

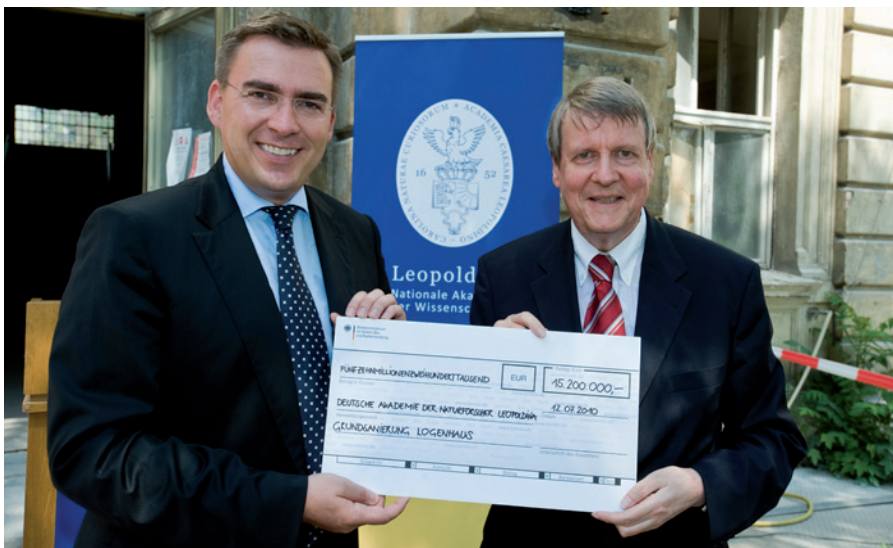


# Leopoldina news

Deutsche Akademie der Naturforscher Leopoldina –  
Nationale Akademie der Wissenschaften

Halle (Saale), 15 September 2010 **04/2010**

## Millions towards the new Leopoldina headquarters



Jan Mücke, Parliamentary State Secretary for the Federal Ministry of Transport, Building and Urban Development, handed the cheque to Prof. Jörg Hacker ML (from left). Photograph: Jens Schlüter

On 12 July, Jan Mücke, Parliamentary State Secretary for the Federal Ministry of Transport, Building and Urban Development, handed over a cheque for 15.2 million euros in funding for the restoration of the future Leopoldina headquarters in Halle, opening the door for work to begin.

“The 15.2 million euros from the government’s second economic stimulus package mean that the Leopoldina’s quarters too can live up to its growing role as a German National Academy of Sciences. The restoration of the masonic lodge house gives the Academy a prestigious headquarters with modern offices for its growing workforce, as well as rooms for scientific events“, Mücke said,

adding that the funding, one of the highest sums awarded under the stimulus package, was a good investment in independent science.“

On the occasion of the handover, the President of the Leopoldina, Prof. Jörg Hacker ML, said: “It is a stroke of luck that such an attractive building is being restored for the Leopoldina in Halle. The new Leopoldina headquarters will not only be given new sparkle, it is to become an open-access venue for dialogue; a site for independent science; a ‘home from home for free thinkers’, as the last German President Horst Köhler once put it.” Secretary-General Prof. Jutta Schnitzer-Ungefug added: “The project is ambitious and is to be carried out within a narrow time-frame.“ (mab)

### Dear members

#### and friends of the Leopoldina,

Once again we have a great deal to report about the Leopoldina’s activities. From now on they will be under the patronage of the



German president Dr Christian Wulff, who, like his predecessor Prof. Horst Köhler, is thus acknowledging the work of the Academy in a very special manner. On

the very first page you can see that the Leopoldina has now been provided with 15.2 million euros from the federal government’s second economic stimulus package. In 2012 the future main building will be given new sparkle. And you will also be interested to know that in August her Royal Highness Princess Sirindhorn from Thailand visited us to learn about science and political consultancy. The meeting paved the way for fruitful cooperation. Our expertise was also called upon by the InterAcademy Council’s committee, which recently submitted its review to the UN on the work of the Intergovernmental Panel on Climate Change. My thanks go to Prof. Ernst-Ludwig Winnacker ML, who worked on the committee. I would also like to thank Prof. André Reis ML, who took on the scientific preparations for the Leopoldina’s biennial conference, to begin on 29 September in Erlangen.

Best regards,

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## News

# Visit by Princess Sirindhorn

The heir to the Thai throne learned about science and policy consultancy at the Leopoldina



*The guests signs the Leopoldina's Golden Book. In the photograph: Ampha Otrakul, member of the Thai royal court; Leopoldina President Prof. Jörg Hacker ML, Princess Sirindhorn, Leopoldina's Secretary-General Prof. Jutta Schnitzer-Ungfug and the President's wife, Dr Margit Hacker (from left).*

Photographs: Jens Schlüter

*Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand visited the Leopoldina in Halle on 16 August. Princess Sirindhorn, the daughter of King Bhumibol Adulyadej and Queen Sirikit Kitiyakara, is interested in education, science and new technologies. She also has an interest in the German scientific system.*

At the Leopoldina, Princess Sirindhorn learned about the science-based policy consultancy service the National Academy provides. Presidium member Prof. Rudolf K. Thauer ML informed her and the Thai delegation about various approaches in the field of energy research, focusing particularly on the subject of biomass. Prof. Karl Sperling ML told them about the results of the Human Genome Project and spoke about the Leopoldina working group on "Predictive genetic diagnostics", of which he is a member. Before the autumn is out, the



*The guests followed the lectures and discussions in the Leopoldina's lecture hall with interest. Minister Chirdchu Raktabutr, from the Thai embassy in Berlin (third from left), accompanied the Princess to Halle.*

working group is to put forward a recommendation which for the first time gives politicians and the public a scientifically solid guideline to the opportunities and risks of genetical analysis and disease prevention.

The discussions at the Leopoldina were also about strengthening scientific connections between Thailand and

Germany. Thailand is in an emergent region when it comes to science and technology. The Leopoldina already cooperates with the Thai Academy of Science and Technology under the auspices of the InterAcademy Panel. Princess Sirindhorn's visit to Halle was made at the personal invitation of President Prof. Jörg Hacker ML.

