

UNIVERSITY OF TORONTO

**HEART AND STROKE/RICHARD LEWAR CENTRE
OF EXCELLENCE IN CARDIOVASCULAR RESEARCH**



Creating Excellence in Cardiovascular Research
BIENNIAL REPORT
JULY 1, 2001 TO JUNE 30, 2003



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MESSAGE FROM THE DIRECTOR

Since its establishment in mid-1999, the Heart & Stroke/Richard Lewar Centre of Excellence at the University of Toronto has grown in leaps and bounds. If the period from 1999 to 2001 represented our birth and early development, then 2001 to 2003 could be described as the adolescent growing years. Over the past two years, we have:

- Significantly increased our Centre's membership base;
- Substantially increased our funding base;
- Consolidated our three research platforms;
- Added strategic personnel recruitments to our already talented and pre-eminent group of scientists; and,
- Garnered national and international recognition of our mission and achievements.



As Director of the Centre, I am often asked to articulate how the Centre can be differentiated from research institutes at hospitals or other universities. Two main features come to mind. First, the strength and depth of our inter-institutional and multidisciplinary research collaborations is unparalleled, as is demonstrated by the combined strength of our exceptional group of members. Our members represent multiple disciplines as well as several local hospitals and research institutes. Our vision cuts across boundaries of traditional disciplines, departments and institutions, and we aim to solve cardiovascular health problems in a whole new way. Second, the Centre aims to unite the cardiovascular community in the quest for discoveries through the sharing of infrastructure and knowledge. While various institutions are also enmeshed in the "discovery business," our positioning within the community allows the Centre to more effectively achieve discoveries. Growing new blood vessels to replace those blocked by atherosclerosis or creating vaccines that protect against viral heart disease or replacement heart muscle cells for those killed during a heart attack may seem like the stuff that science fiction is made of, but it is quickly becoming the reality at the Heart & Stroke/Richard Lewar Centre of Excellence. Novel diagnostic markers, discovered by our talented group of basic science researchers will help our pre-eminent clinician-scientists treat disease earlier, and more effectively, thereby achieving better outcomes for patients.

Stronger inter-institutional collaborations fostered by the HSRLCE have also resulted in the concomitant strengthening of the local cardiovascular research community as a whole through the sharing of infrastructure and knowledge. These collaborations, in combination with careful investment and budgetary strategies, have resulted in the leverage of several large-scale, peer-reviewed grants from agencies such as the Canadian Institutes of Health Research (CIHR), the Heart and Stroke Foundation of Canada (HSFC), the Canadian Foundation for Innovation (CFI) and the Ontario Research and Development Challenge Fund (ORDCF). We also received a high-profile Interdisciplinary Health Research Team (IHRT) grant from the CIHR, and are administering one of the key Strategic Training Programs from the CIHR (one of the 2 dedicated cardiovascular excellence grants across the country – we call it "TACTICS"). Since we commenced operations in 1999 with start-up funding of \$11 million from the Lewar family and the Heart & Stroke Foundation of Ontario, our funds have grown to over \$19 million.

Simultaneously, membership in the Centre has increased to 69 principal investigators and continues to grow. A powerful research Centre can only be built on the strengths of its individual members, and our members were highly productive from 2001 to 2003. Of the over 411 directly cardiovascular-related publications by our members, 94, or 21%, were published in peer-reviewed journals with an impact factor of 10 or higher!

Of these high impact publications, over 50% involved collaborative efforts between two or more of the Centre's PIs. Centre members were also highly successful in leveraging new group grants from both the CIHR and Heart & Stroke Foundation (rated number 1 in both competitions), and received several new research chairs and national and international research awards. Congratulations to all of you.

The combination of the strength of these investigators and the reputation of the University, and now the Centre, has assisted us with the recruitment of two excellent researchers: in collaboration with the Department of Physiology (UofT) we have hired Dr. Scott Heximer (Washington University, St. Louis, MO) who is now a Tier II Canada Research Chair in Cardiovascular Physiology. We also recruited Dr. Ferhaan Ahmad (Howard Hughes Medical Institute at Harvard University, Cambridge, MA) as a new CIHR Clinician-Scientist in collaboration with the University's Department of Medicine and the University Health Network (UHN). I am excited to announce that additional recruitment searches are currently underway.

Our three major research platforms also continue to flourish. Platform I, transgenic physiology for animal models of disease led by Dr. Peter Backx, has experienced significant growth with the acquisition of additional state-of-the-art equipment and highly qualified personnel. Accordingly, utilization of this facility has grown significantly, paving the way to more basic science discoveries. The ability to monitor sophisticated physiological responses in not only the heart, but also the blood vessels, both in vivo and in vitro, underscores the strength of using functional genomics to dissect the mechanisms underlying cardiovascular disease.

Platform II, gene and cell-based therapy, led by Drs. Duncan Stewart and Richard Weisel, has been immersed in two major clinical trials. The first involves gene therapy for cardiac angiogenesis, the second focuses on cell based therapy for pulmonary hypertension. The group has applied for several large-scale program grants thereby synergizing the group intellectually while enhancing their competitiveness and corresponding ability to make "real-life" discoveries in the clinical realm.

Platform III, genes and populations, led by Dr. Alexander Logan, supports gene and protein discovery through large-scale genotype-phenotype correlations. The cardiovascular group is at the leading edge in terms of large-scale gene screening using "gene-chips" containing the whole human or mouse genome. This platform has been supported through the CIHR to screen families in communities for myocardial infarction and heart failure. Screening for and discovering genetic markers of cardiovascular disease will set the stage for the integration of the basic and clinical science discoveries made by platforms I and II into treatment modalities, thereby affecting the lives of real people in real ways.

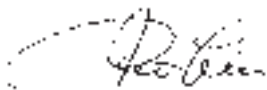
I am confident that the programs and initiatives cited above, as well as those currently underway, will help ensure that Centre accomplishes its original vision: "to achieve national and international leadership in cardiovascular research through innovations in science, collaboration of minds and the training and recruitment of the best and brightest leaders in research".

Indeed, this was independently confirmed during an external review of the Centre in November 2002, led by a team of rigorous reviewers: Dr. Paul Armstrong (University of Alberta), and Dr. Pavel Hamet (University of Montreal). Despite the Centre's nascence and growing phases, we received an excellent review and unanimous approval of our future directions. In the immediate future, we aim to consolidate our current research activities, implement a collaborative fund raising effort, and reorganize our administrative infrastructure to ensure our goals are efficiently achieved.

