



Foundation

Science Awards

Identifying outstanding scientific talents & breakthrough research topics in the life sciences and providing unique opportunities for collaboration in science

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Our awards recognize outstanding leaders in the life sciences. In honoring their breakthrough discoveries, we aim to inspire others and foster collaborations to translate fundamental discoveries into innovation to drive societal progress.

Monika Lessl,
Executive Director Bayer Foundation

Our **Objective**

Bayer Foundation shines a light on exceptional **achievements in fundamental scientific research**, highlighting **outstanding young scientists** with the potential to **transform their fields**, as well as recognizing the **paradigm-shifting contributions** of world leading experts.

In honoring these exceptional people, we not only reward their past achievements, but we bring their **expertise and discoveries** to a diverse audience of scientists, innovators and beyond. By sharing knowledge and expertise widely, we open the door to **new collaborations, to investment in important areas of research**, and ultimately, we further **enhance the impact of science**.

Overview — **Science Awards**

The Bayer Foundation recognizes **outstanding achievements** in scientific research, promotes brilliant young scientists and honors the **pioneering contributions** of world-leading experts.

Otto Bayer Award

Since 1984, world leading researchers who have made pioneering discoveries within the fields of **chemistry and biochemistry** are celebrated with the **Otto Bayer Award**.

These outstanding scientists are recognized for work that has typically been fundamental to the wholistic advancement of their field. The award is presented **every second year** in alternation with the Hansen Family Award and comes with a **prize money of 75,000€**.

The award was established following a generous provision in the will of **Prof. Otto Bayer**. A trained chemist, he established a reputation as an **outstanding researcher** at a young age and subsequently became the **director of research at Bayer**.

He is ultimately credited with **invention of polyurethane-based materials**, a revolutionary family of plastics that are still **critical to many aspects of our everyday lives**. Following his death at the age of 79 in 1982, a generous provision in his will ensured that the **Otto Bayer Award** could be established in his memory.



Who Is Eligible?

Worldwide recognized scientists **based in German-speaking** countries with a long-term track record of ground-breaking research in **chemistry, or biochemistry**.



The Process

Awardees are nominated by **senior members of renowned scientific institutions** from across the globe or by **scientific leaders across research & development at Bayer**. Self-nominations are not eligible. The winners are selected by an **independent panel of scientific experts, the Bayer Foundation Science Council**.

Hansen Family Award

Since 2000, the **Hansen Family Award** recognizes leading scientists for exemplary research in **medicine, biological sciences and related fields**.

Brilliant researchers are recognized for their ground-breaking discoveries with the potential to drive innovation in medicine. The award is presented **every second year** in alternation with the Otto Bayer Award and comes with a **prize money of 75,000 €**.

This award was generously established in 2000 by **Prof. Kurt Hansen**, a former Chairman of the Board and Supervisory Board at Bayer. He established a **foundation to promote the teaching of science**, a program that is **still running today**, as well as **establishing the Hansen Family Award**. Prof. Hansen died in 2002 at the age of 92.



Who Is Eligible?

Worldwide recognized scientists **based in German-speaking** countries with a long-term track record of ground-breaking research in **medicine, biological sciences or related fields**.



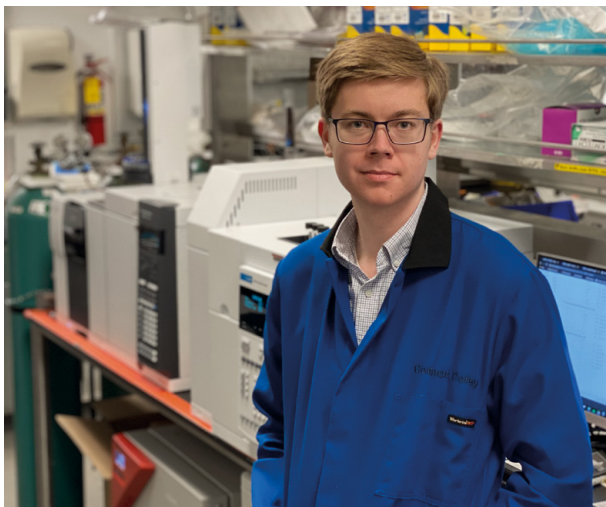
The Process

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Early Excellence in Science Awards

Launched in 2009, the annual Early Excellence in Science Awards identify the **rising stars of science** across the globe in four disciplines: **Biology, Chemistry, Medical Science, and Data Science.**

With these awards, we showcase the inspiring work of game changing early-career scientists demonstrating pioneering research in their fields. The awards are presented **every year** and come with a **prize money of 10,000 €** each.



Who Is Eligible?

Outstanding early career scientists with a proven record of excellence and having completed their **PhD or MD no more than seven years ago.**

There is **no geographical restriction** on the location of the nominee and time taken for parental leave or other exceptional circumstances does not contribute to the five-year period.



The Process

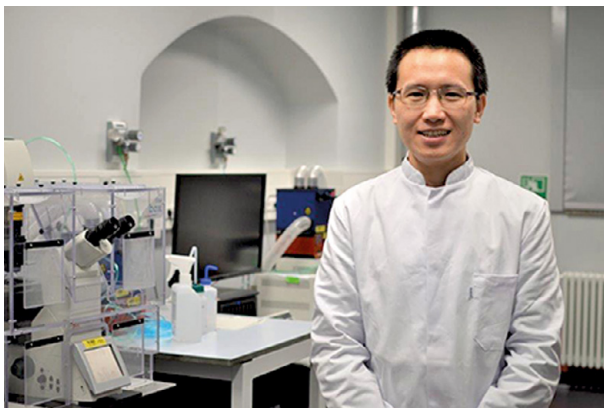
Awardees are nominated by **senior members of renowned scientific institutions** from across the globe or by **scientific leaders across research & development at Bayer.**

Self-nominations are not eligible. The winners are selected by an **independent panel of scientific experts, the Bayer Foundation Science Council.**

Bayer Thrombosis Research Award

The **Bayer Thrombosis Research Award** was established in 2011 and is presented to early career researchers that have already made **outstanding contributions in basic or clinical thrombosis research.**

The recognition is given **every two years** with a **prize money of 30,000 €**. The award was kindly established by Bayer scientists **Dr. Frank Misselwitz, Dr. Dagmar Kubitzka** and **Dr. Elizabeth Perzborn** being awarded the German Future Prize (“Deutscher Zukunftspreis des Bundespräsidenten”) for the **invention of the anticoagulant Xarelto®** in 2009. Bayer matched the donation by an equal installment.