# IPCC review delivered to UN Secretary-General

## The InterAcademy Council committee calls for the Panel to be restructured

*On 30 August a committee of the InterAcademy Council (IAC) in New York delivered its review of the processes and procedures of the Intergovernmental Panel on Climate Change (IPCC) to the UN Secretary-General Ban Ki-Moon. It came to the conclusion that some fundamental changes were required to the communication and management structures of the IPCC. The IAC, a multinational organisation of science academies, including the Leopoldina, was requested this spring to undertake a review of the processes and procedures of the IPCC, which had become the subject of public criticism. On the IAC committee the Leopoldina was represented by Prof. Ernst-Ludwig Winnacker ML.*

The task of the committee, made up of altogether twelve internationally recognised scientists, was not to evaluate the scientific background of the climate reports, but to investigate the processes and procedures of the Intergovernmental Panel on Climate Change (IPCC). The report states that the IPCC does good work overall, but that its structure needs to be modified. In particular, the IAC committee proposes the establishment of an Executive Committee to act on the panel's behalf between Plenary sessions, which take place just once a year. It also suggests improving the structure of the Secretariat in Geneva (Switzerland), which does not work optimally, by appointing an Executive Director.

The review also puts forward proposals on how to solve conflicts of interest among executives, and how cooperation can be improved between different working groups, preventing inaccuracies in the IPCC's future reports. Finally, the committee stated that it was also necessary to improve the way statistical uncertainties in the reports were communica-

ted, explaining that these uncertainties occur due to data and model calculations being limited in the field of climate research. At the start of the year the IPCC became the subject of criticism due to the way it dealt with data that had been used for climate change prognoses.

"We very much hope that, for the sake of the cause, our proposals are soon taken up, restoring people's trust in the IPCC", commented Prof. Ernst Ludwig Winnacker, who spent many years as the President of the German Research Foundation (Deutsche Forschungsgemeinschaft - DFG) and as the Vice-President of the Leopoldina.

The President of the Leopoldina, Prof. Jörg Hacker ML, thanked Ernst-Ludwig Winnacker for his work and stressed the importance of independent scientific expert reviews: "The IAC's work shows once more how important politically and economically independent work is at science academies. We hope that our committed efforts within this group of international academies mean we can help make an institution such as the IPCC work effectively."

The IAC has 15 permanent members representing Argentina, Australia, Brazil, China, France, Germany, India, Indonesia, Japan, South Africa, Turkey, the United Kingdom, the United States, the African Academy of Sciences and the Academy of Sciences for the Developing World (TWAS). The aim of IAC is to provide science-based advice on global issues to international bodies such as the United Nations and the World Bank.

► A special page on the subject, along with the review, can be found here: [www.interacademycouncil.net](http://www.interacademycouncil.net)

## German Federal President Wulff takes on patronage

Federal President Christian Wulff follows on from his predecessor in the post in acting as a patron to the Leopoldina. Since the Leopoldina was named the German National Academy of Sciences in 2008, the former Federal President Horst Köhler had been its patron. In the time since, the Academy has – independently of economic and political interests – dealt increasingly with important future social issues, getting these issues across to politicians and the public, and representing them both nationally and internationally. "We are delighted that the Federal President is acknowledging the Leopoldina and its scientific commitment in this special way, by taking on its patronage. It also encourages the German National Academy of Sciences to continue on its adopted course", President Jörg Hacker ML stated.

## G8 countries donate five billion dollars to Africa

At their summit in Canada at the end of June, the heads of state and government of the G8 countries agreed to spend five billion dollars over a five-year period to combat the high child and maternal mortality rates in Africa, working towards the Millennium Goals adopted in 2000. The national science academies of the G8 – Germany is represented by the Leopoldina – prepared two opinion statements on the subject in the lead-up to the summit. In a statement on maternal and child health, it had recommended providing more funds aimed at reducing maternal mortality, which is closely connected to children's wellbeing. Another statement dealt with a policy for African development. (mab)

► The documents can be found in the Policy Advice section: [www.leopoldina.org](http://www.leopoldina.org)

### New Leopoldina brochure is available in English

The brochure about the Leopoldina, issued in the new corporate design, is now also available in English. The publication provides readers with a guideline to the German National Academy of Sciences. It describes the Leopoldina's tasks and names the person to contact for each section. The brochure can be downloaded as a PDF file in German or English from [www.leopoldina.org](http://www.leopoldina.org) or ordered from the Public Relations department on +49 (0) 345 / 472 39 801, or by email from [presse@leopoldina.org](mailto:presse@leopoldina.org).

### The Leopoldina website is restructured

The Leopoldina website has been reworked and, since the summer, now appears in the new corporate design colours: blue and yellow. Furthermore, sections have also been created for Policy Advice and International Issues, which are directly accessible from the start page. From now on, all information on each topic and working group will be at your fingertips on the site, and statements and recommendations will be available to download. (mab)



Head of the archive Dr Danny Weber, Dr Horst Dietz from the friends' circle and Secretary General Prof. Jutta Schnitzer-Ungewag at the presentation. (from left) . Photograph: Scholz

## Exhibition shows “New Images of Age and Aging“

### Photographers focused on the work of the Academy's group “Aging in Germany“

The Academy workgroup “Aging in Germany” – a cooperative venture between the Leopoldina and acatech – has identified outdated images of aging as a major hurdle for a society which wants and needs to make the most of the opportunities presented by people living longer. Following on from the recommendations of “More Years, more Life” and its eight scientific volumes, and in line with its task of providing information on society, the Leopoldina invited photographers to produce visions of life plans and aging. Selected photographs are now to be shown in an exhibition touring Germany, which opened on 6 September in the Haus der Wissenschaft, Braunschweig. In January 2011 the competition's patron, the Federal Minister for Education and Research, Prof. Annette Schavan, will be presenting the competition winners with their awards in Berlin.