Of course, none of this is possible without the tremendous dedication and hard work of our members, and the continued commitment of our staff. Thus, I would like to thank our Centre members for the extraordinary support and insightful advice that they have provided me with throughout the past two years. Particular thanks are due to the leaders of the Centre's research platforms as well as those individuals who served on the Executive and Advisory Committees, tirelessly donating their time to make the Centre what it is today. I would also like to thank our dedicated staff, including our Business Managers Ms. Wendy Kubasik and Ms. Insook Noell (maternity leave replacement), our Research Officer, Dr. Ann Dulhanty, and our Administrative Assistants Ms. Stacey Cooper and Ms. Kerri Ramoutar.

On reflection, I believe that we all know individuals, perhaps close friends, family members or colleagues, who have suffered due to the devastating effects of cardiovascular disease. Perhaps we have grappled with this disease, still the number one killer in Canada, ourselves. When I contemplate the exciting future of cardiovascular research, I realize that while the field as a whole is still in its genesis, the momentum that we have achieved will only help to accelerate the pace of research progress, discovery and as a result, treatment. Thus, our future research targets include the development of novel risk factors for heart disease, novel treatments strategies, and individualized preventative strategies including the development of novel vaccines for the heart.

I look forward to your continued support of the Heart & Stroke/Richard Lewar Centre.



Peter Liu

MISSION, VISION AND ORGANIZATIONAL STRUCTURE

Mission

The purpose of the Heart and Stroke/Richard Lewar Centre of Excellence (HSRLCE) is to bring the best of cardiovascular sciences at the University of Toronto together, including basic sciences, clinical investigations and community health. Research at the Centre is focused on the prevention and cure of atherosclerosis, heart failure and congenital heart disease. From this research will evolve diagnostic, prognostic, and therapeutic innovations that can impact on the health of all Canadians.

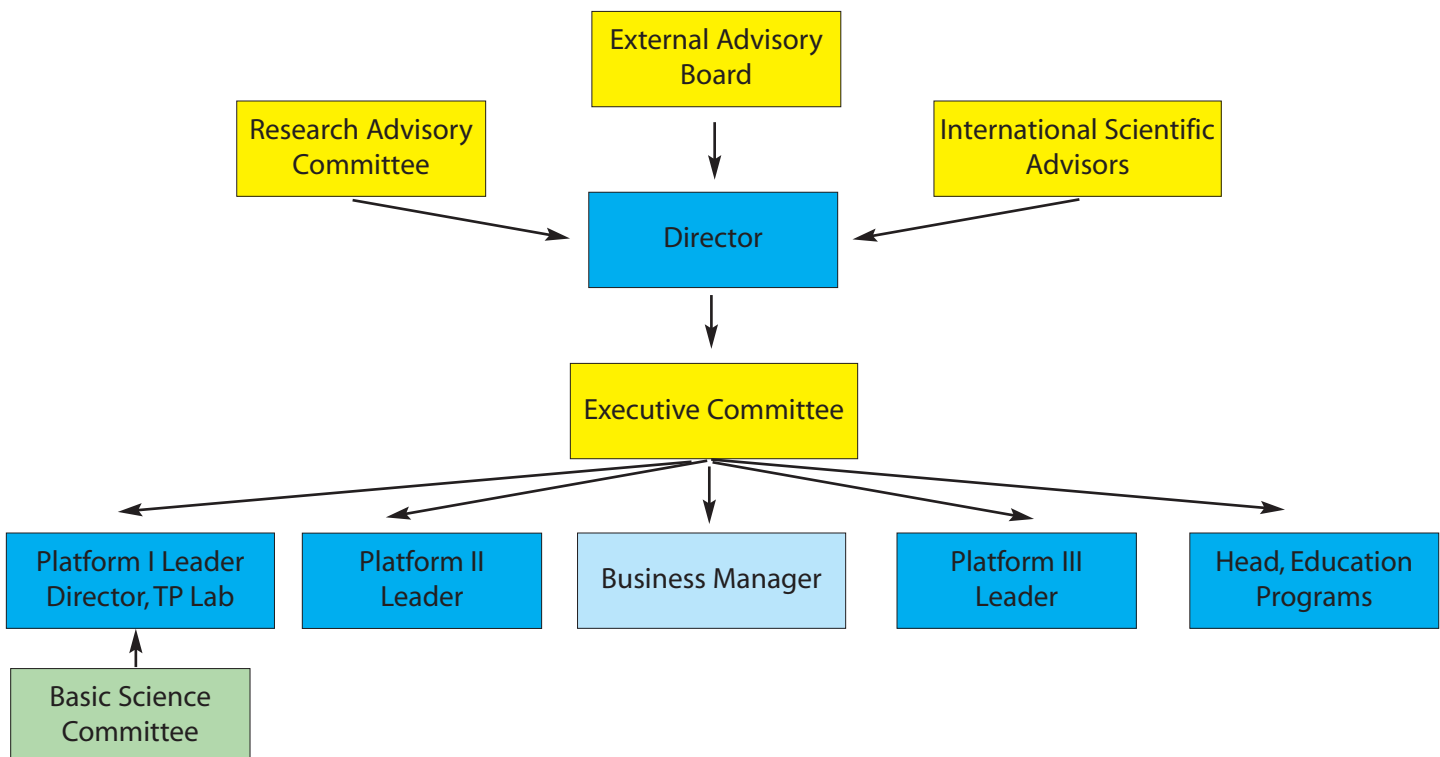
Vision

The Centre of Excellence aims to become an internationally pre-eminent institution in cardiovascular research, through innovations in science, collaboration of minds, and training and recruitment of the best and brightest leaders in research.

