2026 CANADA GAIRDNER AWARDS RECOGNIZE WORLD-LEADING SCIENTISTS FOR BREAKTHROUGH DISCOVERIES ADVANCING HUMAN HEALTH

Prestigious international award recognizes landmark discoveries in biomedical and global health research.

TORONTO, ON (March 31, 2026) – The Gairdner Foundation today announced the nine 2026 Canada Gairdner Award laureates, honouring world-leading scientists whose pioneering biomedical and global health research has transformed our understanding of human health and disease.

2026 Canada Gairdner International Award
The five 2026 Canada Gairdner International Award laureates are recognized for seminal discoveries or contributions to biomedical science:

Dr. Wolfgang Baumeister
Director Emeritus and Scientific Member, Max-Planck-Institute of Biochemistry, Martinsried, Germany; Distinguished Professor, ShanghaiTech University, China

Awarded “For developing cryo-electron tomography, a method that visualizes molecular structures inside intact cells at near-native resolution, creating a new way to study cellular architecture and revealing the inner workings of life at the molecular level.”

The Work:

Wolfgang Baumeister has transformed structural and cell biology by developing cryo-electron tomography (cryo-ET), a method that lets scientists see the 3D organization of molecules inside cells in a close-to-live state. Whereas traditional structural biology isolates proteins, losing context about how they function together, cryo-ET preserves the cell’s natural environment, revealing molecular interactions as they actually occur.

To make cryo-ET effective for studying cells, Wolfgang Baumeister helped adapt and advanced several key approaches. These included using cryogenic ion beams to make cellular samples electron transparent, automating electron microscopy to collect images reliably, reducing electron exposure to prevent radiation damage, and developing computational tools to identify molecular complexes in cells. Prof. Baumeister initially applied this technique to proteasomes – large protein complexes that perform essential tasks in the cell – uncovering their arrangement, dynamics, and supramolecular organization. The technology has been applied to many other cellular processes in recent times.

Through this pioneering combination of biology, imaging, and computation, Prof. Baumeister created a new approach to explore the molecular architecture of life.

The Impact:

Wolfgang Baumeister's innovations have fundamentally changed how scientists study the inner workings of cells. Cryo-electron tomography allows researchers to observe molecular assemblies in their natural environment, revealing how proteins and complexes interact to carry out essential cellular processes.

These insights are transforming our understanding of health and disease, from how cells maintain protein quality to how cellular structures respond to stress. By pioneering both the technology and the practical workflows for cryo-ET, Prof. Baumeister has trained and inspired a global community of scientists. Today, researchers worldwide use cryo-ET to address key questions in structural biology, cell biology, and medicine.

His work has opened entirely new avenues for research, allowing the molecular machinery of life to be seen in unprecedented detail, and establishing cryo-ET as a cornerstone tool for exploring the cellular foundations of biology and disease.

Prof. Jeffery W. Kelly, PhD
H. Lutcher Brown Professor of Chemistry, Department of Chemistry, Scripps Research, La Jolla, United States

Awarded "For discovering the anti-aggregation drug, tafamidis, the first effective treatment for a human amyloid disease, specifically transthyretin amyloidosis, providing the first pharmacological evidence that protein aggregation drives neurodegeneration."

The Work

Jeffery W. Kelly's insightful mechanistic studies on protein aggregation led to the discovery of tafamidis, the first effective drug for slowing the progression of a human amyloid disease, specifically transthyretin amyloidosis. Transthyretin amyloidosis occurs when the normally stable tetrameric protein, transthyretin, dissociates, misfolds and forms harmful clumps and fibers that damage nervous systems and organs. Disease-causing mutations, as well as aging-associated processes in the case of wild-type transthyretin weaken this tetramer leading to polyneuropathy / dementia and cardiomyopathy, respectively.

Tafamifis binds to and stabilizes the tetramer, preventing it from breaking apart and forming damaging aggregates. Dr. Kelly's laboratory also identified naturally occurring genetic variations, called interallelic trans-suppressor mutations, that slow tetramer dissociation, explaining why some individuals are protected from the disease.

Tafamidis inhibits newly made transthyretin from aggregating and depositing in tissue, without clearing the amyloid fibrils already deposited, suggesting that the soluble aggregates in circulation play a critical role in neurodegeneration.