There is a catalogue to accompany the exhibition: *Neue Bilder vom Alter(n)*, ed. by Ursula M. Staudinger, German Academy of Sciences Leopoldina – German National Academy of Sciences, Halle (Saale), published by Wissenschaftliche Verlagsgesellschaft mbH Stuttgart, Nova Acta Leopoldina, 2010, ISBN: 978-3-8047-2838-7.

## Academy portrait collection digitalised

Some 1,400 historical portraits of Leopoldina members are now available in digital form in the Academy's archive. They were digitalised with the financial support of the Leopoldina Academy Circle of Friends (Leopoldina Akademie Freundeskreis e.V.). This makes the photographs and engravings of scientists such as Justus von Liebig, Niels Bohr, Marie Curie and Werner Heisenberg available to a wider audience and for research purposes. At the same time, it safeguards the originals. “The Circle of Friends sees



New perspectives: “Climbing age 8 and 80” by Horst Neuendorf.

Dates: Braunschweig, Haus der Wissenschaft, 7.9.–25.9.2010; Stuttgart, vhs-photogalerie at Treffpunkt Rotenbühlplatz, 29.9.–30.10.2010; Munich, university registration hall, Arcisstraße 21, 10–25.11.2010; Berlin, AOK-Bundesvorstand atrium, Rosenthaler Str. 31, 18.1.–March 2011

Opening hours, addresses and other exhibition venues can be found online at: [www.altern-in-deutschland.de/foto](http://www.altern-in-deutschland.de/foto)

its most pressing task as supporting important Leopoldina plans for which it is otherwise difficult to find funding”, explained Dr.-Ing Horst Dietz, the President of the society. Since the Leopoldina was founded in 1652 it has been traditional for members to submit a portrait; this has created a large collection of engravings and photographs. (mab)

Further information on the project: [www.freundeskreis-leopoldina.de](http://www.freundeskreis-leopoldina.de)

## International Issues

### First parliamentary evening on EASAC in Berlin



EASAC President Prof. Volker ter Meulen ML; Prof. Thomas Mettenleiter ML (top, from left); Prof. Hermann-Josef Wagner ML and Sir Brian Heap, successor to the office of EASAC President (bottom, from left).

Photographs: David Ausserhofer

At a parliamentary evening held on 5 July in Berlin, at the Representation of the State of Saxony-Anhalt, the European Academies Science Advisory Council (EASAC) presented its work. The audience – invited guests from the world of politics and the press – were shown its latest recommendations: “Transforming Europe’s Electricity Supply” and “Climate change and infectious diseases in Europe”. The occasion was EASAC Secretariat’s move from the Royal Society in London to the Leopoldina in Halle in spring 2010.

As Prof. Volker ter Meulen ML, EASAC President, explained clearly in his introduction, “The national science academies need to be present in Brussels to fulfil their duty of providing science-based political advice.” The reason, he continued, was plain to see: up to 80 per cent of all national legislative processes in the countries of the EU are now based on a Brussels ini-

tiative. This, he pointed out, added special authority to shared opinions expressed by the elite of EU scientists, who provide scientifically outstanding independent, politically relevant advice for EU institutions. “EASAC is a highly efficient network made up of the EU’s best scientists”, ter Meulen said. EASAC is currently working on the three topics of “Energy”, “Biosciences” and the “Environment”. Volker ter Meulen’s successor to the office, Sir Brian Heap, explained this further and examined the three areas in more detail. Finally, looking at the subject as a whole, he listed the challenges facing EASAC when it comes to political consultancy. For example, he described how biofuels could not be dealt with without considering the reliability of food supplies. Sir Brian described how well-founded scientific findings were essential when advising key figures in Brussels EU politics. The EASAC has set up an office in Brussels.

Following on from this, Prof. Her-

#### New Council members elected at the EASAC meeting in Budapest

At the EASAC meeting in Budapest, Sir Brian Heap (Academia Europaea) was elected to succeed the current holder of the EASAC Presidency, the Leopoldina’s former President Prof. Volker ter Meulen ML. Sir Brian will take office on 1 December 2010. The Vice-Presidents elected were Prof. József Pálincás (Hungarian Academy of Sciences), Prof. Sven Kullander (Royal Swedish Academy of Sciences) and Prof. Jos van der Meer (Royal Netherlands Academy of Arts and Sciences). The representatives of the European Academies Science Advisory Council met in Budapest on 17 and 18 June to discuss their working programme until the end of 2011. They also met the Hungarian Minister of Social Issues, Culture and Education, Prof. Miklós Réthelyi, at the Hungarian Academy of Sciences. He presented his government’s plans for the period during the Hungarian presidency of the Council of the European Union. The EASAC working programme discussed in Budapest includes recommendations and reports on the following topics by the end of 2011: synthetic biology, concentrated solar energy, the toxicology of nanomaterials, plant genetic resources, carbon capture and storage (CCS), biodiversity, sustainable biofuels and adapting to climate change. (csd)

mann-Josef Wagner ML of the Ruhr-Universität in Bochum gave a speech introducing the EASAC recommendation “Transforming Europe’s Electricity Supply”. Wagner stated that it was crucial to develop a single, uniform strategy to maintain a secure, stable European network that enables competition while simultaneously integrating renewable energies with as little loss as possible. He pointed out that this also meant standardising technology and developing it further.

Today, most systems use alternating current overhead lines, which are reasonably priced but lose a great deal of energy. Wagner explained that two forms of high-voltage direct current power transmission are already technologically available. These are low-loss, but far more complicated to operate. Europe, he went on, leads the way in this field, meaning that a combination of different technologies may provide greater security in future. In short, Prof. Wagner believes that the European network needs to be extended in a coordinated manner, using all forms of technology,

with mains power being standardised and the supply being made more reliable.

In his speech, Prof. Thomas Mettenleiter ML, President of the Friedrich-Löffler-Institut, spoke about the EASAC recommendation on “Climate change and infectious diseases in Europe”. He described how the direct effects of climate change – such as flooding, drought, storms, rising temperatures and a rise in the sea level – could trigger a rise in the number of cases of infectious diseases, and especially vector-borne diseases, i.e. infections transmitted from one host to another by other organisms. These vectors (e.g. insects or mice) react to factors such as temperature, surface water, moisture, wind and ground temperature.