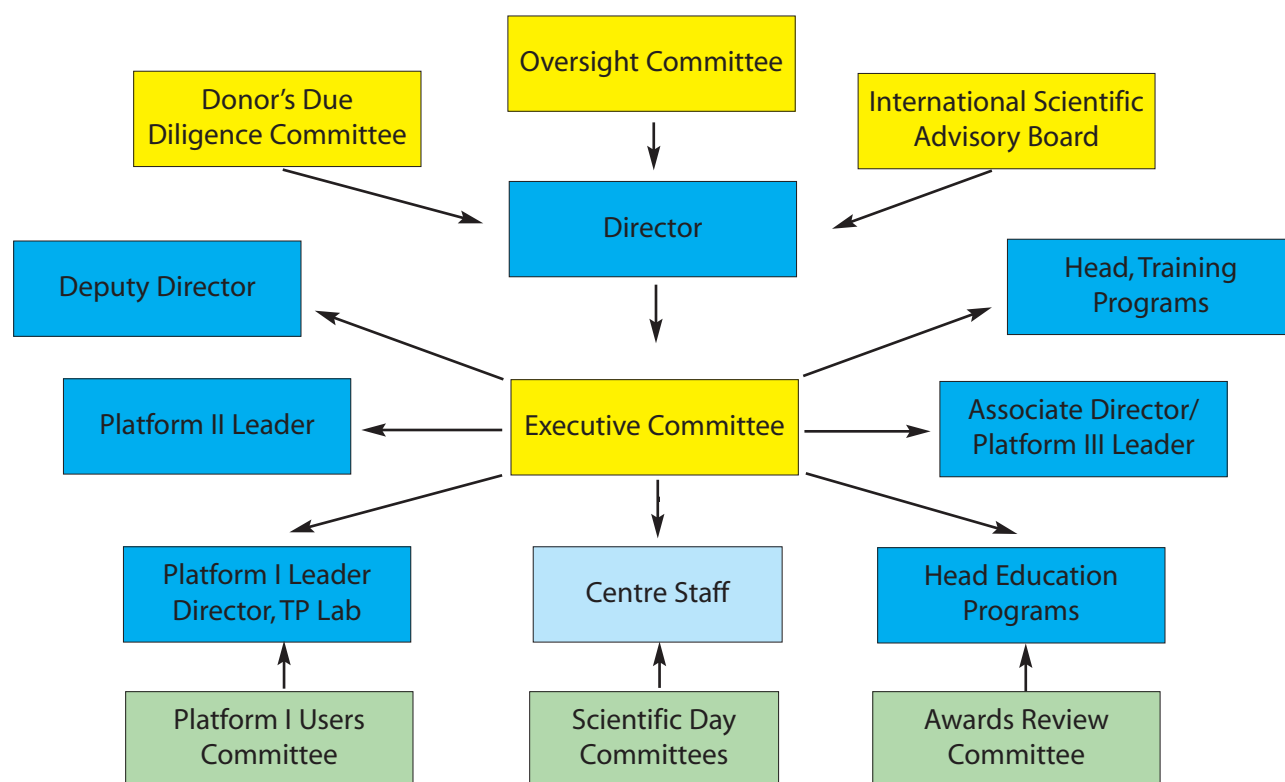
Organizational Structure

The Heart & Stroke/Richard Lewar Centre of Excellence has grown from little more than a simple concept on paper, to an intricate and vibrant organization in four short years. Driven by the enthusiasm, vision and ambition of many, but primarily the Director and the original executive committee, the Centre reached a point in November 2002, when an external review committee commended the group for achieving what some thought impossible: bringing together the cardiovascular research community of Toronto. Having this achievement under its belt, the Centre then embarked on the next stage of its growth: the pursuit of excellence. This evolution can clearly be seen by comparing the Centre's administrative organizational charts, presented below, for May 2002 and September 2003.

HSRLCE Organizational Chart (May 2002)



HSRLCE Organizational Chart (September 2003)



Composition of Centre Committees and Centre Advisors

The Centre is an organization for the cardiovascular research community in Toronto, run by the cardiovascular research community of Toronto. As outlined below, the directors and program heads of the Centre are faculty members from the University of Toronto. This group forms the Centre's Executive Committee. Members of the Centre occupy all the seats on the operational and advisory committees: the Platform I Users Committee, Scientific Day Program Committee and Awards Review Committee. To obtain the best advice and guidance, the Director is guided in his strategic planning by three boards, populated by scientific and business leaders from outside the Centre: the External Advisory Board, Oversight Committee and International Scientific Advisory Board.

The strategic administrative functions of the Centre in essence develop the Centres programs, while an operational administration, consisting primarily of Centre staff, deliver the functions. The table on the next page lists the various administrative of the Centre, with a brief summary of their role at the Centre.

HSRLCE Administrative Role, (September 2003)

	Members	Mandate, Role, Functions, Duties
OVERSIGHT COMMITTEE	Avrum Gotlieb, Denis Grant, Peter Lewis (Chair), Peter Liu, John MacDonald, Eliot Philipson, Stephen Scherer, Michael Sefton Keith Stewart	Assess the performance of the Director and policies/ strategic directions of the Centre; provide Director with guidance on strategic research issues; harmonize goals and operations of Centre with other UofT institutions
DONOR'S DUE DILIGENCE COMMITTEE	Gil Newman, Wendy Kubasik Peter Liu, Bob Luba (Chair), Andrew Scipio del Campo, Laura Syron, David Ward	Fulfill fiduciary responsibility to founding donors; act as a Board of Trustees
INTERNATIONAL SCIENTIFIC ADVISORY BOARD	TBD	Provide guidance on matters related to strategic scientific and research direction; advise on development strategies for Centre of Excellence
EXECUTIVE COMMITTEE	Peter Backx, Ann Dulhanty, Wendy Kubasik, Peter Lewis, Peter Liu (Chair), Alexander Logan, Thomas Parker, Michael Sole, Duncan Stewart, Richard Weisel	Make operational decisions on basis of Director's strategic direction including financial and operational issues of the Centre
PLATFORM I USERS COMMITTEE	TBD	Provide guidance to the Director of the Transgenic Physiology Lab on the provision of services to the membership
AWARDS REVIEW COMMITTEE	Recruited each year	Act as reviewers for Centre's fellowship and studentship awards competitions; provide Head, Education with guidance on awards allocations
SCIENTIFIC DAY PROGRAM COMMITTEE	Recruited each year	Provide advice on the scientific day program including theme, speakers, order of program
DIRECTOR	Peter Liu	Financially accountable; directs strategic direction of the Centre; supervises Centre personnel
DEPUTY DIRECTOR	Richard Weisel	Facilitates communications amongst members of the Centre, liaise with potential strategic and sponsoring partners
ASSOCIATE DIRECTOR, PLATFORM I	Peter Backx	Platform I spokesperson; oversees TP Lab operations; develops systems; ensures lab meets users needs
ASSOCIATE DIRECTOR, PLATFORM II	Duncan Stewart	Platform II spokesperson; develops Centre's program in translational medicine
ASSOCIATE DIRECTOR, PLATFORM III	Alexander Logan	Platform III spokesperson; develops Centre's programs in clinical genetics and proteomics
HEAD, EDUCATION PROGRAMS	Michael Sole	Chairs review committees for Centre's trainee award competitions; provides strategic direction and operational management
HEAD, TRAINING PROGRAMS	Thomas Parker	Represents TACTICS program at Centre; oversees Centre's involvement in training

MEMBERS OF THE CENTRE OF EXCELLENCE

University of Toronto faculty with a focus in cardiovascular research can apply for membership in the Centre. The Executive committee reviews and approves all membership applications. Each member has a voice at the Centre, most clearly heard at the annual strategic planning retreat. Members occupy many places in the administrative structure of the Centre, and trainee members are eligible to apply for Centre awards.

