

Leibniz Prize winners 2007 announced

December 13 2006

The Deutsche Forschungsgemeinschaft (German Research Foundation, DFG) has announced the winners of its 2007 Gottfried Wilhelm Leibniz Prize. At its meeting on 7 December 2006, the DFG Joint Committee named ten scientists and academics — eight men and two women — as recipients of Germany's most highly endowed research award. For the first time, the prize winners for 2007 will receive up to 2.5 million euros (previously: 1.55 million euros) and be able to use these funds flexibly over a period of seven years (previously: five years) to finance their research.

The Leibniz Programme, established in 1985, aims to improve the working conditions of outstanding researchers, expand their research opportunities, relieve them of administrative duties, and make it easier for them to employ particularly qualified young researchers. Scientists and academics from any research area can be nominated for the prize. The DFG Nominations Committee considers the slate of candidates and selects researchers who can be expected to particularly advance their scientific achievements through this award. This year's prize winners once again include several young researchers.

Today's announcement brings the total number of prizes awarded under the Leibniz Programme to 249. Of these, 54 recipients have been from the humanities, 70 from the life sciences, 89 from the natural sciences, and 36 from engineering. A total of 25 awards have gone to women.

Of 129 nominations received for the 2007 prize, the following ten researchers were selected:

Prof. Dr. Jens Claus Brüning (40), Endocrinology, Institute for Genetics, University of Cologne (2.5 million euros)

With his research on the genetic manipulation of mice, Jens Claus Brüning has pioneered a number of breakthroughs in molecular diabetes research. He has demonstrated the role of the insulin receptor in controlling body weight and in the formation of fat metabolism disorders. He has also been able to clarify why endocrine pancreatic cells in overweight persons produce insufficient amounts of insulin; this research has received international attention. In addition, Brüning has succeeded in identifying and characterising nerve cell populations in the hypothalamus that regulate food intake. The key control signal is the insulin that regulates the body's energy status from the brain.

Considering the almost epidemic proliferation of obesity, which now affects nearly 20 percent of the population, these are groundbreaking insights.

After studying human medicine in Cologne, Jens Claus Brüning became a fellow at the Joslin Diabetes Center, Harvard Medical School, in Boston, United States, supported by a DFG scholarship. After he returned to Germany, he was a senior physician at the Internal Medicine Clinic II in Cologne from 2002 to 2003. One year after his habilitation on "Pathogenesis of Diabetes Mellitus Type 2 Due to Conditional Mutagenesis of the Insulin Receptor Gene in Mice", he accepted a tenured professorship at the Institute for Genetics, University of Cologne, in 2003.

Prof. Dr. Patrick Bruno (42), Theoretical Solid State Physics, Max Planck Institute of Microstructure Physics, Halle / Saale (2.5 million euros)

Patrick Bruno is considered one of the most creative and successful

theoretical physicists of the younger generation. His scientific interests are focused on theoretical solid state physics, especially the theory of magnetism in low-dimensional systems and in nanostructures. His microscopic explanation of special exchange interactions in ferromagnetic layered systems (“interlayer exchange coupling”) is already a staple of modern textbooks on solid state physics.

Bruno analysed several magnetic effects in quantum mechanics (Casimir effect, spin Hall effect) and examined the role of Berry phases in anisotropic ferromagnets. In doing so, he often elucidated new aspects of standard theories. The scope of his knowledge, which spans the entire field of theoretical solid state physics, is especially evident in numerous overview articles he published about hot topics such as the spin polarisation of nanostructures, quantum nanomagnets, and magnetic semiconductors.

Patrick Bruno studied physics in Saint-Cloud and Paris, where he graduated in solid state physics in 1986. He went on to earn his doctorate in Orsay in 1989. Since 1998 he has been a scientific member of the Max Planck Society and a director at the Max Planck Institute of Microstructure Physics in Halle. In 1999 he was appointed honorary professor at the Martin Luther University Halle-Wittenberg.

Prof. Dr. Magdalena Götz (44), Neuroscience, GSF — National Research Center for Environment and Health, Institute of Stem Cell Research, Neuherberg, and Department of Physiology, Ludwig-Maximilians University, Munich (2.5 million euros)

Ever since she earned her PhD, Magdalena Götz has been researching the molecular underpinnings of brain development, focusing especially on the cerebral cortex. Her discoveries shed entirely new light on the processes that underlie the formation of neurons and the differentiation of the cerebral cortex. Her discovery, that the brain’s glial cells function

as stem cells and can produce neurons, triggered a paradigm shift in neuroscience. In her follow-up research she was able to elucidate a number of factors that control the transition from glial to neuronal cells.

She demonstrated how new cell types can develop from cells that are already differentiated. Her work presents a groundbreaking contribution to the endeavour of directing the targeted differentiation of stem cells and thus solving one of the key problems of applied stem cell research.