Thus, Prof. Mettenleiter explained, climate change is predicted to affect the intensity and seasonal nature of many infectious diseases. He illustrated this forecast with various examples, including Bluetongue disease in cattle and sheep, which suddenly appeared in Europe, transmitted by midges. He took the example of the Asi-

an tiger mosquito, native to southern and eastern Asia but spreading in Europe and America, to show exactly what risks there could be. Among other diseases, he explained, the mosquitoes transmit dengue fever, yellow fever and many other viruses.

He thus declared it essential to heed the conclusions, e.g. the need to modernise trans-European early warning systems and to determine the relationship between human disease and changes in hosts, vectors and parasites. He also believed that it is important to set up multidisciplinary research programmes, and to bring together biology and the social sciences to look into the effects the climate has on human beings. Data collected from monitoring human and animal health also needs to be combined. Another aim, Mettenleiter stated, must be to invest in educating the next generation of researchers, including those in the fields of entomology, microbiology and epidemiology. (mab)

• The EASAC recommendations can be found at: [www.easac.eu](http://www.easac.eu)

## Delegation of the Leopoldina visited the Polish Academy of Sciences

*On June 16 a delegation of the Leopoldina visited the Polish Academy of Sciences (Polska Akademia Nauk, PAN). Leopoldina President Prof. Jörg Hacker ML was accompanied by the Presidium members Prof. Bärbel Friedrich ML, Prof. Gunter S. Fischer ML and Prof. Heinz Schott ML, and also by the Secretary General of the Leopoldina, Jutta Schnitzer-Ungfug, and the Head of International Relations, Dr Hans-Jochen Marquardt. Dr Konrad Buschbeck, former Science Attaché of the Federal Republic of Germany to the Republic of Poland, and his successor, Dr Monika Schidorowitz, participated as well.*

The representatives of both academies met in the Staszic Palace in Warsaw to discuss possibilities of further cooperation. The first official meeting of the authorities of the Leopoldina and the PAN took place in spring 2009 in Halle. President Michał Kleiber welcomed the guests together with 12 members of PAN. He drew the participants’ attention to the changes that had been recently introduced by the new Par-

liamentary Act on the Polish Academy of Sciences dated April 30, 2010.

Jörg Hacker spoke about the Young Academy. As the new law on the PAN provides for the establishment of a Young Academy, the Polish side expressed its interest in a closer cooperation with the Leopoldina in this regard.

Janusz Lipkowski gave a presentation on the International Year of Chemistry 2011 and on the 100th anniversary of the Nobel Prize for the famous Polish chemist Maria Skłodowska-Curie. This was followed by a presentation by Adam Borkowski on the Polish-German Computer Workshop that took place in 2009 in Poland and was co-organised by Division IV Technical Sciences of the Polish Academy of Sciences. There are plans to organise the second edition of the workshop in Germany.

The Leopoldina delegation also went to various PAN institutes. During the visit at the Institute of the History of Science of the PAN it was agreed that German scientists would be invited to give guest lectures in Warsaw and Polish scientists doing research into the history of science would be

offered possibilities to give guest lectures in Halle.

At the Nencki Institute of Experimental Biology, the institute’s director Adam Szewczyk gave a talk on the structure, educational activities, research achievements and international cooperation of the institute, the latter being especially intensive with German partners.

Magdalena Fikus from the Institute of Biochemistry and Biophysics presented the history of science festivals that have been organised in Poland since 1997. Andrzej Górski spoke about issues of ethics in science with which physicians are confronted in the course of their scientific careers.

The following have been identified as potential fields of future cooperation: ethics in science, the value of evidence-based advice, and the trilateral cooperation between the Polish, French and German Academies of Sciences in the fields of biodiversity, energy and infectious diseases. A important result of the meeting is the desire of both academies to sign a Memorandum of Understanding which will serve as the basis of common activities. (hjm)

# The Leopoldina advises Namibia on setting up an Academy of Sciences

A workshop with the African delegations took place in Halle.



*Prof. Bärbel Friedrich ML, Simon Takalani Rambau (South Africa), Dorothy Mutheu Ngila (South Africa), Dr Hans-Jochen Marquardt, Dr Erika Maass (Namibia), Alfred Adriaan van Kent (Namibia), Prof. Andreas Kleinert ML, Prof. Jutta Schnitzer-Ungefug, Prof. Roseanne Diab (South Africa), Prof. Jörg Hacker ML, Rosa-Stella Mbulu (Namibia), Dr Andreas Wienecke (Namibia), Dr Martha Kandawa-Schulz (Namibia), Elmo Thomas (Namibia), Natascha Cheikhyousef (Namibia), Prof. Heinz Schott ML (von links).*

Photograph: Thomas Meinicke

*The Leopoldina is advising the country of Namibia, along with the Academy of Science of South Africa (ASSAf) and the Network of African Science Academies, on the foundation of an Academy of Sciences. The aim is to develop a Namibian Academy which can provide scientific advice to the world of politics and society, and represent the country in the international Academy community. The delegation from Namibia and South Africa were guests at a workshop from 12 to 15 July at the Leopoldina in Halle and Berlin.*

In 2008 the German government resolved on a "Strategy for the Internationalization of Science and Research"; in line with this, the Leopoldina has decided to become more active in southern Africa. Prof. Jörg Hacker, President of the Leopoldina, explained why the decision was made: "Our choice fell on Namibia as there was a clear political objective to found an Academy there and the country enjoys the requisite political stability."

The key topic of the workshop in Halle was setting up Academy structures and working principles, especially when it came to political consultancy. The guests spoke on the subject with members of the Leopoldina council and the heads of the Academy sections.