The following is a list of Centre members and their research interests:

Adeli, Khosrow PhD, FCACB, DABCC

Head and Associate Professor, Clinical Biochemistry Division, Hospital for Sick Children and University of Toronto. Research interests: molecular and cellular biology of lipoprotein metabolism in cardiovascular disease, insulin resistance syndrome, type 2 diabetes and obesity; molecular basis of genetic disorders of lipoprotein metabolism and dyslipidemias; mechanisms of action of hypolipidemic drugs at the cellular and molecular level.

Backx, Peter PhD

Professor, Departments of Physiology and Medicine, University of Toronto, Division of Cardiology, University Health Network. Research interests: ion channels and heart disease.

Belik, Jaques MD

Professor, Department of Pediatrics, University of Toronto, Staff Neonatologist, The Hospital for Sick Children. Research interest: pulmonary hypertension and vascular smooth muscle contractile potential.

Bendeck, Michelle PhD

Associate Professor of Laboratory Medicine and Pathology, Faculty of Medicine, University of Toronto. Research interests: cell and molecular biology of atherosclerosis, control of SMC activation following arterial injury; and cell-matrix interactions in atherosclerosis and restenosis.

Bradley, T. Douglas BA, MD, FRCPC

Professor of Medicine and Director, Centre of Sleep and Chronobiology, University of Toronto, Director, Cardio-pulmonary Sleep Disorders and Research Centre, Toronto General Hospital of the University Health Network, Staff Physician, Division of Respiriology, Toronto General Hospital of the University Health Network and Director, Sleep Research Laboratory of the Toronto Rehabilitation Institute. Research interests: pathophysiological interactions of sleep apnea and the cardiovascular system as well as clinical trials on the effects of sleep apnea with CPAP.

Brister, Stephanie BSc, MSc, MD

Associate Professor, Department of Surgery, University of Toronto, Staff Cardiac Surgeon, University Health Network. Research interests: thrombosis; haemostasis; women and ischemic heart disease.

Brooks, Dina PhD

Assistant Professor, Department of Physical Therapy, University of Toronto
Research interests: rehabilitation of individuals with cardiac disease, especially after surgery. Her research examines measures that predict long-term outcome as well as the implementation of rehabilitation from the acute hospital to the community.

Bruneau, Benoit PhD

Assistant Professor, Department of Molecular and Medical Genetics, University of Toronto and Scientist, Cardiovascular Research, The Hospital for Sick Children. Research interests: transcriptional regulation of cardiac development, its impact on cardiac function, and its abnormal function in congenital disease.

Butany, Jagdish MBBS, MD

Professor, Department of Pathology, University of Toronto, Staff Pathologist and Director, Autopsy Service, University Health Network. Research interests: cardiovascular pathology as well as the pathology and causes of failure of vascular grafts/vascular prosthesis.

Cheung, Angela MD, PhD, FRCP

Assistant Professor, Departments of Surgery, Medicine, Public Health Sciences, and Health Administration, University of Toronto, Associate Director, Women's Health Program, University Health Network, Research interests: postmenopausal women's health, especially as it relates to cardiovascular disease; randomized controlled trials and cohort studies; health services and health policy research.

Cohen, Eric MD, FRCPC

Associate Professor, Department of Medicine, University of Toronto, Director, Cardiac Catheterization Laboratory, Sunnybrook & Women's College Health Sciences Centre. Research interests: interventional cardiology including adjunctive pharmacotherapy; evaluation of new interventional devices; and outcomes and cost-effectiveness of percutaneous revascularization.

Courtman, David PhD

Assistant Professor, Departments of Surgery and Pathology and the Institute for Biomaterials and Biomedical Engineering, University of Toronto; Staff Scientist, St. Michael's Hospital. Research interests: roles of extrinsic coagulation and matrix degradation in blood vessel remodeling; the development of tissue engineered blood vessels and heart valves; molecular epidemiology of abdominal aortic aneurysm.

Cybulsky, Myron MD

Associate Professor, Department of Laboratory Medicine and Pathobiology, University of Toronto, Pathologist, Toronto General Hospital, University Health Network Senior Scientist, Toronto General Research Institute. Research interests: functions of endothelial cell and leukocyte adhesion molecules in leukocyte emigration during inflammation and atherosclerosis; cellular molecular mechanisms of endothelial cell NF kappa B signal transduction in different regions of the arterial tree during the initiation of atherosclerotic lesions.

Dorian, Paul MD, MSc, FRCPC

Professor, Department of Medicine, University of Toronto, Staff, Division of Cardiology, Department of Medicine and St. Michael's Hospital, Chief of Electrophysiology, St. Michael's Hospital. Research interests: factors related to the induction and maintenance of ventricular fibrillation, defibrillation, antiarrhythmic drug effects on ventricular fibrillation and defibrillation, and quality of life in patients with cardiac arrhythmias.

Dumont, Dan PhD

Associate Professor and Research Scientist, Department of Medical Biophysics, University of Toronto. Research interests: control of angiogenic response using both biochemical and mouse molecular genetic approaches to study the importance of receptor tyrosine kinase signaling during angiogenesis.

Ethier, C. Ross BSc, SM, MA, PhD

Professor of Mechanical Engineering, Biomedical Engineering and Ophthalmology, University of Toronto. Research interests: bioengineering studies of blood flow and mass transfer in large arteries; study of hemodynamic basis of arterial disease; blood flow modeling.

Fantus, I. George BSc, MDCM

Professor, Departments of Medicine and Physiology, Director, Banting and Best Diabetes Centre Core Laboratory; Director, Division of Endocrinology and Metabolism, University of Toronto. Research interests: pathogenesis of insulin resistance and the complications of diabetes. Specifically, his lab is working to identify the insulin signaling defect in adipose and muscle cells in type 2 diabetes mellitus as well as mechanisms of high glucose induced alterations in gene expression in mesangial cells.

