

2011 CANADA GAIRDNER AWARD RECIPIENTS UNVEILED

Canada's prestigious international awards honour the world's most promising medical discoveries

Toronto, ON (March 23, 2011) – The Gairdner Foundation is pleased to announce the recipients of the 2011 Canada Gairdner Awards. Among the world's most esteemed medical research prizes, the awards distinguish Canada as a leader in science, and provide a \$100,000 prize to scientists whose work holds significant potential. The 2011 winners are announced below:

The Canada Gairdner International Awards – recognizing individuals from a variety of fields for seminal discoveries or contributions to medical science – go to:

Adrian Peter Bird, PhD, University of Edinburgh, Edinburgh, UK

Howard Cedar, MD, PhD, Hebrew University, Jerusalem, Israel

Aharon Razin, PhD, Hebrew University, Jerusalem, Israel

The challenge: Every cell in the body contains a complete set of DNA, but no cell uses all that information – it only uses the genes it needs to perform its function. For example, only the cells in the iris use the genes dictating eye colour. But little was known about how and when cells use that information.

The work: These scientists demonstrated how adding a simple chemical group (called a methyl group) to DNA affects how and when genetic information is used.

Why it matters: Inappropriate silencing of gene expression by DNA methylation occurs in diseases such as cancer as an alternative to permanent mutations in the DNA itself. Understanding how to turn methylation on and off could lead to treatments for cancer and other diseases.

Jules A. Hoffmann, PhD, Institut de Biologie Moléculaire et Cellulaire, CNRS and Université de Strasbourg

Shizuo Akira, MD, PhD, Osaka University, Osaka, Japan

The challenge: Humans have natural immune responses that help us combat viruses and bacteria. But how these immune cells recognize and attack foreign pathogens was a mystery.

The work: Dr. Hoffmann discovered Toll like receptors that act as a sensor for microbes and mobilize the immune system to fight infection. Dr. Akira extended this work by identifying microbes recognized by individual Toll like receptors. He showed how these receptors play a role in the activation of adaptive immunity (wherein the immune system “remembers” specific invading pathogens so it can mobilize more quickly and effectively if that pathogen invades in the future).

Why it matters: As a result of this discovery, a variety of treatments that activate and deactivate Toll like receptors are now in clinical trials for vaccines for infectious diseases, cancer immunotherapy, allergies, autoimmune diseases and septic shock. **The Canada Gairdner Global Health Award** – recognizing someone who is responsible for a scientific advancement that has made, or has the potential to make, a significant impact on health in the developing world – goes to:

Robert Edward Black, MD, MPH, The Johns Hopkins University, Baltimore, USA

The challenge: Diarrhea, a treatable and preventable infectious disease, takes the lives of 1.3 million children each year, and is the second leading cause of death in children worldwide.

The work: Through epidemiologic research on the interaction of infectious diseases and nutrition, Dr. Black discovered that zinc can both treat and prevent diarrhea.

Why it matters: Following Dr. Black's discovery, the WHO and UNICEF recommended the global use of zinc for treatment of diarrhea. These potentially life-saving treatment programs have now been implemented in 40 countries.

The Canada Gairdner Wightman Award – given to a Canadian who has demonstrated outstanding leadership in medicine and medical science throughout his/her career – goes to:

Michael R. Hayden, MB, ChB, PhD, FRCP(C), FRSC, OBC, University of British Columbia; Canada Research Chair in Human Genetics & Molecular Medicine

The challenge: Patients with rare diseases have little hope of recovery or treatment, as there is little motivation to investigate diseases that affect such a small percentage of the population.

The work: Dr. Hayden and his team identified genes for numerous rare disorders, which have since been linked to other prevalent diseases such as diabetes, heart disease, and chronic pain. He has also made significant contributions to understanding the genetic and molecular pathways leading to Huntington disease. He has founded three companies to develop screening tests and treatments based on these genetic discoveries. Dr. Hayden also initiated, and leads, an international effort to help HIV/AIDS-ravaged communities in South Africa. His work has had a profound impact on science in Canada and abroad.

Why it matters: Identifying the genetic underpinnings of diseases opens the door to new treatments targeting these genes. For example, Dr. Hayden's pharmaceutical company is developing a new type of gene-targeting treatment for pain, which will have none of the side effects, addictive properties or sedation of opioids.

The Canada Gairdner Awards will be presented at a dinner in Toronto on October 27th. Gairdner also aims to spark a passion for medical research in the next generation by bringing Gairdner recipients to Canada to speak to high school students in 16 centres across the country each October.

"These awards recognize more than just great discoveries," said Dr. John Dirks, President and Scientific Director of Gairdner. "They pay tribute to these extraordinary people who are not afraid to take risks, to

explore uncharted territory in medicine. Each of these recipients saw a medical need and dedicated their lives to working toward a solution. Their work will change the face of medicine.”