In addition to this, the delegations also visited the Academy's office in the government district of Berlin. There, the African guests, accompanied by the Namibian Ambassador Neville Melvin Gertze, held further talks with representatives of the Deutsche Akademische Austauschdienst (DAAD), the Deutsche Forschungsgemeinschaft (DFG), the Deutsche Gesellschaft für Technische Zusammenarbeit (DFZ) and the Junge Akademie, an organisation for outstanding junior scientists established by the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW) and the Leopoldina.

The Namibian Academy is to be established in three phases. A preparation phase (2010) is to be followed by a foun-

ation phase, then a phase of scientific cooperation between the partner academies and the newly founded Academy. In the preparation phase, seven experts from Namibia, three from Germany and three from South Africa will determine the aims, functions and structure of the Namibian Academy at four workshops.

Plans for 2011 include founding the Academy, enlisting excellent scientists from all over the country and taking initial communication steps. In the last phase a cooperation agreement is to be signed by the Namibian and South African Academy and the Leopoldina, with the goal of developing and carrying out scientific projects together.

The preparation phase, which is currently underway, is funded by the international office at the German Federal Ministry of Education and Research.

(cw, hjm)

## Conference Reports

# Cracking the code to the genetic causes of neuropsychiatric disorders, step by step

Scientists discussed the latest results at the Leopoldina symposium in Bonn / By Prof. Markus Nöthen ML

*From 25 to 27 June 2010 the Leopoldina symposium "Neuropsychiatric Disorders: from Gene to Complex Brain Function" took place in the Waterworks building at the World Conference Center in Bonn. The symposium was organised by the Leopoldina, the MoodS integrated genome research network run by the Federal Ministry of Education and Research (BMBF), and the German Centre for Neurodegenerative Diseases (DZNE); it was chaired by Prof. Markus Nöthen ML of Bonn, and brought together 200 international scientists to discuss the latest results of research into the causes of neuropsychiatric disorders.*

The most common neuropsychiatric disorders, such as schizophrenia, depression and manic depression, are multifactorial illnesses. Multifactorial means that a combination of genetic and environmental factors cause the illness. This fact is nothing new, but it is only recently that the necessary molecular genetical investigative techniques have become available to search the genome systematically for disease-predisposing variants. Once a gene has been identified as playing a role in a disease, other methods can be used to pinpoint the subsequent biological steps until the disease develops.

The central focus of discussion at the Leopoldina symposium in Bonn was the latest molecular genetical findings in the field of neuropsychiatric disorders. Today, large-scale international studies have combined data from thousands of patients at a time, making these attempts the largest studies ever carried out of the biological causes of these diseases. Dr Stephan Ripke (Boston, USA) reported on unpublished data on newly identified genes involved in schizophrenia, zeroing in on previously unsuspected biological relationships. There were also reports of similarly far-reaching findings for

Alzheimer's, with the latest genetical findings suggesting that the immune system plays a role in the development of the disease. The findings, reported by Prof. Julie Williams (Cardiff, UK), are expected to provide a strong boost for investigations into the immunological mechanisms behind Alzheimer's. In the case of manic depression, Prof. Sven Cichon (Jülich, Bonn) reported on the identification of a new gene which influences neuronal migration as the brain develops.

The attending scientists agreed that even with the newly discovered genes, only a small percentage of genetically determined causes of disease are known. Identifying more genes requires not only greater numbers of patients but also further work on biostatistical analysis methods. In his lecture, Dr Benedikt Brors (Heidelberg) described how knowledge about biological networks can be used to help evaluate data. It is believed that interaction between genes also plays an important role. Dr Tim Becker (Bonn) presented the latest statistical methods of discovering gene-gene interaction.

At the moment, the major studies in gene identification still concentrate on the effect of gene variants which are common among the population. Recently, however, there have also been indications of the role rare mutations can play. Prof. David Collier (London, UK) reported on new mutations occurring in germ cells and which have a significant effect on the development of schizophrenia. The fact that these "novel mutations" play a role in schizophrenia has long been suspected, as patients have fewer offspring on average than healthy people. This is the first time that this supposition has been confirmed by molecular evidence. In a special lecture, Prof. Matthew Keller (Boulder, USA) provided an overview of evolutionary models of neuropsychiatric disorders. In future it will be possible to check these

models using molecular data, once the entire genomes of a large number of patients have been sequenced.

With most gene variants found in association with diseases it is not immediately known what exact function a certain gene has or how that function is influenced by the genetic variation. Many of the genetic variants now identified take effect by regulating gene expression. As Dr Michael Alexander (Bonn) reported, genetic variants affect the expression of many genes in the human brain. Some of these variants evidently play a part in the development of disorders. Research on genetically modified mice plays a major role in elucidating the biological relationships between genes and their gene products. Prof. Wolfgang Wurst (Neuherberg) reported that a wide range of methods are now available to specify the characteristics of genetically modified mice in detail, right down to their behaviour.

Other methods attempt to prove the effect of the genes directly, at the level of clinical symptoms or that of brain functions. René Breuer (Mannheim, Heidelberg) reported on new statistical methods aimed at finding a link between genetic variants and complex combinations of symptoms. As described by Prof. Meyer-Lindenberg (Mannheim) and Prof. Hendrik Walter (Berlin), imaging techniques are particularly suited to studying the effects of genetic variants on brain functions.

The symposium provided striking evidence of the central role played by a knowledge of genetic foundations in achieving a comprehensive understanding of the biological causes of neuropsychiatric disorders. Identifying each individual disease-related gene requires extensive investigation; the large number of genes yet to be identified makes it clear how important this research will be in the long term.



# The neuroscience of the honeybee

**The international symposium “Honeybee Neuroscience” in Berlin shed light on the present state of development, focussing on the future prospects of this science**

*At the international symposium “Honeybee Neuroscience – a New, Old Model System, Bridging Genomics, Physiology and Behavior. Where To in The Next 50 Years?”, neuroscientists from eleven countries met to discuss future paths honeybee neuroscience research could take. The symposium took place from 10 to 13 June in Berlin. It received support from the Leopoldina, the foundation Alfried Krupp von Bohlen und Halbach-Stiftung, the Berlin-Brandenburg Academy of Sciences and Humanities and Freie Universität Berlin, as well as industrial sponsors.*

The honeybee, with its social colony-forming, has always fascinated humankind. This insect has become a subject of particular interest since the discovery of its complex social behaviour and surprisingly high intelligence. Karl von Frisch, for example, was able to prove that bees communicate using a complicated language of dance; a discovery for which he was awarded the Nobel Prize in 1973. Exploratory experiments have shown that honeybees boast cognitive skills originally only ascribed to vertebrates.