Floras, John MD, DPhil, FRCPC, FACC, LMCC

Professor, Department of Medicine, University of Toronto, Clinical Director, Cardiology, Mount Sinai Hospital, Director of Cardiology Research, University Health Network. Research interests: regulation of the heart and circulation in healthy men and women by the autonomic nervous system, endogenous peptides, purines and hormones, by the endothelium and by exercise; studies of menopause (hormonal replacement therapy); heart failure; hypertension; renal insufficiency and lupus.

Fremes, Stephen MD, MSc, FRCSC, FACP, FACC

Professor, Department of Medicine, University of Toronto, Head, Division of Cardiovascular Surgery, Sunnybrook & Women's College Health Sciences Centre. Research interests: perioperative myocardial protection and the influence of arterial conduits on the short; long-term of patients following coronary bypass surgery; imaging of coronary bypass grafts.

Goodman, Jack PhD

Associate Professor, Faculty of Physical Education and Health, University of Toronto. Research interests: left ventricular response to acute and chronic exercise stress in both health and disease; central and peripheral limitations to exercise performance; mechanisms of cardiovascular adaptation to cardiac rehabilitation.

Goodman, Shaun BSc, MD, MSc

Assistant Professor, Department of Medicine, University of Toronto, Staff Cardiologist, St. Michael's Hospital, Medical Director, Canadian Heart Research Centre. Research interests: acute and chronic ischemic heart disease including anti-thrombotic/platelet therapy; role of 12-lead continuous electrocardiographic (ECG) monitoring in acute coronary syndromes; secondary prevention.

Gotlieb, Avrum BSc, MDCM, FRCPC

Professor and Chair, Department of Laboratory Medicine and Pathobiology, University of Toronto - Director, Vascular Research Laboratory, Department of Laboratory Medicine and Pathology and Banting and Best Diabetes Centre, University Health Network, University of Toronto, Anatomic Pathologist (Cardiovascular) University Health Network, Member, Graduate Faculty. Research interests: cell biology of atherosclerosis; cell biology of the mitral valve as it relates to pathobiological processes which induce heart valve dysfunction and disease.

Heximer, Scott BSc, PhD

Associate Professor, Department of Physiology, Principal Investigator, Heart & Stroke/ Richard Lewar Centre of Excellence, University of Toronto. Research interests: blood pressure regulation; G protein signaling.

Hinek, Alek MD, PhD, DSc

Professor, Department of Laboratory Medicine and Pathobiology, University of Toronto, Senior Scientist, Cardiovascular Research Program, The Hospital for Sick Children. Research interests: vascular development; atherosclerosis; inherited vascular disease; vascular cellular matrix; elastogenesis; SMC proliferation.

Husain, Mansoor MD

Assistant Professor, Department of Medicine, University of Toronto and Scientist, Toronto General Hospital Research Institute, University Health Network. Research interests: molecular regulation of vascular smooth muscle cell proliferation and contractility; genetic models of atherosclerosis and hypertension in mice.

Irvine, Jane PhD

Associate Professor, Department of Psychiatry, University of Toronto and Affiliated Scientist Division of Behavioural Sciences and Health, Toronto General Research Institute, University Health Network. Research interests: behavioural; electrophysiology; quality of life; congenital; ischemic heart disease.

Keeley, Fred PhD

Professor, Departments of Biochemistry, Laboratory Medicine and Pathobiology, University of Toronto, Senior Scientist, The Hospital for Sick Children. Research interests: post-transcriptional regulation of synthesis, structure and assembly of arterial elastin.

Langer, Anatoly MD, BSc, FRCP, FACC

Associate Professor, Department of Medicine, University of Toronto, Director, Canadian Heart Research Centre. Research interests: clinical trials, continuing professional development; and medical education.

Langille, Lowell PhD

Professor, Department of Laboratory Medicine and Pathobiology and Department of Obstetrics and Gynecology, University of Toronto, Director, Heart & Stroke Foundation of Ontario Program in Cell Biology of Atherosclerosis. Research interests: influences of physical forces in the biology of vascular cells and tissues; mechanotransduction pathways in vascular endothelium and smooth muscle cells, and how these pathways regulate cellular activities and tissue remodeling in cell culture and animal models.

Letarte, Michelle PhD

Professor of Immunology and Medical Biophysics, University of Toronto and Research Scientist, The Hospital for Sick Children. Research interests: role of endoglin in normal vascular function and in the pathobiology of Hereditary Hemorrhagic Telangiectasia type 1 (HHT1).

Lewis, Gary MD, FRCPC

Associate Professor, Department of Medicine, University of Toronto, Division of Endocrinology, Toronto General Hospital and Head, Division of Clinical Investigation and Human Physiology, Toronto General Hospital Research Institute, University Health Network. Research interests: insulin regulation of lipoprotein production; mechanism of HDL lowering in hypertriglyceridemia; investigation of the effects of portal vs. peripheral insulin delivery on hepatic glucose and lipoprotein production in humans; and the effect of free fatty acids on pancreatic beta cell secretory function.

Li, Ren-Ke MD, PhD

Professor, Department of Surgery, University of Toronto and Division of Cardiovascular Surgery, Toronto General Hospital, University Health Network. Research interests: cell transplantation after myocardial infarction to introduce muscle into myocardial scar tissue, which will limit ventricular dilatation, stimulate angiogenesis and improve heart function.

Lindsay, Thomas MDCM, MSc, FRCSC

Associate Professor, Department of Surgery and Institute of Medical Sciences, University of Toronto, Director, Toronto General Hospital Vascular Centre, University Health Network. Research interests: pathophysiology of local and remote organ injury after ruptured aortic aneurysm; myocardial contractile dysfunction after hemorrhagic shock; myocardial TNF synthesis.

Liu, Peter MD, FRCPC

Professor and Heart & Stroke Polo Chair, Department of Medicine, Director, Heart & Stroke/Richard Lewar Centre of Excellence, Associate Director, Division of Cardiology, University of Toronto, Director, CIHR Group in Heart Failure Research, Staff Cardiologist and Associate Director, Division of Cardiology, University Health Network. Research interests: inflammatory and immune mechanisms of cardiovascular disease; the role of host responses to cardiovascular injury in producing heart failure investigated through the use of transgenic models; translation of heart failure investigation from the bench to the bedside through clinical trials and health service research.