Who Is Eligible?

Outstanding early career scientists **based in German-speaking countries** with a proven record of excellence and having completed their **PhD or MD no more than five years ago**. Nominees should have a proven track record of outstanding basic or clinical research into thrombosis, particularly on the diagnosis, prevention, and therapy of thromboembolic diseases, including epidemiology and health policy approaches. Time taken for parental leave or other exceptional circumstances does not contribute to the five-year period.



The Process

Awardees are nominated by **senior members of renowned scientific institutions** from across the globe or by **scientific leaders across research & development at Bayer**. Self-nominations are not eligible. The winners are selected by a **panel of internal and external experts in the field.**

Ernst-Ludwig Winnacker Award

In 2021, the **Ernst-Ludwig Winnacker Award for enhancing the impact of science for the benefit of society** was established by the Bayer Foundation.

The award acknowledges those who **stand-up for science and the scientific method**, and consequently **enhance the impact of science** for the benefit of society. This award is not given in recognition of excellence in scientific research but for **engaging in evidence-based scientific discussion** in a public, political, industrial, or educational setting.

The recognition is given **every second year** with a **prize money of 3,000 €** in addition the winner gets access to up to **10,000 € for future projects**.

Ernst-Ludwig Winnacker is one of the most prominent and influential **biochemists** across the globe. In addition to his outstanding scientific career and many professional roles, he also chaired the **Board of Trustees at Bayer Foundation from 2007–2019**. The award was established in 2021 on the occasion of Ernst-Ludwig Winnacker's 80th birthday to honor his contributions to the dialogue between **science and society**.



Who Is Eligible?

Anyone with **significant contributions** in German-speaking countries. Awardees can be recognized for actions such as:

- // **Championing science** or the **scientific method** in public discourse
- // Effectively addressing **incorrect scientific communication** or **decision making**
- // Driving **evidence-based policy** decision making (political, industrial, educational)
- // **Societal engagement** on **critically** important yet controversial scientific topics
- // Fostering **constructive dialogue** about science within society
- // Promotion of science in the face of a **challenging environment**



The Process

Nominations will be invited from **leading voices in science** across German speaking countries and the winner will be selected by the **Science Council of Bayer Foundation** and selected guests, including **Prof. Ernst-Ludwig Winnacker**.



Prof. Edith Heard

Director General at The European Molecular Biology Laboratory (EMBL) in Heidelberg



Prof. Regine Kahmann

Emeritus Acting Head at the Max Planck Institute for Terrestrial Microbiology in Marburg



Prof. Lothar Willmitzer

Former Director at the Max Planck Institute of Molecular Plant Physiology in Potsdam



Prof. Dirk Trauner

Penn Integrates Knowledge Professor at the University of Pennsylvania

Governance

Bayer Foundation Science Council

Members of the Science Council **select the winners of the Foundation's science awards.** They also **provide advice** to shape the Foundation's programs, ensuring they **reflect advancements in the life sciences.**

Overview —————

Award Winners

Since our first awards in 1984, we have recognized more than **80 brilliant minds** including **Nobel laureates** Benjamin List, Emmanuelle Charpentier, Stefan Hell, and Christiane Nüsslein-Volhard and have recognized fields ranging from **synthetic biology, plant genetics, molecular spectroscopy, machine learning** and so much more.



Winners of the**Otto Bayer Award**
for Chemistry
and Biochemistry —**2022**

Frank Glorius
University of Münster,
Münster Germany
Catalysis

For the development of an extensive array of groundbreaking catalytic reactions for organic synthesis, facilitating the sustainable synthesis of organic molecules with high levels of selectivity and purity that offer outstanding value for medical and agricultural applications.

2020

Ruth Ley
Max-Planck-Institut für Entwicklungsbiologie,
Tübingen, Germany
Microbiome

For her groundbreaking discoveries of the importance of human gut microorganisms for human health. She was the first scientist revealing the link between the composition of the human microbiome and the occurrence and manifestation of obesity in humans. Her scientific work has sparked novel research paths towards the understanding of the involvement of the human microbiome in metabolic disorders, neurological diseases, and cancer. Her work will certainly support the development of new therapies to treat serious human diseases.

2018

Tobias Erb
Max-Planck-Institut für terrestrische Mikrobiologie,
Marburg, Germany
Synthetic Biology

For outstanding achievements in the field of synthetic biology, especially the application of artificial photosynthesis. His work is about creating novel enzymes and pathways for the capture and conversion of greenhouse gas carbon dioxide. He has successfully designed an artificial photosynthesis process that is more efficient than the natural one evolved in plants. Transplanting this process into plants, algae or synthetic cells could lead to crops with improved productivity or novel processes in chemistry that meets human energy and requirements and at the same time reduce CO₂ from the atmosphere.