Magdalena Götz studied biology in Zurich and Tübingen, where she obtained her doctorate in 1992. She declined several offers of professorship from Scandinavia, the UK and the US. Currently she is a professor and director at the National Research Center for Environment and Health, Institute of Stem Cell Research, in Neuberberg, and she holds a chair at the Ludwig-Maximilians University's Department of Physiology in Munich.

Prof. Dr. Peter Gumbsch (44), Materials Science, Institute for Reliability of Components and Systems (IZBS), University of Karlsruhe, and Fraunhofer Institute for Mechanics of Materials (IWM), Freiburg im Breisgau and Halle /Saale (2.5 million euros)

At the intersection of physics and engineering, Peter Gumbsch works in the field of materials science, where he specialises in the mechanics of materials. In addition to his research on deformation in thin films, he has focused particularly on the dynamics of deformation processes and the dislocations underlying deformation (irregularities in the lattice structure of solid materials) at high velocities. In a similar manner, Peter Gumbsch has analysed the elementary mechanisms of fracture. Using atomistic investigations and the first serious quantum-mechanical calculations of brittle fracture behaviour, he expanded the thermodynamic model that had been the textbook standard with important insights into the breaking of atomic bonds. He is instrumental

in the development of multiscale materials modelling, a cutting-edge discipline used to describe materials across scales, from individual atoms to crystals to complete workpieces.

Following his doctorate in physics at the University of Stuttgart, Peter Gumbsch went to Oxford in 1991 as visiting scientist, before returning to Stuttgart to work at the Max Planck Institute for Metals Research. In 2000 and 2001 he was offered chairs at the Technical University Braunschweig and Ohio State University, both of which he declined in favour of a full professorship in Karlsruhe. He is currently tenured professor for mechanics of materials and head of the Institute for Reliability of Components and Systems at the University of Karlsruhe, as well as director of the Fraunhofer Institute for Mechanics of Materials (IWM) in Freiburg and Halle.

Prof. Dr. Gerald Haug (38), Paleoclimatology, Department of Geodynamics, GeoForschungsZentrum (GFZ) Potsdam, and Department of Geosciences, University of Potsdam (2.5 million euros)

Gerald Haug investigates climate developments over the last several thousand to several million years. On the basis of seabed and lake sediments, he has successfully used innovative methods to reconstruct climate changes in recent Earth history in a number of key regions on our planet. Among other topics, he has examined the causes of climate thresholds and major climate shifts in recent Earth and climate history. He has been able to provide a plausible explanation for one of the oldest mysteries of paleoclimate research — the onset of the major ice ages on the northern hemisphere over 2.7 million years ago — and to demonstrate that the North Pacific is the key source of humidity for the American ice shield and the entire northern hemisphere. He also proved that changes in the physical stratification of polar and subpolar oceans are closely related to alterations in the exchange of the greenhouse gas CO₂ between the ocean and the atmosphere.

Gerald Haug studied geology at the University of Karlsruhe and earned his PhD at the University of Kiel in 1995. After four years as a postdoc in Kiel, Vancouver, Woods Hole, and Los Angeles, he became an assistant professor at the Swiss Federal Institute of Technology (ETH) in Zurich, where he habilitated in 2002. Since 2003 he has headed the “Climate Dynamics and Sediments” section at the GeoForschungsZentrum (GFZ) in Potsdam and taught at the University of Potsdam.

Prof. Dr. Bernhard Jussen (47), Medieval History, Faculty of History, Philosophy and Theology, University of Bielefeld (2.5 million euros)

Bernhard Jussen’s work reflects the growing interest of historians in the rapidly developing discipline of cultural studies. In interdisciplinary and international projects he has illuminated the relationship between power and order, between the creation of meaning and zeitgeist, especially from a semantic angle. Going beyond a merely descriptive approach, he has taken advantage of the entire spectrum of anthropological and ethnological methods in order to examine the mentalities and categories of moral action that form the basis of social orders and of political and social activities. Another of his research interests is the artistic representation of history. At this interface of art history and cultural history, of artistic practice and production, he collaborates with researchers in other countries to examine the viability of pictorial sources as an interdisciplinary field of study in the humanities.

Bernhard Jussen studied history, philosophy and Catholic theology in Munich and Münster, earned his PhD at the University of Münster in 1988, and habilitated at the University of Göttingen in 1999. His past positions include research fellow at the Max Planck Institute for History in Göttingen, visiting fellow in Paris and Oxford, and visiting professor at the University of Michigan, Ann Arbor. For four years he has been teaching medieval history at the University of Bielefeld, where he also

heads the School for Historical Research.

Prof. Dr. Guinevere Kauffmann (37), Astrophysics, Max Planck Institute for Astrophysics, Garching (2.5 million euros)

Guinevere Kauffmann investigates the evolution of galaxies using extensive observations of the sky. She has demonstrated how dark matter structures can serve as a skeletal framework to construct an evolutionary model for the galaxy population as a whole. Her work shows how this evolutionary model can be included in computer simulations of the cosmic structure. Furthermore, she was the first to consider the growth of supermassive black holes in such models, allowing studies of the connection between the growth of black holes and their host galaxies. She demonstrated that one can obtain realistic stellar masses for almost all galaxies. Her publications show that the galaxy population can be divided into two almost entirely distinct classes. For small stellar masses, galaxies are usually discy, diffuse, gas-rich, and star-forming, whereas higher stellar-mass galaxies are generally elliptical, concentrated, and gas-poor, with little star formation.