The Impact

In the early 1990s, Kelly was among the first to demonstrate the foundational concept that protein shape changes alone were sufficient to convert proteins into aggregates, including amyloid fibrils. By translating these mechanistic insights into a pharmacological strategy to prevent these shape changes, he provided the first drug-based evidence that the healthspan and lifespan of patients afflicted with the third most common amyloid disease, transthyretin amyloidosis could be extended through inhibiting transthyretin aggregation. Seventy thousand patients are taking the Pfizer drug tafamidis for this purpose, discovered in Kelly's laboratory.

Beyond transthyretin amyloidosis, this achievement shifted scientific and medical consensus toward embracing aggregation modulation as a viable therapeutic strategy, catalyzing the development of ten aggregation-modulating therapies that are now regulatory agency approved for treating human amyloid diseases, such as for ameliorating Alzheimer's disease, hereditary ALS, and other protein-misfolding disorders. His discoveries established a new paradigm for treating neurodegenerative diseases, offering hope to millions and showing that controlling protein aggregation can fundamentally change the course of these devastating illnesses.

Prof. John R. Yates III, PhD
John Lytton Young Endowed Chair and Professor, Department of Integrative Structural and Computational Biology, Scripps Research, La Jolla, United States

Prof. Ruedi Aebersold
Professor Emeritus, Molecular Systems Biology, Institute of Molecular Systems Biology, Department of Biology, ETH Zurich, Switzerland

Prof. Matthias Mann
Director of Department of Proteomics and Signal Transduction, Max Planck Institute of Biochemistry, Martinsried, Germany

Awarded "For establishing the foundations of modern systems proteomics through transformative innovations in quantitative protein measurement, mass spectrometry technologies, and computational analysis."

The Work

John Yates, Ruedi Aebersold, and Matthias Mann collectively established the foundations of modern proteomics -the large-scale study of proteins- by solving three interdependent problems: how proteins can be measured at scale, how those measurements can be made quantitative and reliable, and how complex protein data can be interpreted biologically.

Yates pioneered shotgun proteomics through the development of the computational methods that interpret tandem mass spectra to identify proteins enabling large-scale, unbiased identification of proteins from complex mixtures, fundamentally transforming biological research.

Aebersold transformed protein analysis by moving the field from 2D gel electrophoresis to quantitative proteome analysis and later to targeted approaches and to the measurement of the functional state of the proteome, establishing proteomics as a rigorous, systems-level and quantitative science.

Mann transformed the field through innovations spanning mass spectrometry methods, computational analysis, and biological application. His development of MaxQuant, one of the most widely used computational platforms in proteomics, set new standards for protein identification and quantification. His laboratory pioneered methods that enabled the accurate measurement of over ten thousand proteins and their modifications in single experiments, and extended mass spectrometry-based proteomics into clinical diagnostics through plasma proteomics and into spatial biology through Deep Visual Proteomics.

The Impact

By making it possible to comprehensively study the molecules and their functionally relevant properties that carry out key cellular functions and serve as targets for many drugs, Yates, Aebersold and Mann made contributions to protein analysis that reshaped biomedical research and medicine.

Proteomics is now central to understanding disease mechanisms, enabling advances in cancer research, neurodegenerative disease, immunology, infectious disease, and precision medicine. Their collective work has opened new avenues of understanding the biological processes of proteins in the cell and their disruption in disease, enabling drug discovery, and strengthening the pathway for translation of basic research into clinical benefit.

2026 John Dirks Canada Gairdner Global Health Award

The two 2026 John Dirks Canada Gairdner Global Health Award laureates are recognized for outstanding achievements in global health research:

Prof. John D. Clemens, MD

Senior Scientific Advisor to the Director General, International Vaccine Institute, Seoul, South Korea; Adjunct Professor of Epidemiology, UCLA Fielding School of Public Health, Los Angeles, United States

Dr. Jan Holmgren, MD, PhD
Senior Professor, Sahlgrenska Academy, University of Gothenburg, Sweden

Awarded “For advances in understanding cholera disease and immunity, and for the development and evaluation of safe, effective, and affordable inactivated oral cholera vaccines that have enabled cholera control worldwide.”