2016

Dirk Trauner
Ludwig-Maximilian-University Munich,
Munich, Germany
Photopharmacology

For his pioneering contributions in Photopharmacology and Chemical Optogenetics. Trauner developed novel synthetic photoswitches that can sensitize a wide variety of cellular receptors toward light. His work has potential to open new chemotherapeutical treatment opportunities, including chemical treatment strategies to cure blindness and cancer.

2014

Frédéric Merkt
Laboratory for Physical Chemistry, ETH Zürich,
Zürich, Switzerland
Molecular Spectroscopy

For his outstanding contributions in Molecular Spectroscopy and the characterization of highly-electronically excited atoms and molecules by high-resolution spectroscopic and XUV laser technology developments. The work of Prof. Merkt made significant contributions to the understanding of the basic chemical structure, bonding and physical behavior of molecules and ions, and to the investigation of unusual properties in high molecular Rydberg states.

2012**Benjamin List****Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany***Organocatalysis*

For his outstanding achievements in the field of organo-catalysis. Around 80 percent of all chemical products are manufactured with the help of catalyst, making processes efficient and help to save resources. List's work on enamine catalysis and symmetric counteranion directed catalysis (ACDC) opens up a new path towards more sustainable chemistry.

2010**Detlef Weigel****Max-Planck-Institut für Entwicklungsbiologie,
Tübingen, Germany***Plant Genetics*

For his outstanding contributions to the understanding of molecular-biological principles governing the variability of plants. His results in genome research enhance the predictability of the responses from crop plants to rapid environmental changes, and thus help to understand how apparent genetic disadvantages might become advantages under changing environmental conditions. This understanding will accelerate the use of green genetic engineering in crop science technologies and agricultural strategies.

2008**Thomas Carell****Ludwig-Maximilian-University,
Munich, Germany***DNA Research*

For his outstanding work on understanding the development of damage to deoxyribonucleic acid – particularly through UV light – and DNA repair processes, development of cancer and aging processes. These research findings could have tremendous practical significance, for example in the detection of chemical compounds as mutagens, and the analysis of resistance development in drugs whose mode of action – as with many cancer treatments – is based on an interaction with the DNA.

2006**Alois Fürstner****Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany***Organic Synthesis*

For his outstanding work in the field of organometallic chemistry, including especially catalysis research and its application in the production of complex natural substances. At the focus of these activities are extensive studies on the metathesis of alkenes and alkynes, and the development of new concepts for homogeneous catalysis. The breakthroughs achieved here enable elegant total synthesis of numerous natural substances such as macrolides, alkaloids and glycoconjugates.

2003**Christian Griesinger****Max-Planck-Institut für biophysikalische Chemie,
Göttingen, Germany***NMR Techniques*

For his outstanding achievements in the field of magnetic resonance spectroscopy. The method he developed for three-dimensional magnetic resonance spectroscopy enabled the identification of highly complex protein structures. This in turn has made possible important findings on the function of enzymes and key contributions to understanding biological activity in cells.

2001**Herbert Waldmann****Max-Planck-Institut für molekulare Physiologie,
Dortmund, Germany***Chemical Biology*

For his outstanding achievements in the field of bioorganic chemistry. By combining organic chemistry and biological methods, he developed important findings on signal transduction in cells that make an important contribution to the understanding of these highly complex biological processes.

1998

Carsten Bolm
RWTH Aachen,
Aachen, Germany
Catalysis

For his outstanding achievements in the field of preparative chemistry. As a result, the spectrum of enantioselective reactions – particularly as regards aspects of oxidation and carbon-carbon linkages – has been expanded to include a wide range of new chiral ligands, thus considerably broadening knowledge about asymmetric metal catalysis.

Ulrich Koert
University of Marburg,
Marburg, Germany
Organic Synthesis

For his outstanding achievements in the field of preparative chemistry. The stereoselective synthesis of oligotetrahydrofurans enables the buildup of complex molecular structures. Embedded in membranes, such structures enable the simulation and study of natural phenomena such as sodium or potassium transport in ion channels.

1996

Stefan Jentsch
Max-Planck-Institut für Biochemie,
Martinsried, Germany
Ubiquitinylation

For his outstanding achievements in the field of cell biochemistry. Based on his molecular biological analyses on the makeup of the ubiquitin proteasome system in yeasts, his research led to the conclusion that the systematic breakdown of protein is vital and of critical regulative importance for the organism of all living things, including humans.

1995

Paul Knochel
Ludwig-Maximilian-University Munich,
Munich, Germany
Organic Synthesis

For his outstanding achievements in the field of organometallic chemistry. His research particularly into functionalized zinc and copper organyles provided astoundingly simple solutions for many reactivity and chemoselectivity problems. In this way, he opened up new and efficient synthesis paths to polyfunctional molecules that were previously difficult to access by traditional means.

Gerhard Ecker
University of Münster,
Münster, Germany
Organic Synthesis

For his outstanding achievements in the field of organometallic chemistry. His research particularly into organozirconium chemistry led to the implementation of mechanistic concepts in reactions of preparatory importance for organic chemistry and polymer chemistry. Also, of fundamental importance are his analyses of the elementary steps of important organometallic reactions with respect to the reactivity behavior and mechanism.

1994

Robert Schlögl
Fritz Haber Institute of Max Planck Society,
Berlin, Germany
Catalysis

For his outstanding achievements in the field of heterogeneous catalysis. His research into the characterization of the microstructure of industrial catalysts' enabled surface-physical analyses with model systems that are of elementary importance for understanding catalytic processes.

1993

Dieter Hoppe
University of Münster,
Münster, Germany
Organic Synthesis

For his outstanding achievements in the development of extraordinarily effective and practical methods for enantio- and diastereoselective active substance synthesis based on carbanion chemistry in connection with chiral identification through supramolecular interactions. The synthesis building blocks he created represent fundamentally new developments and provide solutions for previously unresolved synthetic problems.