## THE HONEYBEE IS A MODEL IN THE NEUROSCIENCES

These special skills mean that over the last few decades the honeybee has become a model organism in the neurosciences: the bee’s genome has been mapped, and electrophysiological and optophysiological techniques have been established, playing a major role in answering fundamental questions about the physiology of the senses. Complex experimental paradigms have also been developed, e.g. to investigate learning or navigation, and are now in widespread use. The community of scientists studying neuroscience issues from the example of the honeybee has correspondingly grown constantly.

This symposium was instigated by

Prof. Dorothea Eisenhardt (Freie Universität Berlin), Prof. Giovanni Galizia (University of Konstanz, Germany) and Prof. Martin Giurfa ML (Université Paul Sabatier, Toulouse, France) to initiate active discussion on the long-term prospects of neuroscience research into the honeybee. This venue was chosen because the research done by Prof. Randolph Menzel ML over more than 30 years makes Berlin one of the most important centres for bee neuroscience in the world.

During the symposium, 29 renowned scientists from Argentina, Australia, Denmark, Germany, France, Britain, Israel, Japan, New Zealand, Norway and the USA lectured on sensory systems, genetics and molecular biology, orientation and navigation, neuroanatomy and neurophysiology, honeybee learning and memory, and social organisation and communication in the beehive. Twenty-eight posters were also presented, mainly by junior scientists. After each speech and during the poster sessions, four fundamental neuroscience issues were discussed. Comparisons were made with other insects in five lectures by scientists from the USA, Norway and Germany, reporting on the neuroscience of ants, moths and flies. These speeches contributed to further discussions on future strategies for neuroscience research into model invertebrate systems in general.

The aim of the symposium was not to find the lowest common denominator. On the contrary, controversial topics were battled out fiercely, revealing the issues for the next 50 years. An example: although it has long been known that bees have a well-developed colour system, their actual colour range, i.e. the topological elements which can be defined by colour similarities, is still a controversial matter. What colour vision system do bees really use? On this topic, interpretations produced by cellular neurobiology, by behaviour observation research, and by manipulative learning research have so far proven irreconcilable, meaning that new experiments are

required in which the specialists in question cooperate. Socially relevant issues were also discussed: How can molecular biology studies of bees be carried out which use transgenic bees yet create no risk to the environment or the apiary? To this end, international associations and agreements are required, joint projects need to be planned and safety standards need to be rationalised. The foundations for all this were laid at the meeting. This discussion was then picked up again at the congress of the International Union for the Study of Social Insects (IUSSI) in Copenhagen in August 2010.

## SOCIALLY RELEVANT ISSUES ON THE AGENDA

The next generation of scientists working in practice was also an issue: new student exchange associations were created and new training courses set up to create international links between the scientists involved and to exchange information. This is to start out with a workshop planned for next year on the practical implementation of RNAi technology. The final result of this meeting was the many new connections made, which will culminate in specific cooperative projects spanning continental borders. The relaxed nature of the event and generous amount of time given up to informal communication, e.g. at the closing festivities, helped the symposium achieve its aim of defining the position of research today, and laying out the topics and social basis for research in the future – Where to in the next 50 years?

The discussions and speeches at the symposium are to be published soon by Springer Verlag publishing house in a book entitled “Honeybee Neurobiology and Behavior – A Tribute to Randolph Menzel”.

(gg)

► Further information:

<http://neuro.uni-konstanz.de/honeybee>

# Events

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## **LEOPOLDINA 2010 BIENNIAL CONFERENCE IN ASSOCIATION WITH THE "GERMAN MENTAL RETARDATION NETWORK" (MRNET) RESEARCH ASSOCIATION: "GENETICS AND NEUROBIOLOGY OF MENTAL RETARDATION", 29 SEPTEMBER – 1 OCTOBER 2010, 2 P.M., MEDICAL DEPARTMENT LECTURE HALL, ULMENWEG, 91054 ERLANGEN**

Mental retardation (MR) is defined as a substantial impairment of a subject's cognitive and adaptive abilities with onset before the age of 18. It affects some two or three per cent of the population and is one of the biggest unsolved problems in medicine. Progress over the last few years has shown that genetic factors – chromosome disorders and single-gene defects – play a significant role in the development of MR. New genome research methods are now paving the way for a systematic analysis of the underlying genetic changes. Interaction with neuroscience is opening up a new, particularly innovative field of research. For this reason, the Leopoldina is holding the conference, organised by the research association German Men-

tal Retardation Network (MRNET) as its biennial conference. It is receiving support from the foundation Alfried Krupp von Bohlen und Halbach Stiftung, among others.

The main focus of research is on delving into genetic causes and achieving a better understanding of the pathophysiological relationships of thought and learning processes. The aim is not only to improve diagnostic possibilities but also to establish what is needed for effective therapies to be developed. The conference covers a correspondingly wide range of subjects, from newly described single-gene defects and changes in genome sequence copy numbers which may cause MR to new findings in the field of neural

development and the role of molecular genetic networks, or the latest results of the medicinal treatment of patients with Fragile X Syndrome. Well-known experts will be speaking on related fields such as research into autism and intelligence. Over three days, 17 international researchers from Europe and North America will be reporting on their latest results along with a large number of junior researchers. At the biennial conference, on 29 September, 2 p.m., the 30,000 euros Leopoldina Early Career Award will be presented with the support of the Commerzbank Foundation.

