

Society Awards 2000-2001

Travel Awards

Winternational Meeting, Mont Ste. Anne, Quebec. February 8 -11, 2001
Merck Frosst-CSBMCB \$750 travel stipends were awarded to:

Dr. Diana Bellovino, Instituto Nazionale de Ricerca per gli Alimenti e la Nutrizione, Rome, Italy. "Studies on retinol binding protein regulated secretion"

Ms. Kazuko Miyakawa, National Institute of Bioscience & Human Technology, Ibaraki, Japan; "An uncleavable signal peptide: Identification of the central hydrophobic region and amino terminal region of FGF-9 as functional domains of secretin"

Ms. Edith D. Wong, Section of Molecular and Cellular Biology, University of California-Davis, Davis, California. "The Dynamin-related GTPase, Mgm1p, is an Intermembrane Space Protein required for maintenance of Fusion Competent Mitochondria"

Ms. LaShaunda King, Department of Medical Chemistry and Pharmacology, University of Illi-



nois at Chicago. "A DnaK-BiP chimera promotes survival of DnaK-deficient E. Coli cells after heat stress"

Mr. Julian Guttman, Department of Anatomy, University of British Columbia. "Microtubule-Based Motor Transport of a Junction Plaque- Spermatid Translocation by Sertoli Cells"

Travel Award winners at the Winternational Meeting, Mont Ste. Anne, Quebec. February 8 -11, 2001

AGM Meeting , Alliston, Ontario, May 31-June 3, 2001

\$750 awards - Merck-Frosst Travel Awards for graduate students

Name	University	Supervisor
Laila Singh	Simon Fraser University	Jenifer Thewalt
Philip Berardi	University of Calgary	Karl Riabowol
Knut Woltjen	University of Calgary	Derrick Rancourt
Stephanie Minnema	University of Calgary	Derrick Rancourt
Josh Rizak	University of Saskatoon	Bruce Waygood
Mohammed Hadi	University of Manitoba	Yeuwen Gong
Nicolas Bilodeau	Universite Laval	Robert Faure
Jacquelyn Wood	Dalhousie University	David Byers

\$375 Awards - Merck-Frosst Travel Awards for graduate students

Jason Baardsnes	Queen's University	Peter Davies
Tudor Moldoveanu	Queen's University	Peter Davies
Greg Vilks	University of Western Ontario	David Litchfield
Rebecca Crane	University of Guelph	Janet Wood

\$750 awards - Perkin Elmer Travel Awards for post-doctoral fellows

Colin McGowan	Simon Fraser University	William Davidson
Fiona Mansergh	University of Calgary	Derrick Rancourt
Mike Wride	University of Calgary	Derrick Rancourt

\$375 awards - NANUC Travel Awards for post-doctoral fellows

Laurie Graham	Queen's University	Peter Davies
Melanie Tomczak	Queen's University	Peter Davies
Michael Kuiper	Queen's University	Peter Davies
Peter Ferguson	University of Western Ontario	Gary Shaw

Poster Competitions

2000 Roche Diagnostics Poster Awards, AGM Ottawa.

Duerksen Award Cell Biology

Sandy Beyko, Department of Biochemistry, Microbiology and Immunology, University of Ottawa. "Cerebral Abnormalities in CX32 Deficient Mice." Supervisor Dr. Steffany Bennett.

Molecular Biology Award

Alex Valencia, Department of Biology Carleton University, "Cloning and Characterization of cDNA Clones Encoding Putative Cell Wall-Associated Proteins of *Neurospora crassa*." Supervisor Dr. John Vierula

Biochemistry

Karen M. Black, Department of Biochemistry, Dalhousie University, "An Absolutely Conserved Tryptophan; Investigating Its Role In Cytochrome C." Supervisor Dr. Carmichael J.A. Wallace

2001 Roche Diagnostics Poster Award - Winternational Meeting, Quebec

Mr. Roberto Botelho, Hospital for Sick Children, Toronto. "Localized biphasic changes in phosphatidylinositol-4-5-bisphosphate at sites of phagocytosis".

2001 Roche Diagnostics Poster Awards - AGM, Alliston

The Student Poster Session which was presented Friday, June 1, had 42 poster presentations, 38 from students and four from Principal Investigators. Of the 38 student presentations, 29 elected to compete for the two Roche Diagnostics Poster Awards. Dr. Waygood, Saskatoon, headed an adjudication committee (Dr. G. Cote, Queen's; Dr. G.

Flynn, Queen's; Dr. F. Keeley, Toronto; Dr. C. Lazure, IRMC; Dr. D. Litchfield, Western Ontario; Dr. N. Martin, Queen's; Dr. L. McIntosh, UBC; Dr. D. Rose, Toronto; Dr. H. Vogel, Calgary; and Dr. S. Withers, UBC) for these awards.

Mr. Tudor Moldoveanu, Department of Biochemistry, Queen's University. "Structural Basis for the Activation of Calpain by Ca⁺⁺."