François Diederich
ETH Zürich,
Zürich, Switzerland
Organic Synthesis

For his outstanding achievements in connection with molecular identification using cyclophane-type receptors and with the chemistry of low-molecular and polymeric carbon allotropes and carbon-rich compounds, for which he enabled widespread and fundamentally new preparative access.

1992

Christiane Nüsslein-Volhard
Max-Planck-Institut für Entwicklungsbiologie,
Tübingen, Germany
Developmental Biology

For her outstanding achievements in the field of developmental biology. Her groundbreaking analysis of the pattern formation mutants of the fruit fly *Drosophila* played a key role in explaining the genetic steering of embryonic development (Nobel Prize in physiology or medicine 1995).

Herbert Jäckle
Max-Planck-Institut für biophysikalische Chemie,
Göttingen, Germany
Developmental Biology

For his outstanding achievements in the field of developmental biology. His molecular-biological characterization of the first segmentation genes active in the *Drosophila* embryo and their interplay as the basis for further pattern formation led to embryological insight of fundamental importance.

1991

Martin Quack
ETH Zürich,
Zürich, Switzerland
Physical Chemistry

For his outstanding achievements in the field of intramolecular molecular dynamics and kinetics – for new approaches in connection with the theory of unimolecular processes and with the mechanism for infrared photochemistry, as well as for taking into account dynamic aspects in high-resolution spectroscopy. In this way he provided key impulses for understanding elementary chemical reactions.

1990

Kurt Peter C. Volhardt
University of California,
Berkeley, CA, USA
Organic Synthesis

For his outstanding achievements in the field of organometallic synthesis, and particularly for the systematic expansion of cobalt-mediated [2+2+2] cycloaddition. He succeeded in using the high selectivity of this reaction to display theoretically interesting molecules and for the total synthesis of complex natural substances.

1990

Wolfgang A. Herrmann
Technical University of Munich,
Munich, Germany
Catalysis

For his outstanding achievements in the field of synthesis and the characterization of transition metal complexes. By opening up new preparative methods, he also provided model compounds for stoichiometric and catalytic reactions that are of great importance in understanding the fundamental steps that take place on catalyst's surfaces.

1989

Helmut Schwarz
Technical University of Berlin,
Berlin, Germany
Organic Synthesis / Reaction Mechanisms

For his outstanding achievements in the field of organic mass spectrometry – for explaining the decomposition of low-energy organic ions in the gas phase and the elementary processes that take place in this connection. By combining a wide variety of techniques, he succeeded in determining the structures of unusual rearrangement products through experiment and calculation.

1988

Hartmut Michel
Max-Planck-Institut für Biophysik,
Frankfurt, Germany
Photosynthesis Receptors

Johann Deisenhofer
Max-Planck-Institut für Biochemie,
Martinsried, Germany
Photosynthesis Receptors

For their outstanding achievements in explaining the three-dimensional structure of the photosynthetic reaction center of the purple bacterium *Rhodospseudomonas viridis*. These findings have drawn tremendous international acclaim, providing key impulses both to research into other membrane proteins and to photosynthesis research (Nobel Prize in chemistry 1988).

1987

Martin Jansen
University of Bonn,
Bonn, Germany
Material Science

For his outstanding achievements in the field of solid-state research – for the exploration of numerous oxidic and particularly binary systems. Partly through new preparatory methods, he succeeded in exploring and comprehensively characterizing previously unknown or insufficiently described products.

Arndt Simon
Max-Planck-Institut für Festkörperforschung,
Stuttgart, Germany
Material Science

For his outstanding work in the field of solid-state research, with regards to cluster chemistry questions. Using special synthesis and analysis methods, he succeeded in gaining key insight into the general structural principles and properties of the analyzed systems.



1986**Manfred T. Reetz****Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany***Organometallics*

For his outstanding achievements in the field of organic synthesis with organometallic compounds, and particularly for the development of stereoselective synthesis methods. These processes have provided crucial impulses to conventional organic chemistry and are now widely used in natural substance synthesis.

Horst Kessler**Technical University of Munich,
Munich, Germany***NMR Techniques*

For his outstanding achievements in the field of dynamic stereochemistry and particularly for the development of two-dimensional NMR spectroscopy for conformation analysis and its use in bioactive molecules such as peptides. This method is an efficient alternative to X-ray structure analysis in conformation.

1985**Klaus Hahlbrock****Max-Planck-Institut für Pflanzenzüchtungsforschung,
Cologne, Germany***Plant Genetics*

For his outstanding achievements in the field of plant genetics, particularly for explaining the biochemical and molecular mechanisms with which plants are able to defend themselves against disease pathogens. This provided fundamental knowledge on resistance breeding in plants.

Jozef Schell**Max-Planck-Institut für Pflanzenzüchtungsforschung,
Cologne, Germany***Plant Genetics*

For his outstanding achievements in the field of plant genetics, particularly for the development of a transfer and expression mechanism for new genetic information in plant cells. This provided a vital basis for developmental biology, plant-molecular biology and plant breeding.

Heinz Saedler**Max-Planck-Institut für Pflanzenzüchtungsforschung,
Cologne, Germany***Plant Genetics*

For his outstanding achievements in the field of plant genetics, particularly for the isolation in plants of so-called “transposable elements” and the analysis of their behavior at the molecular level. The application of “transposable elements” in the isolation and regulation of genes is a fundamental prerequisite for genetic engineering in plants.

1984**Gerhard Wegner****Max-Planck-Institut für Polymerforschung,
Mainz, Germany***Material Science*

For his outstanding achievements in the field of polymer science and to support his future scientific research. The award thus recognizes his internationally leading work on structural property relationships in polymers, and his findings with regard to the importance of interdisciplinary research for the further development of polymer science and techniques as well as the importance of cooperation between industry and universities.

