

## Prolific Scientist Profiles

### The 2000 Gairdner Awards

Rohit Bose, B.Sc. (M.D./Ph.D2)

The Gairdner Foundation International Awards are arguably the most prestigious Canadian awards for medical research. They are awarded to individuals who have made outstanding discoveries or contributions to medical science. Each year, three to six winners are chosen. The nomination process is international in scope and a panel of scientists from Canada, the United States and Great Britain chooses the award recipients. At an award ceremony in Toronto, they receive \$30,000 and a sculpture, "Le Coeur". First awarded in 1959, they are the brainchild of James A. Gairdner, a Toronto businessman who suffered from severe arthritis and developed a deep respect for medical research. However, despite their own prestige, the Gairdner Awards have become most famous for their predictive value: 52 of the award's 256 recipients have gone on to win a Nobel prize.

#### Gairdner Award Winners, 2000

##### Roger D. Kornber, Ph.D. and Robert G. Roeder, Ph.D.

Dr. Kornberg and Dr. Roeder are recognized for their studies on the transcription machinery and elucidation of the basic mechanisms of transcription in eukaryotic cells.



**Dr. Roger Kornberg's** first major contribution to molecular biology came as a postdoctoral fellow at Cambridge, when he proposed the nucleosome model of chromatin structure. In order to understand the functional significance of nucleosomes, his attention turned to transcription. Dr. Kornberg receives the Gairdner Award for his essential

contributions in describing much of the transcription apparatus, as well as the mechanisms and regulation of transcription. Earlier this year, the crystallographic structure of RNA poly-

merase II was elucidated in his laboratory. Currently, Dr. Kornberg is a professor in Structural Biology at Stanford University School of Medicine.



Like his co-recipient of this award, **Dr. Robert Roeder** also made his mark early. As a graduate student at the University of Washington in Seattle, he discovered all three of the eukaryotic RNA polymerases. He went on to study the polymerases' mechanism of action and subcellular localization. Dr. Roeder also developed test-tube assays for the initia-

tion of transcription, which greatly furthered the characterization of the transcriptional apparatus. He is further credited with the discovery of the first eukaryotic gene-specific activator. Dr. Roeder is the Arnold and Mabel Beckman Professor of Biochemistry and Molecular Biology at the Rockefeller University of New York.

**Alain Townsend, M.D., Ph.D. and Emil Unanue, M.D.**

Dr. Alain Townsend and Dr. Emil Unanue are recognized for elucidating the mechanisms of antigen processing, the physiological role of histocompatibility molecules and T lymphocyte antigen recognition.



**Professor Alain Townsend**

greatly furthered the field of immunology by discovering that cytotoxic T cells recognize peptides associated with major histocompatibility (MHC) molecules. He went on to delineate the role of antigenic peptides in the assembly and expression of MHC Class I molecules. This major contribution led to the discovery of peptide transporters

in the endoplasmic reticulum. Dr. Townsend is a Professor of Molecular Immunology at the Institute of Molecular Medicine and an honorary consultant in General Internal Medicine at John Radcliffe Hospital, Oxford University.



In the late 1960s, **Professor Emil Unanue** put forward the revolutionary suggestion that proteins became more immunogenic after their phagocytosis and subsequent catabolism by macrophages. He went on to discover that protein antigens are internalized and broken down into short peptides by antigen-presenting cells. Professor Unanue elucidated the

function of MHC Class II molecules: they bind to these peptides and activate T cells. He is currently the Pathologist-in-Chief at Barnes-Jewish Hospital, and the Professor and Head of Pathology and Immunology at Washington University in St. Louis.

**Jack Hirsh, C.M., M.D., F.R.C.P.C, F.R.A.C.P, F.R.S.C., D.Sc.**

Dr. Jack Hirsh is recognized for his pioneering contributions to our understanding of the diagnosis, prevention and treatment of thromboembolic disorders.



Originally from Australia, **Dr. Jack Hirsh** has made a number of significant contributions in the area of thromboembolic disorders. He developed diagnostic techniques that have improved the diagnosis of these disorders. His studies of the anticoagulants heparin and warfarin set the international standards for their dosing. Dr. Hirsh was also involved in the

development of low-molecular-weight heparin. His approach to clinical research has formed much of the basis for modern “evidence-based medicine,” and he is considered to be one of the founding fathers of McMaster medical school. Following his residency, Dr. Hirsh trained at the University of Toronto among other places before joining the faculty at McMaster University. Currently, he is the Director of the Hamilton Civic Hospital Research Centre.



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