Mr. Peter Kavsak, Department of Medical Genetics and Microbiology, University of Toronto. "Smad7 binds Smurf2 to form an E2 ubiquitin ligase that targets the TGF receptor for degradation."

CSBMCB 2001 PDF Poster Awards-AGM, Alliston

The PDF Poster Session was held Saturday, June 2 with 36 poster presentations, 13 by PDFs, 22 from PI's and one from a grad student. Eight PDFs entered the CSBMCB poster competition to contest for the two awarded prizes. These posters were adjudicated by a committee headed by Dr. H. Duckworth, Manitoba; included Dr. H S Chan, Toronto; Dr. E. Pai, Toronto; and Dr. D. Wishart, Alberta. Winners are:

Dr. Denis Daigle, Department of Biochemistry, McMaster University. "YjeQ, an essential *Escherchia coli* protein of unknown function, is an unusual GTPase of the Ras/EF-Tu class that contains a circular permutation of the GTPase domain and exhibits marked burst kinetics."

Dr. Laurie Graham, Department of Biochemistry, Queen's University. "Proteomic analysis of the odorant/pheromone-binding protein family in *Drosophila*."

Society's Distinguished 2001 Awards

2001 Roche Diagnostics Prize for Biomolecular and Cellular Research Awardee: Dr. W. Ford Doolittle

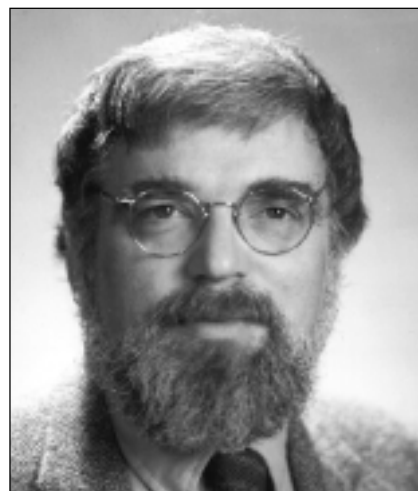
Dr. Doolittle, an American by birth, was educated at Harvard University (B.A., 1963) and Stanford University (Ph.D., 1969). First appointed to the Department of Biochemistry at Dalhousie University as an Assistant Professor in 1971, he rose through the ranks to attain a full professorship in 1982. For the past 28 years here in Halifax, he has undertaken an active and productive career in research by demonstrating remarkable scholarship in the area of evolutionary biology. During the last 14 years he has also been the Director of the Evolutionary Biology Program, sponsored by The Canadian Institute for Advanced Research. This has been the most successful of the CIAR-programs and currently includes participating scientists from across Canada and the USA. Dr. Doolittle is working in a highly theoretical field and is widely respected by the international scientific community. His research is directed to the most fundamental level of biology. He is an ardent defender of the pursuit of fundamental knowledge and he is prepared to make the case for this research to university presidents, members of parliament and the lay public. I believe he is one of the most fundamental thinkers in biological sciences in Canada today. His ideas and theories have stood the test of time over two decades in a highly debated and rapidly developing field of theoretical research.

Dr. Doolittle has 150 original publications, 30 review articles and 10 book chapters. His ideas and theories on cellular evolution from the perspective of RNA and DNA sequences and his research accomplishments are widely recognized and cited in the literature. He is frequently an invited speaker at prestigious international meetings on evolutionary biology, such as the Keystone Symposia, the Gordon Research Conferences, and the National Academy of Sciences. He has received numerous honours over the years and is a Fellow of the American Association for the Advancement of Science, the CIAR, the Royal Society of Canada and the American Academy of Microbiology. Most recently he received an honorary doctorate from the University of Ottawa.

Dr. Doolittle's major research focus for many

years has been the use of the techniques of molecular biology for gene mapping and sequencing to determine how living organisms and their genes have evolved. Through his study of archaeobacteria he has contributed to the progressive revision of theories of how life evolved via several evolutionary kingdoms. His early studies focused on ribosomal RNA of cyanobacteria and the investigation of the endosymbiont theory for the development of chloroplasts and mitochondria in cells. As data have accumulated to support the concept that archaeobacteria are much closer evolutionary to eukaryotes than prokaryotes he expanded his studies to thermophilic and halophilic archaeobacteria. The methods developed in his laboratory provide highly flexible and reliable tools for genetic analysis in these organisms, where essentially no previous genetic mapping had been completed. Such studies have helped to define the origin of eukaryote specific genes.

In addition to his ability as an experimental scientist he is an unusually perceptive thinker. He possesses remarkable insight into theoretical issues which results in very creative ideas that stimulate debate on the process of evolution. He has an excellent capacity to critically assess current theories of evolution, construct new theories and develop innovative ways for evaluating those theories. His article in 1980 concerning "selfish DNA," published in *Nature*, was a very important starting point for the idea that the bulk of the DNA which makes up large genomes is the product of genetic processes and selection occurring within the genome and has little to do with the fitness of the organisms. This was the insight that began his rise to international recognition. Important analysis of population genetics provided support for the concept that repeat sequences of DNA in introns play a major role in redesigning development pathways for genes. He was also responsible for developing the concept that introns, which account for 90% of the human genes, are relics of the first assembly of



Dr. W. Ford Doolittle

genes. His greatest contributions have been at the theoretical level and he has become one of the principal contributors internationally to the debate on the genome and genome structure which has led to redefinition of evolutionary relationships.