Winners of the

Hansen Family Award for Medicine, Biological Sciences and Related Fields

2023

Claudia Höbartner
University of Würzburg,
Würzburg, Germany
Catalytic Nucleic Acids

For her pioneering research in biomolecular chemistry towards structural and mechanistic characterization and application of functional nucleic acids, with particular focus on catalytic RNA (ribozymes) and catalytic DNA (deoxyribozymes).

2021

Kai Johnsson
Max-Planck-Institut für medizinische Forschung
Heidelberg, Germany
Protein Labelling

For his seminal work establishing distinct approaches to protein labelling in living cells that have enabled broad advances in chemical and cell biology.

2019

Edith Heard
European Molecular Biology Laboratory (EMBL),
Heidelberg, Germany
Epigenetics

For groundbreaking insights and paradigm shifting discoveries in the area of epigenetics. She and her team contribute significantly to our understanding of the interplay between chromatin structure and gene activity, which is essential for the development of new drugs aimed at treating cancer and other diseases.

2017

Jens Claus Brüning
Max-Planck-Institut für Stoffwechselforschung,
Cologne, Germany
Diabetes/Obesity

For groundbreaking insights into the physiology of insulin action and the pathophysiology of insulin resistance. His fundamental discoveries about the role of insulin action in the CNS and his research on systemic feeding control signals and obesity-induced deregulation pathways paved the ground for novel treatment options in obesity and type-2-diabetes mellitus.

Matthias H. Tschöp
Helmholtz Zentrum,
Munich, Germany
Diabetes/Obesity

For paradigm shifting discoveries about gut-brain communication pathways related to hunger signals. His pioneering combination of physiology research with human biology and peptide-based pharmacology has led to breakthrough discoveries resulting in multiple novel drug candidates with unprecedented potential to stop the worldwide obesity and type-2-diabetes pandemic.

2015

Emmanuelle Charpentier
Max-Planck-Forschungsstelle
für die Wissenschaft der Pathogene,
Berlin, Germany
Genome Editing

For her pioneering contributions in harnessing the ancient immune defense system of bacteria – called CRISPR/Cas9 – into a powerful biotech tool which can cut any DNA at any desired position by designing the appropriate guide-RNA. This is an ingenious development with enormous impact on all life science areas.



2013

Hans-Georg Rammensee
The University Hospital Tübingen,
Tübingen, Germany
Cancer Immunology

For his pioneering contributions in cancer immunotherapy. Through active immunization of cancer patients with synthetic “tumor-associated” peptides, he was able to demonstrate the importance of personalized medicine, tailor-made to the specific genetic constellation of a tumor disease. This opens up new opportunities for the treatment of cancer patients by activating the body’s immune system – an important contribution to medical progress.

2011

Stefan Hell
Max-Planck-Institut für medizinische Forschung,
Heidelberg, Germany
Light Microscopy

For his breakthroughs in the field of light microscopy that provide insights into living cells and tissue that were inconceivable before. With his invention and development of Stimulated Emission Depletion (STED) microscopy, Hell revolutionized fluorescence microscopy and was the first person to find a way of radically overcoming the light microscope’s resolution barrier of 200 nanometers as established by Ernst Abbe in 1873 (Nobel Prize in chemistry 2014).

2009

Patrick Cramer
Ludwig-Maximilians-University Munich,
Munich, Germany
Genetic Research

For his outstanding research into the dynamic processes of gene transcription and regulation. His research has played a key role in explaining the structure and function of cellular RNA polymerase, thus opening up completely new methods for understanding the molecular mechanisms of gene regulation, the elementary process of life.

2007

Magdalena Götz
Helmholtz Zentrum,
Munich, Germany
Neurobiology

For her outstanding achievements in the field of neurobiology. Through her multifaceted and outstanding research, she found that radial gliacells are not fully mature supporting cells, but rather can themselves develop into highly differentiated neurons and display the self-regeneration characteristic of stem cells. These findings revolutionized the conventional wisdom and are of central importance for new approaches to treating brain injuries and diseases.

2005

Rüdiger Klein
Max-Planck-Institut für Neurobiologie,
Planegg, Germany
Nerve Growth

For his outstanding achievements in the field of neurobiology. His multifaceted and outstanding research into the development of the nervous system resulted in important findings on known and new nerve growth factors and their intracellular signal transduction paths. Understanding of these processes is of tremendous importance for the complex interaction between biological cells during the development of organisms, and thus serves as the basis for new therapeutic approaches.

2002

Christian Haass
Ludwig-Maximilians-University Munich,
Munich, Germany
Alzheimer's Mechanism

Ralf Baumeister
Ludwig-Maximilians-University Munich,
Munich, Germany
Alzheimer's Mechanism

For their outstanding achievements in Alzheimer's disease research. The presenilin 1 and 2 genes were characterized and their function explained in cell culture models and transgenic mice, as well as with the help of the nematode *Caenorhabditis elegans*. These genes enable the proteolytic generation of the beta-amyloid peptide, which is responsible for the formation of amyloid plaques. This research revealed new approaches for the treatment of Alzheimer's disease.

2000

Thomas Jürgen Jentsch
Medical Center Hamburg-Eppendorf (UKE),
Hamburg, Germany
Ion Channels

For his outstanding achievements in the field of molecular neurobiology. He was the first to clone the gene for a voltage-dependent chloride channel from the electric organ of the electric ray, thereafter, expanding his research to include human ion channels. Here he was able to demonstrate that certain hereditary diseases are caused by changes in ion channels. This in turn revealed new therapeutic approaches for these and other diseases.