Logan, Alexander MD, MSc, FRCPC

Professor, Departments of Medicine and Public Health Sciences, University of Toronto, Medical Staff, University Health Network and Mount Sinai Hospital. Research interests: genetic epidemiology and gene identification in human hypertension; clinical trials in heart failure; clinical investigations assessing sleep apnea in refractory hypertension.

MacLennan, David BSA, MS, PhD

University Professor, Banting and Best Department of Medical Research, University of Toronto. Research interests: basic investigation of function of sarcoplasmic reticulum proteins; investigation of animal models of genetic basis of cardiomyopathy.

Marsden, Philip MD

Professor and Keenan Chair in Medical Research, Department of Medicine, University of Toronto, Staff, Division of Nephrology, St. Michael's Hospital. Research interests: endothelial-derived vasomediator gene expression.

Mickle, Don MSc, MD

Professor, Department of Laboratory Medicine and Pathobiology, University of Toronto, Director, Western Division Laboratories and Clinical Biochemistry, University Health Network. Research interests: myocardial cell transplantation.

Nolan, Robert BA, MA, PhD

Assistant Professor, Department of Psychiatry, University of Toronto, Adjunct Professor, Graduate Programme in Psychology, University of Toronto, Cardiovascular Research Psychologist and Director, Behavioral Cardiology Research Unit, University Health Network. Research interests: cardiovascular reactivity to stress and heart rate variability; environmental and psychosocial determinants of cardiovascular health; behavioral strategies for risk factor reduction counseling.

Opas, Michael PhD

Professor, Department of Laboratory Medicine and Pathobiology and the Institute of Medical Science, University of Toronto. Research interests: cytoskeleton, cell adhesion, and motility; cell biology of Ca-binding proteins.

Opavsky, Anne BSc, MSc, MD, PhD

Assistant Professor, Department of Pediatrics, University of Toronto, Scientist Track Investigator, Infection, Immunity, Injury and Repair Research and Cell Biology, The Hospital for Sick Children. Research interests: host susceptibility to viral myocarditis; cardiac myocyte responses to viral infection; and signal transduction.

Osmond, Daniel PhD

Emeritus Professor, Departments of Physiology and Medicine, University of Toronto. Research interests: "New Pressor Protein" related to coagulation Factor XII, its mechanism of action, its cardiovascular effects, the potentiation of its effects by the antihypertensive drugs known as angiotensin I converting enzyme inhibitors.

Parker, John MD, FRCPC

Associate Professor, Department of Medicine, University of Toronto, Service Chief, Cardiology, Director, Harrowstown Heart Failure Clinic and Director, Cardiovascular Clinical Research Laboratory, Mount Sinai Hospital. Research interests: autonomic physiology; nitrate pharmacology; and kinetics.

Parker, Thomas MD, FRCPC, FACC

Associate Professor, Department of Medicine, University of Toronto, Brazilian Ball Chair, Division of Cardiology, St. Michael's Hospital. Research interests: molecular regulation of cardiac hypertrophy and calcium-binding proteins.

Penninger, Josef MD

Associate Professor, Departments of Immunology and Medical Biophysics University of Toronto, Associate Professor, Department of Experimental Pathology University of Innsbruck, Austria. Research interests: pathogenesis of cancer, heart and bone diseases using gene-targeting technology in mice.

Rakowski, Harry MD, FRCPC

Professor of Medicine, University of Toronto, Staff Cardiologist and Director, Clinical Cardiology, University Health Network. Research interests: hypertrophic cardiomyopathy; valvular heart disease; and contrast echocardiography.

Rao, Vivek MD, PhD, FRCSC

Assistant Professor, Department of Surgery, University of Toronto, Staff Surgeon, Division of Cardiovascular Surgery, University Health Network. Research interests: myocardial protection for cardiac surgery; transplant vasculopathy; vascular biology of the endothelium.

Ross, Heather BSc, MD, FRCPC, ABIM

Assistant Professor, Department of Medicine, University of Toronto, Medical Director, Cardiac Transplant Program and Director of Clinical Trials for the Multiorgan Transplant Program, University Health Network. Research interests: congestive heart failure; cardiac transplantation.

Rubin, Barry BSc, MD, PhD, FRCSC, FACS

Associate Professor, Department of Surgery, University of Toronto, Medical Director and Staff Surgeon, Division of Vascular Surgery, University Health Network, Senior Scientist, Toronto General Research Institute, Consultant Staff, Mount Sinai Hospital and The Hospital for Sick Children. Research interests: molecular regulation of cardiac gene expression; role of MAP kinases.

Scholey, James MD, FRCPC

Associate Professor of Medicine, University of Toronto, Staff Physician and Chair of Fellowship Awards, University Health Network. Research interests: growth factors; cell signaling; diabetes; and mechanical strain.

Sefton, Michael BSc, ScD

Professor, Department of Chemical Engineering and Applied Chemistry and Director, Institute of Biomaterials and Biomedical Engineering, University of Toronto. Research interests: tissue engineering; cardiovascular biomaterials; platelet activation.

Siu, Sam MD, SM, FACC, FRCPC

Associate Professor, Department of Medicine, University of Toronto, Director of Research, University of Toronto Congenital Cardiac Centre for Adults, Director of Echocardiography, University Health Network and Mount Sinai Hospital. Research interests: adult congenital heart disease; pregnancy and heart disease; quantitative echocardiography.

Sole, Michael BSc, MD, FRCPC, FACC

Professor, Departments of Medicine and Physiology, University of Toronto, Staff Physician, University Health Network and Mount Sinai Hospital. Research interests: conditioned nutritional requirements and pathogenesis of myocardial failure; circadian molecular rhythms in cardiovascular tissues.

Steiner, George BA, MD, FRCPC

Professor, Departments of Medicine and Physiology, University of Toronto, Senior Staff Physician, University Health Network, Project Director, Diabetes Atherosclerosis Intervention Study; Head, WHO Collaborating Centre for the Study of Atherosclerosis in Diabetes. Research interests: diabetes, lipoproteins and atherosclerosis.

Stewart, Donna MD, FRCPC

Professor and Chair of Women's Health, Department of Psychiatry, University of Toronto and University Health Network. Research interests: gender differences in cardiovascular disease and rehabilitation.

Stewart, Duncan MD, FRCPC

Professor and Director, Division of Cardiology, Department of Medicine, University of Toronto, Head, Division of Cardiology, St. Michael's Hospital. Research interests: vascular biology, in particular the cell biology of endothelium as it relates to atherosclerosis and other vascular diseases; translational research in the field of gene-based therapies, particularly therapeutic angiogenesis and pulmonary hypertension.