► The programme can be found at:  
[www.german-mrnet.de](http://www.german-mrnet.de)

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## **LEOPOLDINA SYMPOSIUM: "HUMAN RIGHTS AND SCIENCE", 6. OCTOBER 2010, 8.30 A.M, REPRESENTATION OF THE STATE OF SAXONY-ANHALT, LUISENSTR. 18, 10117 BERLIN**

In May 1993 an "International Human Rights Network of Academies and Scholarly Societies" (IHRN) was established at the National Academy of Sciences in Washington, D.C. The IHRN assists scientists and scholars around the world who are subjected to repression solely for having non-violently exercised their rights as promulgated by the Universal Declaration of Human Rights. It also promotes and protects the independence of academies and scholarly societies worldwide and the free exchange of ideas. Currently, science academies and scholarly societies in 70 countries are affiliated with IHRN.

In 2001, following a decision by the Presidium at the suggestion of several members, a "Human Rights Committee" (HRC) was established at the Leopoldina. At present, the Committee consists of members from Germany, Austria and Switzerland. In July 2003, the HRC was admitted to the "International Human Rights Network of Academies and Scholarly Societies".

Since neither the activities of the IHRN, nor the many human rights violations suffered by academics are well known to the general public or even to academic institutions, the German National Acade-

my of Sciences Leopoldina is conducting this symposium in co-operation with "The Young Academy", to provide information on human rights norms and institutions and to discuss some issues with special reference to the European situation. The symposium also provides a platform for representatives of European academies to discuss the human rights situation in various parts of the continent.

► Information and registration:  
[www.leopoldina.org](http://www.leopoldina.org)

**TRILATERAL SYMPOSIUM ACADEMIE DES SCIENCES – GERMAN NATIONAL ACADEMY OF SCIENCES LEOPOLDINA – CHINESE ACADEMY OF SCIENCES: “FUTURE OF SCIENCES, SCIENCES FOR THE FUTURE: CHEMISTRY AND ITS INTERFACES WITH BIOLOGY AND PHYSICS”, 7. - 8. OCTOBER 2010, 9 A.M., INSTITUT DE FRANCE, QUAI DE CONTI 23, 75006 PARIS (FRANCE)**

Developments in science and technology have never been as rapid as now. Faster and more effective communication of the scientific results from the international academic community to peers, to application-oriented institutions and industries as well as to policy- and decision-makers represents a real challenge. Chemistry plays a central role in modern society because it is closely associated with a major industry which delivers products appearing in everyday life. However, chemistry has suffered from a somewhat negative image since the 1970s. Although this has improved, some misconceptions still remain. In reality, chemistry plays a unique role in solving problems the world is fa-

cing. Facing the challenges of health, nutrition, energy, and environmental control as well as management of natural resources are crucial topics on the agenda of current chemistry. Moreover, chemistry is not just a core science in itself, it is also actively expanding into other fields such as biology and physics, offering great opportunities for collaborative efforts in the quest to design and create new materials.

It appears particularly appropriate that a high level Chemistry Symposium will take place, organized by the respective National Academies of France, Germany and China. Chemists from these three countries will share most recent advances in the relevant fields. Twelve scientists

(four per country) will give oral presentations. Moreover, a round-table discussion will focus on the various approaches, existing or to be implemented, for promoting sciences, with chemistry being in the focus, aimed at decision-makers in scientific institutions and science management and at younger scientists representing the next generation.

Scientific organisation: Prof. Jean-François Bach, Paris (France); Prof. Pierre Braunstein ML, Strasbourg (France); Prof. Manfred T. Reetz ML, Mülheim; Prof. Wen-Hua Sun, Beijing (China)

**LEOPOLDINA PARTNER SYMPOSIUM AT THE WORLD HEALTH SUMMIT “BIODIVERSITY AND HEALTH”, 10. OCTOBER 2010, 4.15 P.M., LANGENBECK-VIRCHOW-HAUS, LUISENSTRASSE 58/59, 10117 BERLIN**

The partner symposium discusses the strong impact of climate change on biodiversity. Furthermore, biodiversity in particular that of microorganisms provides the structural diversity of bioactive natural products, many of which are used

as antibiotics or antitumor drugs. Novel techniques like genome mining allow to predict biosynthesis genes of natural products and enable the isolation of potentially novel bioactive compounds. Finally, climate change could impact the evoluti-

on of pathogens and thus affects multiple infectious diseases of humans.

► Further Information and registration: [www.worldhealthsummit.org](http://www.worldhealthsummit.org)

**SPECIAL SYMPOSIUM IN HONOUR OF THE FORMER PRESIDENT OF THE LEOPOLDINA, PROF. VOLKER TER MEULEN ML: “NEW DEVELOPMENTS IN INFECTIOUS DISEASES”, 27 OCTOBER, 3.15 P.M., ASSEMBLY HALL OF THE “LÖWENGEBÄUDE”, THE MAIN BUILDING OF MARTIN LUTHER UNIVERSITY, HALLE-WITTENBERG, UNIVERSITÄTSPLATZ 1, 06108 HALLE**

The Leopoldina is holding a symposium to honour Prof. Volker ter Meulen ML, who led the Academy from 2003 to February 2010. The programme is planned as follows:

3.20 p.m. Welcome address by Prof. Bärbel Friedrich ML, Vice-President of the Leopoldina	Leopoldina 4.05 p.m. “Influenzaviren auf dem Weg vom Tier zum Menschen” (Influenza viruses passing from animal to human), Prof. Hans Dieter Klenk ML, Marburg (special lecture)
3.30 p.m. Welcome speech by State Secretary Dr Georg Schütte, BMBF	(break)
3.40 p.m. Address by Prof. Jörg Hacker ML, President of the Leopoldina	4.50 p.m. Address by Minister Prof. Birgitta Wolff, Ministry of Education and Cultural Affairs
3.55 p.m. Speech of thanks by Prof. Volker ter Meulen ML, former President of the	5 p.m. “Prions and beyond”, Prof. Adriano Aguzzi ML, Zurich (lecture)
	5.30 p.m. “A second-generation HPV vac-

cine with efficacy against a broad spectrum of genital and cutaneous types”, Prof. Reinhard Kirnbauer, Vienna (lecture)

6 p.m. “Why do viruses cause cancer? Lessons learned from the newest cancer virus”, Dr Patrick S. Moore, Pittsburgh, USA (lecture)

6.30 p.m. “Measles infection: a paradigm shift through international collaboration” Prof. Bert K. Rima, Belfast, Northern Ireland

7.10 p.m. reception

Event ends around 8 p.m.