Winners of the**Early Excellence in
Science Awards** in Data
Science, Biology, Chemistry,
Medical Science and
formerly Materials (until 2013)**2023****Michael Skinnider**
Princeton University,
Princeton, NJ, USA
Data Science

For the development of a sophisticated computational platform and a novel artificial intelligence system enabling the discovery of new antibiotics in microbes or of new small therapeutic molecules within the human body or the human microbiome.

Gal Ofir
Max-Planck-Institut für Biologie,
Tübingen, Germany
Biology

For his groundbreaking discovery that mechanisms and biochemical actions of bacterial immune systems share a high degree of similarity with plant immune systems which is fundamental for our understanding of the (co) evolution of bacteria and plants.

Erin Stache
Cornell University,
Ithaca, NY, USA
Chemistry

For her multidisciplinary research combining the fields of synthetic organic chemistry with photochemistry and polymer chemistry and thereby paving the way for new applications in materials sciences and synthesis.

Vivi Maketa
University of Kinshasa,
Kinshasa, DR Congo
Medical Science

For her exceptional contributions to the design and implementation of research projects on infectious and neglected diseases thereby providing essential proof for the safety, immunogenicity, and efficacy of novel drugs and vaccines.

2022**Mohammad Lotfollahi**
Helmholtz Institute Munich,
Munich, Germany
Data Science

For his innovative development of machine learning algorithms in the context of computational biology. His work advances the understanding of large-scale single-cell omics data in health and disease and will ultimately facilitate the advancement of precision medicine and AI-assisted drug discovery.

Claudia Bonfio
University of Strasbourg,
Strasbourg, France
Biology

For her landmark achievements in origin of life studies demonstrating the viability of prebiotic ion-sulfur peptide catalysis. Her work on self-assembly of prebiotic biomolecules has the potential to enable a biochemical systems approach toward the in vitro assembly of advanced primitive cells such as stem cells.

2022

Mark Levin
University of Chicago,
Chicago, IL, USA
Chemistry

For his breakthrough research on the highly selective skeletal editing of complex organic molecules using a wide range of chemical modalities. This technology enables facile modification of existing compound libraries, rapidly providing access to new chemical space and biologically active compounds.

Yanira Mendez Gomez
University of Cambridge,
Cambridge, UK
Medical Science

For her pioneering utilization of multicomponent reactions allowing the assembly of highly complex bioconjugates such as multivalent antibacterial vaccines or antibody-drug conjugates, constituting a great contribution to new ways of producing vaccines.

**2021**

Maria Zimmermann-Kogadeeva
European Molecular Biology Laboratory (EMBL),
Heidelberg, Germany
Data Science

For her groundbreaking insights into the metabolic interactions of gut bacteria with their human host, through the combination of computational modeling with transcriptomics and genetic engineering.

Marieke Oudelaar
Max-Planck-Institut für multidisziplinäre
Naturwissenschaften,
Göttingen, Germany
Biology

For her outstanding contributions in the development of methods to characterize the organization of the 3D genome, and her studies on the interaction between gene regulatory elements at a single gene loci.

Connor W. Coley
Massachusetts Institute of Technology,
Cambridge, MA, USA
Chemistry

For his pioneering work in applying machine learning to virtual screening, prediction, and automated synthesis of novel small organic molecules with therapeutical potential.

Dasha Nelidova
Institute of Molecular and Clinical Ophthalmology,
Basel, Switzerland
Medical Science

For the development of a revolutionary therapeutic approach to restore light sensitivity in the eye retina of patients suffering from age-related macular degeneration by combining gene therapy and nanotechnology.

2020

Marinka Zitnik
Harvard University (Harvard Medical School),
Boston, MA, USA
Data Science

For her innovative use of machine learning approaches to analyze multidimensional biomedical data.

Julia Mahamid
European Molecular Biology Laboratory (EMBL),
Heidelberg, Germany
Biology

For her important contributions to the development of in-cell structural studies by electron cryo-tomography.

Josep Cornella
Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany
Chemistry

For his innovative research on the design, invention, and implementation of catalytic strategies for organic synthesis.

Nicolai Franzmeier
Ludwig-Maximilians-University Munich,
Munich, Germany
Medical Sciences

For the development of novel approaches in imaging to study the pathology of Alzheimer's disease.



2019

Julian Stinglee
Ludwig-Maximilians-University Munich,
Munich, Germany
Biology

For his discovery of an entirely unexpected DNA repair pathway, which is crucially important to prevent ageing and tumorigenesis.

Christina Woo
Harvard University,
Boston, MA, USA
Chemistry

For her pioneering research on the role of small molecules influencing protein function and biological signaling using large-scale chemical biology approaches.

Susanne van Veluw
Harvard University (Harvard Medical School),
Boston, MA, USA
Medical Sciences

For developing and applying cutting-edge imaging techniques to visualize hitherto undetectable micro infarct lesions in the human brain.

2017–2018

Christoph Engel
Max-Planck-Institut zur Erforschung
von Gemeinschaftsgütern,
Bonn, Germany
Biology

For outstanding research providing the molecular basis for ribosomal RNA synthesis by RNA polymerase in eukaryotic cells. By solving the first 3D crystal structure of the 14-subunit RNA polymerase I (Pol I) he concluded a decade long attempt to elucidate atomic structural details of 590 kDa enzyme complex.

Keary M. Engle
Scripps Research,
La Jolla, CA, USA
Chemistry

For unparalleled contributions at the interface of organometallic chemistry, organic synthesis, and catalysis – particularly in the area of effective syntheses of small molecules by smart catalysis.

Kathryn Susan Hayward
Florey Institute of Neuroscience
and Mental Health,
Melbourne, Australia
Medical Sciences

For making a collective impact on the field of stroke rehabilitation and recovery focused on individuals with significant loss of arm and hand function in early post-stroke.