Dr. Doolittle has been a leader at all levels. He is an excellent mentor for graduate students, some of whom have gone on to post doctoral fellowships in laboratories of Nobel Laureates. Former graduate students and post doctoral fellows that have trained in the Doolittle laboratory are now in demand as faculty members across Canada and in the USA. His research program has become a focus for development locally. Dr. Doolittle and his colleagues in the CIAR program have been the foundation for the Biomolecular Structure-Function, Genomics, Genetics initiative that forms a corner-

stone of the Research Strategy for Health Research developed by the Faculty of Medicine and incorporated into the Strategic Research Plan of Dalhousie University. Nationally, he helped initiate efforts to develop a Human Genome Program in Canada and participated development of the CIAR Evolutionary Biology Program of which he became the director. More recently, he has been a key contributor to the development of the Genome Canada Project and to the subsequent establishment of the Atlantic Genome Centre which has evolved from his initial proposal for a study of comparative microbial genomics, broadly based among institutions in all the eastern provinces.

The 2001 Laureate CSBMCB's Merck Frost Awardee: Dr. Natalie C. J. Strynadka

Dr. Strynadka received her university training at the University of Alberta, obtaining her B.Sc. in Biochemistry in 1985 and her Ph.D in 1990 under the supervision of Dr. Mike James.

During the next seven years she stayed on in Dr. James's laboratory, initially as a Post-Doctoral Fellow and then as a Research Associate. In 1997 she was appointed Assistant Professor in the Department of Biochemistry and Molecular Biology

at University of British Columbia. Although Dr Strynadka still in the early stages of her career as an independent investigator, she has already established an outstanding international reputation for her work in structural biology. A Burroughs Wellcome New Investigator Award (in 1999) and a Howard Hughes International Scholarship (in 2000) are truly remarkable achievements and amply demonstrate the high regard of the international research community for the pioneering work done by Dr Strynadka and her colleagues.

The quality and significance of her work may readily be judged by the fact that so much of her research has been published in top flight journals

such as *Nature*, *Journal of Biological Chemistry*, and *Biochemistry*. She has published 42 papers and has participated in numerous symposia as well as receiving many university speaking engagements.

The relevance of Dr. Strynadka's specific research achievements, which have an immediate and, most likely, longer-term impact on the scientific tableau may be summarised by her following accomplishments.

- a) Solving, for the first time in any species, the structure of a membrane-associated signal peptidase (Paetzel et al, *Nature*, 1998). This structure has revealed a novel catalytic mechanism and has provided the basis for understanding substrate specificity. Importantly, the structure provides a template for the design of compounds to inhibit bacterial growth, such that signal peptidase is being explored as an excellent target for antibiotic development.
- b) Solution of the structure of the "Tir/Intimin" complex that mediates the adhesion of pathogenic *E. coli* to mammalian host cells (Luo et al, *Nature*, 2000). This work is the first report of an adhesion complex in any pathogenic species and provides major insights into the binding sites and multivalent character of this cell-cell attachment. It is widely expected that this knowledge will provide a firm basis to design agents to inhibit pathogen adhesion and perhaps to develop anti-pathogen vaccines.
- c) Definition, for the first time, of the structure and kinetic properties of the retaining glycosyltransferase from *Neisseria meningi-*



Dr. Natalie C. J. Strynadka

tidis (Persson et al, *Nature: Structural Biology*, 2001). This enzyme is a key player in the synthesis of lipopolysaccharide in *Neisseria* species and this structure is the first to reveal interactions of the enzyme with both acceptor and donor sugars. This work is important from the perspective of basic biochemical characterization of this major class of enzymes and also because of the central role of lipopolysaccharides in bacterial pathogenesis.

d) Solution, for the first time, of the structure of a class D beta-lactamase - that of the enzyme from *Pseudomonas aeruginosa* (Paetzel et al, *Nature: Structural Biology*, 2000). This structure is revealed as a homo-dimer that has a novel catalytic mechanism and site for substrate binding. This structure should provide a template for the design of inhibitors and in this sense is vital because no clinically useful inhibitors of this class of beta-lactamases have yet been developed.

Workshop On: Myelin Structure And Its Role In Autoimmunity

June 5-8, 2002, Hotel Giubileo, Rifreddo, Potenza, Italy

Sponsored by the International Society for Neurochemistry (ISN), the Italian Association of Neuroimmunology (AINI), and the Multiple Sclerosis Society of Canada.

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OBJECTIVES OF THE WORKSHOP

Myelin, the insulating sheath surrounding nerve axons, has proven to be one of the most difficult membrane systems to study. The reason is that myelin is the product of an intimate contact between two different cell types and because myelin has a compact multilamellar structure that limits the accessibility of its components. Indeed, the organisation of myelin at the molecular level and,