Strauss, Bradley MD, PhD

Associate Professor, Departments of Medicine and Laboratory Medicine and Pathobiology, University of Toronto, Cardiology Staff and Director, Interventional Cardiology, St. Michael's Hospital. Research interests: restenosis; atherosclerosis; interventional cardiology; vascular biology; gene therapy.

Thomas, Scott PhD

Associate Professor, Department of Physical Therapy and Graduate Coordinator, Graduate Department of Rehabilitation Science, University of Toronto. Research interests: cardiovascular and musculoskeletal function and aging; non- or minimally invasive measures of cardiovascular status; interactions of exercise and other therapies (e.g. endocrine) on function and physical capacity.

Tsushima, Robert PhD

Assistant Professor, Department of Medicine, University of Toronto. Research interests: properties of cardiac ion channels and their role in arrhythmias.

Tu, Jack MD, PhD, FRCPC

Associate Professor, Departments of Medicine, Public Health Science and Health Administration, University of Toronto and Senior Scientist, Institute for Clinical and Evaluative Sciences (ICES). Research interests: Canadian Cardiovascular Outcomes Research Team; acute myocardial infarction care; OECD study of cross-national differences in treatments, costs, and outcomes in ischemic heart disease; effectiveness of congestive heart failure guidelines in Ontario; late results of the warm heart trial; carotid endarterectomy health services research.

Ward, Michael MD, PhD

Associate Professor, Department of Medicine, University of Toronto and Staff, Department of Medicine, St. Michael's Hospital. Research interests: endothelium; nitric oxide; endothelin; vascular smooth muscle; contractile proteins; hypoxia; atherosclerosis; and angiogenesis.

Webb, Gary BSc, MDCM

Professor, Department of Medicine, University of Toronto, Senior Staff Cardiologist and Director, University of Toronto Congenital Cardiac Centre for Adults, Toronto General Hospital, University Health Network, Bitove Family Professor of Adult Congenital Heart Disease. Research interests: clinical and research aspects of adult congenital heart disease and Marfan syndrome; teaching of clinical cardiology.

Weisel, Richard BA, MD, FRCSC

Assistant Professor, Department of Surgery and Chair, Division of Cardiac Surgery, University of Toronto, Cardiac Surgeon, University Health Network. Research interests: myocardial protection; cell transplantation; tissue engineering; gene and cell therapy.

Wittnich, Carin DVM, MSc, CVO

Professor, Departments of Surgery and Physiology, Director, Cardiovascular Sciences Collaborative Program, University of Toronto, Scientific Staff, Department of Surgery, The Hospital for Sick Children. Research interests: role of age, gender and sex hormones on myocardial pathology (hypertrophy, failure); developmental changes in myocardial intolerance to oxygen stress and its impact on congenital heart disease.

Wright, Graham PhD

Professor, Department of Medical Biophysics, Research Director, Heart and Circulation Program, University of Toronto. Research interests: MRI, Cardiac Imaging Image-guided intervention, myocardial characterization and angiography.

Yau, Terrence MD, MSc, FRCSC

Assistant Professor, Department of Surgery, University of Toronto, Staff Surgeon, Division of Cardiovascular Surgery, University Health Network. Research interests: myocardial gene therapy; cell transplantation; ventricular dysfunction.

Yeh, Wen-Chen PhD

Assistant Professor, Department of Medical Biophysics, University of Toronto, Senior Scientist, Princess Margaret Hospital/University Health Network. Research interests: TNF signaling; survival and apoptosis pathways.

RESEARCH PROGRAMS

Platform I: Transgenic Physiology (Associate Director: Dr. Peter Backx)

The Transgenic Physiology Laboratory of the Heart & Stroke/Richard Lewar Centre of Excellence is directed by Dr. Peter Backx and is the most physically tangible part of the Centre, located in the Fitzgerald Building on the University of Toronto's downtown campus. Also located at this site are the administrative offices of the Centre.



The mandate of the Transgenic Physiology Lab is to enhance basic research in the cardiovascular sciences within the University of Toronto community by providing the environment, expertise and resources for evaluation of cardiovascular function in experimental models, with an emphasis on models of altered cardiovascular function. The Centre supports two technical personnel, houses a broad array of state-of-the-art equipment, and has in-house expertise in a number of investigative techniques and models.

The capabilities of the Transgenic Physiology Lab at the Centre have evolved significantly over the past two-and-a-half years. From its opening in mid 2001, a great deal of progress has been made in both providing infrastructure and expertise to facilitate a wide range of investigations for members of the Centre. This supports the long-term goal of the Centre: achieving excellence, by providing the membership access to avenues of investigation that allows new questions to be addressed, and answers to be obtained more expeditiously.

The following list documents the significant capacity of the Transgenic Physiology Lab to support excellence in the investigations of the members.

For in vivo/ex vivo assessment:

- Echocardiography to measure ejection fraction, VCS, wall motion and M-mode telemetry (pressure and ECG recordings);
- In vivo hemodynamics, such as pressure and pressure-volume recordings;
- Vascular function: perfusion myographs, flow control and force measurements of strips;
- Cell shortening and trabecular mechanics along with sarcomere length and Ca^{2+} measurements;
- Confocal microscopy of isolated cells for Ca^{2+} transients, Ca^{2+} sparks, Ca^{2+} spikes;
- Programmed stimulation for arrhythmia induction;
- Patch-clamp recordings: action potentials, membrane currents; Single cell (cardiac and smooth muscle) patch-clamp electrophysiology;
- Cellular mechanics and Ca^{2+} imaging;
- Langendorff measurements of isometric pressure (balloon-based, variable perfusion pressures), working heart, electrical recordings, pressure volume;
- Tail cuff pressure, ECG recordings;
- Molecular analysis of ion channels and drug development.

