Boehringer Ingelheim Stiftung

2015

HEINRICH WIELAND PRIZE

AWARD SYMPOSIUM OF THE 2015 HEINRICH WIELAND PRIZE

Nymphenburg Palace, Munich, Germany
Friday, November 6, 2015

HEINRICH WIELAND PRIZE

The international Heinrich Wieland Prize honours distinguished scientists for their outstanding research on biologically active molecules and systems in the fields of chemistry, biochemistry, and physiology, as well as on their clinical importance. The prize is endowed with 100,000 euros by the Boehringer Ingelheim Foundation and named after Heinrich Wieland (1877–1957), Nobel Laureate in Chemistry in 1927.

Every year the foundation invites scientists to make nominations in an open call. It entrusts the selection of the awardees to a Scientific Board of Trustees, all of whom work in an honorary capacity (see page 7 for current members). Presented yearly since 1964, the Heinrich Wieland Prize counts four subsequent Nobel Laureates among its awardees.

www.heinrich-wieland-prize.de

PROGRAMME

AWARD SYMPOSIUM

3:00 PM	**Registration**
3:30 PM	**Welcome and opening remarks** Professor Dr Wolfgang Baumeister, Chair of the Board of Trustees of the Heinrich Wieland Prize, MPI of Biochemistry, Martinsried, Germany
3:40 PM	**"Neuronal circuit dysfunction in Alzheimer's disease"** Professor Dr Arthur Konnerth, Technische Universität München (TUM), Munich, Germany
4:20 PM	**"Restoring vision using optogenetics"** Professor Botond Roska, MD, PhD, Friedrich Miescher Institute for Biomedical Research (FMI), Basel, Switzerland
5:00 PM	**Coffee break** including **"Meet the Speakers"** for selected students
5:45 PM	**"A circuit model of addiction"** Professor Dr Christian Lüscher, University of Geneva, Geneva, Switzerland
6:30 PM	**Award ceremony**
	Moderation Dr Claudia Walther, Managing Director of the Boehringer Ingelheim Foundation, Mainz, Germany
	Musical prelude Wolfgang Amadeus Mozart (1756–1791), Divertimento in D major, KV 136, Presto
	Laudation Professor Dr Bert Sakmann, Technische Universität München (TUM), Munich, Germany
	Award presentation to Professor Gero Miesenböck, MD, University of Oxford, Oxford, UK, by Otto Boehringer, Chairman of the Executive Board of the Boehringer Ingelheim Foundation, Mainz, Germany, and Professor Dr Wolfgang Baumeister
	Award lecture **"Lighting up the brain"** Professor Gero Miesenböck, MD
	Musical conclusion Ludwig van Beethoven (1770–1827), String Quartet No 9 in C major, Op. 59/3, Allegro Molto
7:45–9:00 PM	**Get-together**

Music by the Goldmund Quartet: Florian Schötz (violin), Pinchas Adt (violin), Christoph Vandory (viola), and Raphael Paratore (cello).

Professor Gero Miesenböck
University of Oxford, Oxford, UK

The neuroscientist Gero Miesenböck is honoured with the Heinrich Wieland Prize for his conception and first experimental demonstration of optogenetics. Hailed as "breakthrough of the decade", optogenetics is revolutionizing the field of neuroscience by enabling researchers to switch specific nerve cells on or off within living animals, thus helping them to uncover the cellular basis of complex behaviour. This is achieved by genetically modifying the cells so that their activity can be controlled with light. Gero Miesenböck uses optogenetic tools in fruit flies to understand how neuronal circuits process information.

Gero Miesenböck studied medicine at the University of Innsbruck, Austria, and did postdoctoral research at the Memorial Sloan-Kettering Cancer Center, New York, USA. He was on the faculty of Cornell University and Yale University, USA, before joining the University of Oxford, UK, in 2007, where he is Waynflete Professor of Physiology and founding director of the Centre for Neural Circuits and Behaviour.

SPEAKERS

Professor Dr Arthur Konnerth

Technische Universität München (TUM), Munich, Germany

Arthur Konnerth studies the way synapses interact in learning and memory. Using pioneering imaging techniques such as two-photon fluorescence microscopy, he determined the function of nerve cells in the brain of living animals. He and his team pioneered *in vivo* two-photon imaging of cortical circuits with single cell resolution. More recently, they developed the LOTOS (low power temporal oversampling) method of high-resolution two-photon calcium imaging and used it for the functional mapping of inputs to neurons on the single synapse level *in vivo*. This work advanced our understanding on how neurons compute input to reach decisions.

Arthur Konnerth studied medicine at the Ludwig-Maximilians-Universität München (LMU), doing his graduate studies at the MPI for Psychiatry, both Munich, Germany. After completing his postdoctoral research at the University of Pennsylvania, Philadelphia, USA, and at the MPI for Biophysical Chemistry in Göttingen, Germany, he became professor at the University of Saarland, Germany. In 1999 he returned to Munich, where he held professorships at both Universities – TUM and LMU. Since 2005 he is the Friedrich-Schiedel Professor and director of the Institute of Neuroscience at TUM.

Professor Dr Christian Lüscher

University of Geneva, Geneva, Switzerland

Christian Lüscher studies the cellular mechanisms that change in nerve cells and their synapses due to drug addiction. He aims at correlating these drug-induced changes with behaviour and designs ways to reverse them to combat addiction. His lab uses a wide range of methods including electrophysiology *in vitro* and *in vivo*, knockout approaches, and optogenetics. Lüscher has already shown that a combination of optogenetics and artificial stimulation of nerve cells can reverse drug-induced changes in cocain-addicted mice.