The Work:

John Clemens, an epidemiologist, and Jan Holmgren, an immunologist, have worked together for over 40 years to transform global cholera control by creating oral cholera vaccines made from inactivated, or killed, bacteria that are safe, effective, and affordable. Their work spans laboratory research, vaccine development, clinical trials, and public health programs.

Holmgren’s fundamental research showed how cholera causes disease and how immunity develops, demonstrated that oral vaccines provide strong protection, identified the components needed for effective immunity, enabling him to develop Dukoral, the world’s first oral cholera vaccine to be internationally licensed and WHO-prequalified.

Building on Holmgren’s discoveries and vaccine development, Clemens led large field trials in cholera-affected communities, beginning at the International Centre for Diarrhoeal Diseases Research, Bangladesh. The studies, which led to the licensure of Dukoral, showed that the oral cholera vaccines were safe, offered lasting protection, and reduced transmission in the wider community, while also introducing methods to measure vaccine impact under real-world conditions.

To reach those most at risk in low-income settings, they also worked with Vietnamese and Indian manufacturers to develop Shanchol, the first affordable, WHO-prequalified oral cholera vaccine, whose introduction into public health practice was supported by Clemens’ research showing it was practical, widely accepted, and effective for large-scale use.

The Impact:

Cholera is a severe diarrheal disease that can spread quickly in communities without access to clean water and proper sanitation, causing thousands of deaths each year. The work of Drs. Clemens and Holmgren has transformed how the disease is prevented and controlled. Their research provided the evidence that led the WHO to recommend oral cholera vaccines for both

ongoing outbreaks and areas where cholera is common, and it supported the creation of the world's first global oral cholera vaccine stockpile.

Since the stockpile was established, millions of vaccine doses have been distributed through national programs and emergency responses. These vaccines have been safe, effective, and able to reduce transmission in entire communities. Their work has led to large declines in cholera cases and continues to protect and save lives around the world.

2026 Peter Gilgan Canada Gairdner Momentum Award

The two 2026 Peter Gilgan Canada Gairdner Momentum Award laureates are Canadian mid-career investigators recognized for exceptional scientific research contributions with continued potential for impact on human health.

Dr. Karen Maxwell
Professor, Department of Biochemistry, Temerty Faculty of Medicine, University of Toronto, Canada

Awarded "For uncovering the molecular strategies bacteria use to defend against viruses, revealing how viruses known as bacteriophages evade these defences, and laying the foundation for next-generation precision phage therapies to combat antibiotic-resistant infections."

The Work:

Karen Maxwell studies how bacteria defend themselves against viruses known as bacteriophages, and how the viruses evolve to bypass these bacterial immune systems. Her research integrates genetics, biochemistry, and structural biology to uncover sophisticated molecular strategies.

Dr. Maxwell's research group has discovered and characterized multiple new bacterial immune systems and the mechanisms that regulate when these systems turn on during infection. This work helps us understand exactly how bacterial immunity works and how these defences are deployed at the right time. Among Dr. Maxwell's key discoveries is that some bacteria produce small chemical compounds that block viral replication as a form of "chemical immunity."

Her work also shows that bacterial immunity is shaped by genes carried on mobile pieces of DNA, including viral DNA left behind in bacterial genomes. These dormant viral elements can actively protect their hosts by detecting invading viruses and triggering rapid immune responses. Together, these studies have reshaped the scientific framework for understanding microbial immunity and virus–host interactions.

The Impact:

Antibiotic resistant bacterial infections are a major global health challenge, threatening millions of lives each year. The work of Dr. Maxwell has transformed how scientists understand the battle between bacteria and the viruses that infect them. Her discoveries revealed new bacterial defence strategies and the ways phages bypass them, providing a foundation for designing precise, next-generation phage-based therapies.

These insights are already guiding the development of treatments that can target harmful bacteria while preserving beneficial microbes, and they are informing genome-editing technologies and synthetic biology applications. By mapping the strategies of both bacteria and phages, Dr. Maxwell's research is opening new paths for fighting infections, managing antibiotic resistance, and advancing biotechnology, with broad benefits for human health.