Guinevere Kauffmann completed her studies at the University of Cape Town with a Master of Science in astronomy and received a PhD in astrophysics from the University of Cambridge in 1993. After that she worked at the Max Planck Institute for Extraterrestrial Physics before switching to the Max Planck Institute for Astrophysics in 1996, where she has been a research group leader since 2003.

Prof. Dr. Falko Langenhorst (42), Mineralogy and Petrology, Institute of Geosciences, University of Jena (2.5 million euros)

Falko Langenhorst looks at the impacts of celestial bodies colliding with Earth, as well as with other planets and moons, which have played a major role in the evolution of our planet and the solar system. He

focuses especially on the basic physics and chemistry of impact processes and their effects on the biosphere (“astromineralogy”). Falko Langenhorst was the first to detect high-pressure minerals in the Martian meteorite Zagami, which itself had been ejected from the surface of Mars by a meteorite and flung all the way to Earth. For the impact event that produced this Martian meteorite, Langenhorst has been able to determine pressures of about 300,000 bars and temperatures of 2,400 to 2,500 degrees Celsius. He also received great international attention for his research on the crystal chemistry of perovskite, a main component of Earth’s lower mantle.

Falko Langenhorst studied mineralogy in Gießen and Münster, where he got his PhD in 1993 before he went to Lille as a postdoc. Since 2004 he has held the chair for general and applied mineralogy in Jena. His high international reputation is reflected in numerous honours, such as his membership in the Academia Europaea and a fellowship from the Japanese Society for the Promotion of Science.

Prof. Dr. Oliver Primavesi (45), Classical Philology, Department of Classical Philology, Ludwig-Maximilians University, Munich (2.5 million euros)

Oliver Primavesi is a Grecian with an unusually broad scope who has successfully initiated a dialogue between his discipline and ancient philosophy. Furthermore he has presented important interpretations of Homer’s works and prepared the reconstruction of a lost Aristotelian treatise on the Pythagoreans by using Aristotle quotations found in other authors’ writings. Together with Alain Martin, he edited the Strasbourg Empedocles papyrus. For the first time, this edition makes a pre-Platonic philosophical text palpable in original fragments and, contrary to popular textbook opinion, portrays the philosopher not as representative of a wide-ranging emancipatory movement away from religious myth and toward the philosophical logos; rather, he shows how intricately

cosmology and science, religion and philosophy of nature, myth and logos are interwoven in Empedoclean thought.

Oliver Primavesi initially studied music with success, but then decided to switch to classical philology. After studying in Heidelberg and Oxford, he obtained his doctorate in Frankfurt, where he went on to qualify as a university lecturer in 1997. Following a brief interlude as lecturer at the University of Frankfurt, he accepted a chair at the Ludwig-Maximilians University in Munich in 2000. Here he is currently professor of Greek philology. Primavesi was awarded the Prix Reinach by the Association pour l'Encouragement des Études Grecques (Association for the Promotion of Greek Studies), and the Prix Joseph Gantrelle by the Académie Royale de Belgique (Belgian Royal Academy).

Prof. Dr. Detlef Weigel (44), Plant Developmental Biology, Max Planck Institute for Developmental Biology, Tübingen (2.5 million euros)

Detlef Weigel is one of the leading international scientists in the field of plant developmental biology. His work on flower development, the regulation of flowering, and the evolution of adaptive traits was groundbreaking and secured him unanimous international recognition. By expressing the flower-identity gene *LEAFY* in aspen plants, he was able to reduce the tree's flowering time, which is normally more than eight years, to just a few months. This is significant especially in regard to the acceleration of marker-assisted breeding programmes, where earlier flowering saves a lot of time.

Detlef Weigel studied biology in Bielefeld and Cologne. In 1988 he earned his doctorate with a thesis on neurogenetic and developmental processes in *Drosophila* (fruit flies) as model organisms. During his postdoctoral training in Pasadena he made the transition to plant molecular biologist. Between 1993 and 2002, he was at first assistant, then associate professor at the Salk Institute for Biological Studies in La

Jolla. In 2002 he became a director at the Max Planck Institute for Developmental Biology in Tübingen, where he heads the Molecular Biology Department.

The award ceremony for the Gottfried Wilhelm Leibniz Programme 2007 will take place on 13 March 2007, 3:00 PM, at the Berlin-Brandenburg Academy of Sciences and Humanities in Berlin. The prizes will be awarded by the new President of the DFG, Professor Matthias Kleiner.

Source: Deutsche Forschungsgemeinschaft

Citation: Leibniz Prize winners 2007 announced (2006, December 13) retrieved 26 April 2024 from <https://phys.org/news/2006-12-leibniz-prize-winners.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.