2016

Christopher Aylett
Imperial College London,
London, UK
Biology

For outstanding research on structural studies to understand the machinery of cellular signalling – his work contributes largely to explain the function of a protein complex implicated in cancer, obesity and neurodegeneration.

Bill Morandi
ETH Zürich,
Zürich, Switzerland
Chemistry

For outstanding contributions in green catalysis – particularly his work on novel methods for a sustainable transformation of hydrocarbons and polyols into high-value chemical building blocks of high relevance to biologically active small molecule and materials research.

Theresa Bunse
ETH Zürich,
Zürich, Switzerland
Medical Sciences

For outstanding work in the field of tumor immunotherapy – particularly for her contributions towards the development of mutation-specific vaccines for patients with gliomas.

2015**Cigall Kadoch****Harvard University (Harvard Medical School),
Boston, MA, USA***Biology*

For outstanding contributions in understanding and targeting human cancers driven by aberrant chromatin regulators, including the discovery of the mechanism of human synovial sarcoma. One of her most significant findings is that high mutation frequency is present in genes involved in chromatin biology-based processes.

Tanja Gaich**Leibniz University Hannover,
Hannover, Germany***Chemistry*

For the development of a novel method for efficient synthesis of polycyclic natural products from plants and microorganisms – which play an important role in novel drug development strategies.

Marie-Luise Berres**RWTH Aachen University,
Aachen, Germany***Medical Sciences*

For outstanding contributions to a better understanding of the pathogenetic role of Langerhans Cell in Histiocytosis, a barely understood hematological disorder with incidence similar to acute myelogenous leukemia and a mortality rate of 20–40 % in high risk patients (mostly children).

2013**Steven Spoel****University of Edinburgh,
Edinburgh, UK***Biology*

For outstanding contributions in gene function research. The work of Steven Spoel has led to a better understanding of how living cells translate environmental signals into changes in gene expression. This knowledge is of high relevance for the understanding of gene expression mechanisms in human, animal and plant cells, and thus likewise important for cancer research, animal health and crop breeding.

Abigail Doyle**Princeton University,
Princeton, NJ, USA***Chemistry*

For the development of novel nickel-catalyzed cross-coupling reactions and the identification of new reagents and strategies for catalytic nucleophilic (radio) fluorination. The work of Abigail Doyle is of high relevance for the application in drug discovery, agro science and material research.

Javier Fernández**Singapore University of Technology and Design,
Singapore***Materials*

For outstanding contributions in materials engineering. Javier Fernández has developed a new biologically inspired material, called “Shrilk”, that replicates the exceptional capabilities of one of nature’s most exceptional materials – insect cuticle. This is a milestone in material design and of high relevance in many applications, including biocompatible packaging and tissue engineering.

2012

Christiane Opitz
Deutsches Krebsforschungszentrum,
Heidelberg, Germany
Biology

For outstanding contributions to the understanding of the relevance of the tryptophan metabolism in cancer biology. Together with her team she discovered the first endogenous ligand for the aryl hydrocarbon receptor (AHR) which is involved in promoting tumor growth and suppressing anti-tumor immune responses. This discovery could enable the development of drugs which are expected to inhibit the malignant phenotype of cancer cells and restore anti-tumor immunity.

Nuno Maulide
Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany
Chemistry

For developing new routes to synthesize highly functional small ring molecules. These molecules are excellent starting points for various active ingredients or natural products. By developing new synthetic methods beyond well-established chemical reactions, the Maulide group has discovered unprecedented new phenomena and introduced novel concepts in the field of asymmetric catalysis to be used in all Life Sciences.

Volker Presser
INM – Leibniz-Institut für Neue Materialien,
Saarbrücken, Germany
Materials

For outstanding research on novel nanomaterials that can be used in energy storage and transformation technologies. The work of his team focuses on the development of super- and pseudocapacitors using state-of-the-art methods like electrospinning and atomic layer deposition. Volker Presser's research contributes substantially to advancing the technologies urgently needed for efficient large-scale use of renewable energies and for energy storage.

2011

Cristobal Uauy
The John Innes Centre,
Norwich, UK
Biology

For outstanding research contributions in the area of crop genetics. Among a number of high-class achievements, Cristobal Uauy cloned the first QTL (Quantitative Trait Locus) in wheat, he identified a resistance gene against wheat yellow rust pathogen, and he is very active in the translation of basic research results into applied crop breeding. His scientific work provides the basis for a powerful new toolkit for improved crop productivity, and thus opens the horizon for new strategies in wheat breeding.

Andreas Bender
Ludwig-Maximilians-University Munich,
Munich, Germany
Chemistry

For outstanding research work in the field of cheminformatics and the development of new prediction models for drug properties. The work of Andreas Bender discloses new opportunities for a better prediction of modes of action of drugs with in-silico methods, and thus promotes the efficient development of pharmaceutical products on the road from the idea to an optimized drug candidate.

Arne Thomas
Technical University Berlin,
Berlin, Germany
Materials

For outstanding research contributions in the area of functional materials. The work of Arne Thomas discloses new pathways for the synthesis of highly porous materials. These materials provide new solutions for long unsolved technical challenges, because their properties can be adapted to a wide range of applications, e.g. for gas storage, catalysis support, purification and separation purposes, for column chromatography and ion exchange, and as insulation material.

2010

Oliver Daumke
Max-Delbrück-Center,
Berlin, Germany
Biology

For his contributions to the understanding of the structure and function of GTP-binding (G) proteins. G proteins can act as molecular switches that control growth signals in biological cells. Other G proteins function as molecular motors that deform cellular membranes. Prof. Daumke investigates the differences and similarities between these two classes of G proteins.