Dr. Aaron Phillips

Associate Professor, Departments of Clinical Neurosciences, Cardiac Sciences, Physiology and Pharmacology, University of Calgary; Associate Dean, Innovation and Commercialization, Cumming School of Medicine, University of Calgary, Canada

Awarded "For pioneering work that restores blood pressure control after spinal cord injury, reducing life-threatening complications, improving daily functioning, and transforming clinical care for people living with paralysis."

The Work:

Aaron Phillips' research focuses on a major consequence of spinal cord injury: unstable blood pressure caused by damage to the body's autonomic control systems. Through a series of foundational studies, he discovered the specific regions within the spinal cord that play a central role in regulating blood pressure.

Using this insight, Dr. Phillips developed an implantable neuroprosthetic system that delivers targeted electrical stimulation to the spinal cord. The system can continuously monitor blood pressure and adjust stimulation in real time, acting as an artificial reflex to restore stability. He translated this approach from laboratory studies into human clinical trials, demonstrating that the technology could safely and reliably correct severe blood pressure instability in people with chronic spinal cord injury.

The Impact:

Spinal cord injury affects more than 27 million people worldwide, and unstable blood pressure is one of its most disabling and dangerous consequences. Dr. Phillips' work has shown, for the first time, that this problem can be effectively treated rather than simply managed. Clinical studies

revealed that his therapy restores stable blood pressure, reduces reliance on medication, and allows people to sit upright, participate in rehabilitation, and engage more fully in daily life. This first-in-class therapy that has received FDA Breakthrough Therapy Designation and is now advancing through pivotal trials for market approval.

Beyond spinal cord injury, this work is reshaping how autonomic disorders are understood and treated. By demonstrating that targeted spinal stimulation can restore essential bodily functions, Dr. Phillips has opened a new therapeutic direction with the potential to improve care for a wide range of conditions involving blood pressure dysregulation.

Quotes

“The discoveries recognized by the Canada Gairdner Awards this year demonstrate how fundamental research can deepen our understanding of biology and lead to advances that improve health around the world. We are proud to honour scientists who are expanding the frontiers of knowledge and shaping the future of medicine.”
- Janet Rossant, President and Scientific Director, Gairdner Foundation

“Congratulations to all the 2026 Gairdner Awards laureates! Your work demonstrates the incredible power of science and research to transform lives all around the world. I’m honoured to highlight the achievements of two Canadian researchers—Dr. Maxwell’s advancements to our understanding of bacterial immune systems and Dr. Phillips’ innovations to restore blood pressure control after spinal cord injury. Canada is a place where the brightest scientific minds can thrive, and the government is committed to securing Canada’s place at the forefront of discovery and innovation.”
- The Honourable Mélanie Joly, Minister of Industry and Minister responsible for Canada Economic Development for Quebec Regions, Government of Canada

“We believe in the power of science to improve health and create a better world. The Government of Canada’s support for the Gairdner Foundation reflects our commitment to supporting research that will build a stronger, more resilient and healthier Canada.”
- The Honourable Marjorie Michel, Minister of Health, Government of Canada

“Congratulations to the 2026 Canada Gairdner laureates on receiving this international recognition for their pioneering research. Their discoveries will have a lasting impact on the health of Canadians and people around the world and inspire future generations of scientists to dream bigger and reach further.”
- Maggie Chi, Member of Parliament for Don Valley North and Parliamentary Secretary to the Minister of Health, Government of Canada

About the Gairdner Foundation

The mission of the Gairdner Foundation is to celebrate, inform and inspire scientific excellence around the globe.

Established in 1957, the Gairdner Foundation is dedicated to fulfilling James A. Gairdner's vision to recognize major research contributions to the treatment of disease and alleviation of human suffering. Through the prestigious annual Canada Gairdner Awards, the Foundation celebrates the world's most creative and accomplished researchers whose work is improving the health and wellbeing of people around the world. Since its inception, 434 awards have been bestowed on laureates from over 40 countries, and of those awardees, 103 have gone on to receive Nobel Prizes.

The Gairdner Foundation brings people together to openly discuss science in order to better engage the public, understand the problems we face, and work together to find solutions. Through Gairdner Connects, our national outreach program, we bring science to communities across Canada to inspire future innovators and spark public dialogue about the role of research in addressing the world's most pressing health challenges.

https://gairdner.org/

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