# People

## Deceased members

### **Prof. Ihsan Dogramaci ML,** **3.4.1915–25.2.2010 Ankara** **(Turkey)**

Gynaecology and Paediatrics section  
Prof. Dogramaci became a member of the Leopoldina in 1982 for his work on the social aspects of the development of paediatrics and his great personal commitment in this field.

### **Prof. Reinhard J. Haschen ML,**

1.3.1920–7.7.2010 Cologne  
Physiology and Pharmacology/Toxicology section  
Prof. Haschen was welcomed to the ranks of the Leopoldina in 1969 for his pioneering work on issues in the fields of haematology, biochemistry and clinical biochemistry.

### **Prof. Ilse Jahn ML,**

2.2.1922–8.5.2010 Berlin  
History of Science and Medicine section  
Prof. Jahn became a member of the Leopoldina in 1986 for her work in the history of science, and particularly in the field of the history of biology and evolutionary research.

### **Prof. Karl J. Ulrich ML,**

18.11.1925–2.8.2010 Königstein-Falkenstein  
Physiology and Pharmacology/Toxicology section  
Prof. Ulrich was welcomed to the ranks of the Leopoldina in 1969 for his research into the nature and function of animal membranes and their permeability, and particularly for his work on the function of the kidneys.

### **Prof. Hans Georg von Schnering ML,**

6.7.1931–22.7.2010 Aidlingen  
Chemistry section  
Prof. von Schnering was taken on as a member of the Leopoldina in 1987 for his outstanding, internationally influential works in the field of solid-state physics, e.g. describing potential energy surfaces in crystal structures.

### **Prof. Otto H. Wolff ML,**

10.1.1920–27.4.2010  
London (Britain)  
Gynaecology and Paediatrics section  
Prof. Wolff became a member of the Leopoldina in 1982 for his pioneering works in the field of paediatrics, in particular hyper- and hypolipidemia, obesity and phenylketonuria.

## Newly elected members of the Academy, 26 May 2010

**Roland Beckmann,** Munich, Professor of Biochemistry at the Department of Biochemistry and Gene Center Munich, LMU Munich (Biochemistry and Biophysics section)

**Ralph Bock,** Potsdam, Professor of Molecular Biology and Director at the Max Planck Institute of Molecular Plant Physiology, Potsdam (Genetics/Molecular Biology and Cell Biology section)

**Christoph Dehio,** Basel (Switzerland), Professor of Molecular Biology at the Biozentrum, University of Basel (Microbiology and Immunology section)

**Ivan Dikic,** Frankfurt am Main, Professor of Biochemistry at the School of Medicine, University of Split, Croatia, Director at the Institute of Biochemistry II of the Goethe University Medical School, Frankfurt am Main; Scientific Director at the Frankfurt Institute for Molecular Life Sciences (Biochemistry and Biophysics section)

**Bernd Fakler,** Freiburg, Professor of Physiology and Director of the Institute of Physiology, Department II, University of Freiburg (Physiology and Pharmacology/Toxicology section)

**Erwin Grill,** Weihenstephan, Professor of Botany at the Chair of Botany, Technische Universität München (Genetics/Molecular Biology and Cell Biology section)

**Toni Kutchan,** St. Louis (USA), Adjunct Professor at the Department of Biology of Washington University St. Louis; Member and Principal Investigator at the Donald Danforth Plant Science Center, St. Louis (Genetics/Molecular Biology and Cell Biology section)

**Manfred Milinski,** Director of the Department of Evolutionary Ecology at the Max Planck Institute for Evolutionary Biology, Plön, and honorary professor at Kiel University (Organismic and Evolutionary Biology section)

**Ole Petersen,** Cardiff (UK,) Professor of Physiology; Director at the Cardiff School of Biosciences of Cardiff University (Physiology and Pharmacology/Toxicology section)

**Venki Ramakrishnan,** Cambridge (UK), Professor of Biochemistry, Group Leader and Joint Head at the Structural Studies Division of the MRC Laboratory of Molecular Biology Cambridge (Biochemistry and Biophysics section)

**Paul Schulze-Lefert,** Cologne, Professor of Molecular Phytopathology and Director of the Department of Molecular Phytopathology at the Max Planck Institute for Plant Breeding Research (Organismic and Evolutionary Biology section)

**Irmgard Sinning,** Heidelberg, Professor of Structural Biology and Managing Director of Heidelberg University Biochemistry Center (Biochemistry and Biophysics section)

**Hermann Wagner,** Aachen, Professor of Zoology/Animal Physiology and Head of the Institute of Biology (II) at Aachen University (RWTH) (Organismic and Evolutionary Biology section)



**Leopoldina**  
Nationale Akademie  
der Wissenschaften

**Deutsche Akademie der Naturforscher  
Leopoldina – Nationale Akademie  
der Wissenschaften**

Emil-Abderhalden-Str. 37  
06108 Halle (Saale)  
Telefon: +49-345/4 72 39 – 800  
Telefax: +49-345/4 72 39 – 19  
presse@leopoldina.org

**Editors**

Prof. Jutta Schnitzer-Ungefug (jsu)  
(responsible according to the German press law)  
Prof. Gunnar Berg ML (gb)  
Manuela Bank (mab)

**Other authors in this issue:**

Dr Christian Anton, consultant at the policy advice  
department (ca)

Dr Christiane S. Diehl, International Relations  
Department, EASAC (csd)  
Prof. Giovanni Galizia, Konstanz (gg)  
Dr habil. Hans-Jochen Marquardt,  
head of the International Relations Department  
(hjm)  
Caroline Wichmann, head of the Press and Public  
Relations department (cw)

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**Abbreviations**

ML = Member of the Leopoldina