Nicolai Cramer
ETH Zurich,
Zurich, Switzerland
Chemistry

For the developments of new catalytic organometallic reactions for activation of carbon-hydrogen and carbon-carbon bonds. With his research he contributes to the field of production of complex active and natural substances.

Andreas Walther
Johannes-Gutenberg-University Mainz,
Mainz, Germany
Materials

For the development of innovative, pearlescent biomimetic materials that exhibit impressive properties in terms of their mechanical stability and flame retardance. This makes them very interesting for use in maritime, aviation and aerospace applications.

2009

Noriyuki Nishimura
Kobe University,
Kobe, Japan
Biology

For his outstanding contributions to the identification and characterization of specific stress hormone receptors in plants. These receptors ensure that plants are better able to survive stress conditions such as drought. The work of Dr. Nishimura greatly facilitates the ability to discover new ways to ensure food supplies for a growing world population.

Tobias Ritter
Max-Planck-Institut für Kohlenforschung,
Mülheim, Germany
Chemistry

For his detailed investigations into fluorination reactions. His new method of integrating fluorine highly selectively in aromatic substances by mild and simple means is a significant advance for active ingredient research in medicinal chemistry and crop protection.

Jürgen Groll
Julius-Maximilians-University Würzburg,
Würzburg, Germany
Materials

For his outstanding contributions to the development of new types of biocompatible polymeric hydrogels. The new hydrogels enable more targeted drug transport and controlled release in target tissues, thereby facilitating lower dosages of drugs and helping to reduce their side effects.

Winners of the

Bayer Thrombosis Research Award

for Basic and Clinical Thrombosis Research

2023

Linda Schönborn
Universitätsmedizin Greifswald,
Greifswald, Germany

Covid-19 vaccine-induced thrombocytopenia

For her groundbreaking work in the field of COVID-19 to identify the underlying mechanism of vaccine-induced immune thrombotic thrombocytopenia (VITT) that allowed her to provide guidance for the medical treatment of these patients worldwide.

Leo Nicolai
Ludwig-Maximilians-Universität Munich,
Munich, Germany

Role of immune-thrombosis in Covid-19 infection

For his outstanding research that laid the grounds to demonstrate that organ involvement and prothrombotic features in COVID-19 are linked by immune-thrombosis.

2021

Stefano Barco
University Medical Center Mainz,
Mainz, Germany

Epidemiology and risk-adjusted treatment of acute pulmonary embolism

For his research on the epidemiology and management of venous thromboembolism. Dr. Barco's work provided novel insights on the burden of venous thromboembolism and related mortality on a global scale, contributing to raising awareness on this condition and to the implementation of healthcare measures on a population level. Additionally, his work allowed the development or optimization of risk-adapted therapeutic approaches for acute pulmonary embolism and its sequelae. These results have been translated into clinical practice and serve to guide treatment decisions.

2019

Changjun Yin
Ludwig-Maximilians-University Munich,
Munich, Germany

Immunity of atherosclerosis-brain interfaces

For outstanding innovative work for new treatment strategies in atherosclerosis and Alzheimer's diseases (AD) since both are prototypical unresolvable inflammatory diseases with high risks to develop thrombosis-related diseases and his work has shown that anti-complement C5 therapy can reduce thrombotic events in patients afflicted with complement-triggered diseases. Recent research indicates that oxidized lipids from diseased arteries or A β plaques in the brain trigger both the complement and coagulation cascades. A better understanding of such regulation of complement cascades in chronic inflammation may therefore facilitate the development of novel therapies for patients with thrombotic conditions, i.e. atherosclerosis and AD.

2017

David Seiffge**The University Hospital of Basel,
Basel, Switzerland***Clinical work on management of non-vitamin K
dependent oral anticoagulants in acute stroke patients*

For outstanding clinical research in the area of anti-coagulation risk management. David Seiffge's innovative studies provide pioneer evidence for the clinical relevance of novel oral anticoagulants (NOACs) in stroke patients. Particularly his research on the bleeding risk of acute stroke patients taking NOACs and rapid availability of NOAC plasma levels to assess anticoagulant effect have potential to open new treatment opportunities with improved benefit-risk ratio for stroke patients.

2015

Markus Bender**The University Hospital Würzburg,
Würzburg, Germany***Platelet receptor research*

For his work in the field of rare congenital blood platelet disorders in patients with Wiskott-Aldrich syndrome. Dr. Bender showed that the severe blood clotting and immune system disorders in patients suffering from this condition are attributable to a deficiency of the cytoskeleton-stabilizing protein profilin-1 in the precursor cells of blood platelets. This could open new opportunities for the early detection and treatment of this severe illness in future.

2013

Krystin Krauel**The University Heart Center Freiburg,
Bad Krozingen, Germany***Immune responses in cardiovascular diseases*

For her contributions to a better understanding of the interactions between thrombotic processes and immune defense mechanisms. Her work on the role of platelet factor 4 (PF4) in the antibacterial immune response system provided a new level of awareness about the pathophysiology of heparin-induced thrombocytopenia (HIT). Dr. Krauel was able to demonstrate that the binding capabilities of cytokine signaling molecule to bacteria is a significant cause for the immune-mediated adverse drug reaction HIT. This better understanding of HIT opens new horizons for patient treatment and prevention.



Winner of the

Ernst-Ludwig Winnacker Award

for enhancing the impact of science for the benefit of society

2022

Antje Boetius

Alfred Wegener Institute Helmholtz Center for Polar and Marine Research, Bremerhaven, Germany

For her outstanding public engagement, policy advice and scientific communication across a broad range of topics, particularly including the impact of climate change, biodiversity losses and ocean health.





Foundation

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