor of Nuclear Medicine und Director of the Department of Nuclear Medicine, Universitätsklinikum Essen (Section Radiology)

Reinhard Fässler, Munich/Germany, Professor of Experimental Medicine und Director of the Department of Molecular Medicine, Max-Planck-Institut für Biochemie (Section Anatomy und Anthropology)

Annette Grüters-Kieslich, Berlin/Germany, Professor of Paediatric Endocrinology, Director at the Institute of Paediatric Endocrinology, Otto-Heubner-Centrum, Dean of Charité- Universitätsmedizin Berlin (Section Gynaecology and Paediatrics)

Michael Hallek, Cologne/Germany, Professor of Internal Medicine, Director at the Department for Internal Medicine at Cologne University (Section Internal Medicine and Dermatology)

Jürgen Hennig, Freiburg/Germany, Professor of Medical Physics and Scientific Director at the Department of Radiology, Universitätsklinikum Freiburg (Section Radiology)

Nobel Prize in Physiology or Medicine goes to Jules A. Hoffmann



Biologist and immunologist Prof. Jules A. Hoffmann ML has received the Nobel Prize in Physiology or Medicine. He and his US colleague Bruce A. Beutler share one half of the overall award, for their work on describing the principles of innate immunity. Canadian scientist Ralph M. Steinman received the other half of the award posthumously for his discovery of dendritic cells, which activate the immune system. Jules A. Hoffmann, who was born in Luxembourg in 1941, was director

of the renowned Institut de Biologie Moléculaire et Cellulaire (CNRS) at the University of Strasbourg from 1993 to 2005. From 2007 to 2008 he was president of the Leopoldina's French counterpart, the Académie des Sciences in Paris. Hoffmann became a member of the Leopoldina in 1988 and was always dedicated to the Academy. For example, he gave the keynote speech when the Leopoldina was named the German National Academy of Sciences in 2008. Hoffmann also spent many years sharing his expertise with the Leopoldina as a member of the Senate, and has only recently retired from his duties there. The Nobel Prize in Physiology or Medicine is endowed with SEK 10 million (1.1 million €). All Nobel Prizes are traditionally presented to the laureates on 10 December – the anniversary of the death of Alfred Nobel.

Maria-E. Regina Krautwald-Junghanns, Leipzig/Germany, Professor of poultry and reptile diseases, Director at the Department of Birds and Reptiles at Leipzig University (Section Veterinary Medicine)

Maode Lai, Zhejiang/China, Professor of Pathology and Director at the Department of Pathology and Pathophysiology, Zhejiang University (Section Pathology and Forensic Medicine)

Stephan Lang, Essen/Germany, Professor of Oto-Rhino-Laryngology, Head and Neck Surgery, Director at the Department of Oto-Rhino-Laryngology, Universitätsklinikum Essen (Section Ophthalmology, Oto-Rhino-Laryngology and Stomatology)

Heymut Omran, Münster/Germany, Professor of Paediatrics, Director at the Department of Paediatrics and Adolescent Medicine, Universitätsklinikum Münster (Section Gynaecology and Paediatrics)

Konrad Reinhart, Jena/Germany, Professor of Anesthesiology and Intensive-care Medicine, Director at the Department of Anesthesiology and Intensive-care Medicine, Jena University (Section Surgery, Orthopaedics, Anaesthesiology)

Marcella Rietschel, Mannheim/Germany, Professor of Genetic Epidemiology in Psychiatry, Scientific Director at Zentralinstitut für Seelische Gesundheit Mannheim (Section Neurosciences)

Hans-Peter Rodemann, Tübingen/Germany, Professor of Radiobiology, Head of Section Radiobiology and Molecular environmental Research at the Department of Radiobiology and Radiooncology, Tübingen University (Section Radiology)

Henning Schliephake, Göttingen/Germany, Professor of Oral and Maxillofacial Surgery, Director at the Department of Oral and Maxillofacial Surgery, Göttingen University (Section Ophthalmology, Oto-Rhino-Laryngology and Stomatology)

Angelika E. Schnieke, Freising/Germany, Professor of Livestock Biotechnology, Wissenschaftszentrum Weihenste-

phan, Technischen Universität München (Section Veterinary Medicine)

Berthold Seitz, Homburg/Germany, Professor of Ophthalmology und Director at the Eye Hospital, Universitätsklinikum des Saarlandes (Section Ophthalmology, Oto-Rhino-Laryngology and Stomatology)

Claudia Spies, Berlin/Germany, Professor of Anesthesiology, Director at the Department of Anesthesiology and Operation-Intensive Medicine, Charité Universitätsmedizin Berlin (Section Surgery, Orthopaedics, Anaesthesiology)

Brigitte Vollmar, Rostock/Germany, Professor of Experimental Surgery, Director at the Institute of Experimental Surgery, Rostock University (Section Surgery, Orthopaedics, Anaesthesiology)

David E. Wellbery, Chicago/USA, Professor of Germanic Studies and Comparative Literature and Chair of the Department of Germanic Studies, University of Chicago (Section Cultural Sciences)

Christian Werner, Mainz/Germany, Professor of Anesthesiology, Director at the Department of Anesthesiology, Universitätsklinikum Mainz (Section Surgery, Orthopaedics, Anaesthesiology)

Jochen A. Werner, Marburg/Germany, Professor of Oto-Rhino-Laryngology, Director of the Department of Oto-Rhino-Laryngology, Universitätsklinikum Marburg (Section Ophthalmology, Oto-Rhino-Laryngology and Stomatology)

Sabine Werner, Zurich/Switzerland, Professor of Cell Biology at the Institute of Cell Biology, ETH Zurich (Section Internal Medicine and Dermatology)

Frauke Zipp, Mainz/Germany, Professor of Neurology, Director at the Department of Neurology, Universitätsmedizin Mainz (Sektion Neuro Sciences)