Christian Lüscher studied medicine in Lausanne and Bern, Switzerland, continuing with a residency in neurology. In 1996 he went to the University of California, San Francisco, USA, for a Postdoc. He returned to Switzerland in 1999 to the University of Geneva, Department of Basic Neurosciences, where he has been a full professor since 2009.

SPEAKERS

Professor Botond Roska, MD, PhD

Friedrich Miescher Institute for Biomedical Research (FMI), Basel, Switzerland

Botond Roska studies the structure and function of retinal circuits. By combining physiological, molecular, viral and computational approaches, he has fundamentally advanced our knowledge of neuronal circuits in the mammalian retina, thalamus, and visual cortex. Using optogenetic tools, he managed to reactivate retinal function, at least partially, in mouse models of blindness caused by retinal diseases. His goal is to advance this therapy for use in human patients with, for example, *retinitis pigmentosa*.

Botond Roska studied medicine at the Semmelweis University in Budapest, Hungary, and neurobiology at the University of California, Berkeley, USA. After his PhD in 2002 he was awarded a Harvard Junior Fellowhip in the Department of Genetics at the Harvard Medical School, Boston, USA. In 2005 he joined the Friedrich Miescher Institute for Biomedical Research, Basel, Switzerland, where he now is a senior group leader. In 2010 he became an adjunct professor at the Faculty of Medicine, University of Basel, Switzerland.

Professor Dr Bert Sakmann

Technische Universität München (TUM), Munich, Germany

Bert Sakmann shared the Nobel Prize with Erwin Neher in 1991 for their revolutionary patch clamp technique with which they were able to show for the first time that specific ion channels exist. With it, they measured small electrical currents from single ion channels and unravelled how cells use these to communicate across membranes. Sakmann's most recent research analyses the functional anatomy of circuits in the cerebral cortex that form the basis of behaviours like decision-making. Using large scale, high-resolution light and electron microscopy, he reconstructs the different cell types in the layers of the brain and their connections. By simulating signal flows, he aims to identify at which part of the circuit sensory input is turned into behavioural output.

Bert Sakmann studied medicine at the Universities of Tübingen and Munich, Germany. After working at the MPI of Psychiatry in Munich and the University College London, UK, he moved to the MPI for Biophysical Chemistry in Göttingen, Germany, where he became director in 1983. In 1988 he changed to the MPI for Medical Research in Heidelberg, Germany, also as director. He now heads emeritus groups at the MPI of Neurobiology in Martinsried, Germany, and the Max Planck Florida Institute for Neuroscience, Jupiter, USA, as well as a group at the TUM, Munich, Germany.

Heinrich Otto Wieland was born on July 4, 1877, in Pforzheim, Germany. Wieland studied chemistry at the Ludwig-Maximilians-Universität München (LMU), Munich, Germany, where he received his doctorate in 1901 and was appointed "außerordentlicher Professor" in 1909. At this time he was already interested in oxidation processes in the living cell, one of the foundation stones of the field of biochemistry. He worked at the Technische Universität München (TUM) and LMU until 1921 as well as at the Kaiser Wilhelm Institute in Berlin-Dahlem. He then accepted a call to the University of Freiburg, but returned to LMU in 1925 to succeed Richard Willstätter as Chair of Chemistry. He retired in 1952 and died in Munich on August 5, 1957.

Heinrich Wieland received numerous awards, among them the 1927 Nobel Prize in Chemistry for his pioneering investigations of bile acids and related substances.

Heinrich Wieland was a cousin of Albert Boehringer, the founder of the company Boehringer Ingelheim. As early as 1903 Wieland worked with the company and in 1917 his consultancy led to the company's first scientific department dedicated to innovative research. His scientific findings made it possible, for example, to produce drugs against cardiovasular and respiratory diseases.

The Board of Trustees of the Heinrich Wieland Prize
Its current members are the following professors:

Wolfgang Baumeister (chair) – Max Planck Institute of Biochemistry, Martinsried, Germany
Georg Ertl – University Hospital of Würzburg, Germany
Alois Fürstner – Max-Planck-Institut für Kohlenforschung, Mülheim an der Ruhr, Germany
Dame Carol Robinson – University of Oxford, UK
Walter Rosenthal – Friedrich Schiller University Jena, Germany
Gerd Schnorrenberg – Boehringer Ingelheim Pharma GmbH & Co KG, Biberach, Germany
Petra Schwille – Max Planck Institute of Biochemistry, Martinsried, Germany
Rudolf Tauber – Charité – University Medicine Berlin, Germany
Dirk Trauner – Ludwig-Maximilians-Universität München (LMU), Germany
Felix Wieland – University of Heidelberg, Germany
Hanns Ulrich Zeilhofer – ETH and University of Zurich, Switzerland

2015

HEINRICH WIELAND PRIZE

BOEHRINGER INGELHEIM FOUNDATION

The Boehringer Ingelheim Foundation is an independent, non-profit organization committed to the promotion of the medical, biological, chemical, and pharmaceutical sciences. It was established in 1977 by Hubertus Liebrecht (1931–1991), a member of the shareholder family of the company Boehringer Ingelheim. With the Plus 3 Perspectives Programme and the Exploration Grants, the foundation supports independent junior group leaders. It also endows awards for up-and coming scientists. In addition, the foundation provides funds of 100 million euros over ten years to support the scientific running of the Institute of Molecular Biology (IMB), Mainz, Germany, and 50 million euros for the development of the life sciences at the University of Mainz.

Boehringer Ingelheim Stiftung

CONTACT

Boehringer Ingelheim Foundation
Schusterstr. 46–48
55116 Mainz
Germany
Phone +49 (0) 6131 27 508-0
Fax +49 (0) 6131 27 508-11
E-mail secretariat@bistiftung.de
www.heinrich-wieland-prize.de
www.bistiftung.de