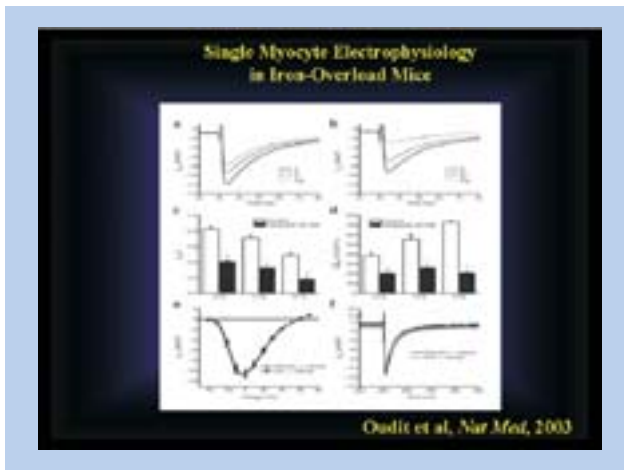


Figure 1

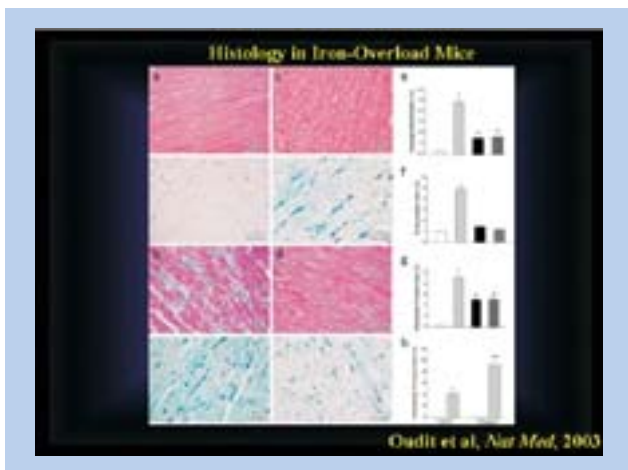


Figure 2

Figures 1 and 2: Iron overload is reaching epidemic proportions worldwide. Iron-overload cardiomyopathy is the most important prognostic factor for patient survival. Researchers at the HSRLCE transgenic laboratory have shown that cardiac L-type calcium channels are the key transporters of iron into cardiomyocytes under iron-overloaded conditions, and potentially represent a new therapeutic target to reduce the cardiovascular burden from iron overload.

For Morphometric Assessment:

- Echoradiography (wall thickness, heart size etc);
- Conventional, confocal and deconvolution microscopy for cell, trabecular and whole heart assessment;
- Tissue histology and immunohistochemistry, ImagePro5 software analysis.

Figure 3: Heart disease is associated with altered electrical properties of the heart. Indeed, 50% of heart disease patients develop life-threatening arrhythmias. Researchers at the HSRLCE transgenic laboratory have shown that the changes in ion channels, which are responsible for the electrical patterns in the heart, can themselves create heart disease. These results establish for the first time a direct link between electrical changes and the progression of heart disease".

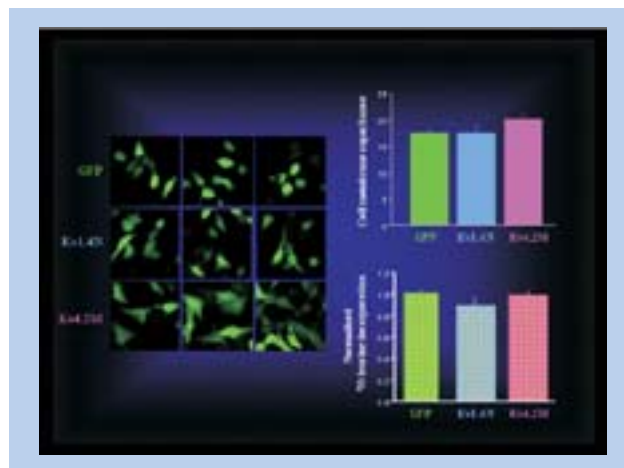


Figure 3

Technical Expertise in Models of Disease:

- Aortic banding: open chest thoracic and abdominal, closed chest ascending;
- Coronary artery ligation (under development);
- Telemetry surgeries.

Gene Delivery/Expression Analysis:

- In vivo gene therapy with adenovirus to perform RNA interference, expertise now exists to produce vector of choice, delivery to heart is being perfected.

Figure 4: Using mice, investigators at the HSRLCE transgenic laboratory have shown that the evolutionarily conserved phosphoinositide pathway (PIP) is a key regulator of normal physiological growth and pathophysiological growth. Proteins and enzymes involved in the regulation of these PIP molecules represent exciting new targets in the treatment of heart disease.

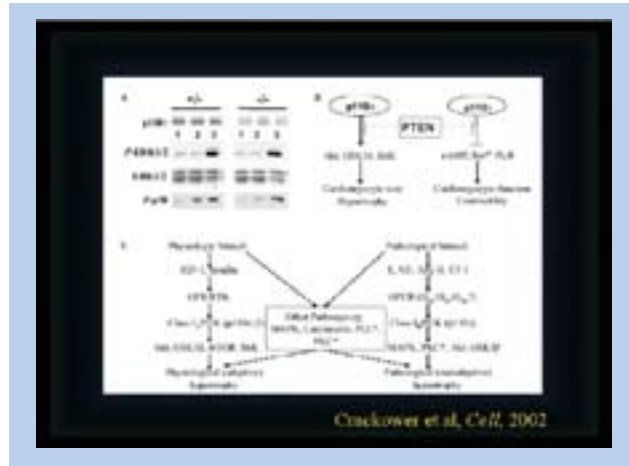


Figure 4



Figure 5

Figures 5 – 10: (this page and next): Thyroid hormone is a powerful modifier of heart function and thyroid hormone signaling is disrupted in disease. The HSRLCE transgenic laboratory has generated a mouse with elevated thyroid hormone exclusively in the heart. These mice have enhanced heart function and are resistant to deterioration of cardiac function in disease.

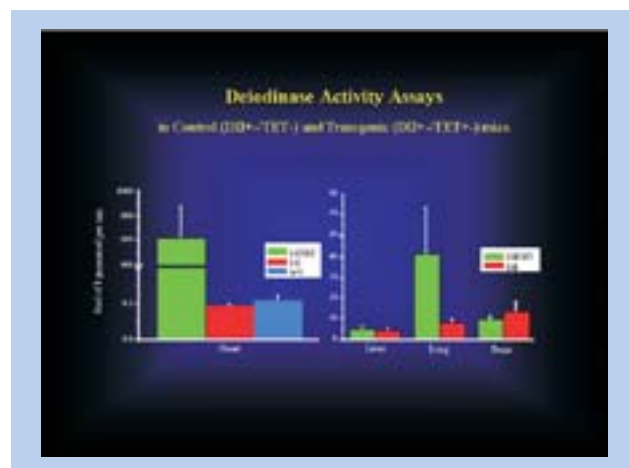


Figure 6

Figure 7

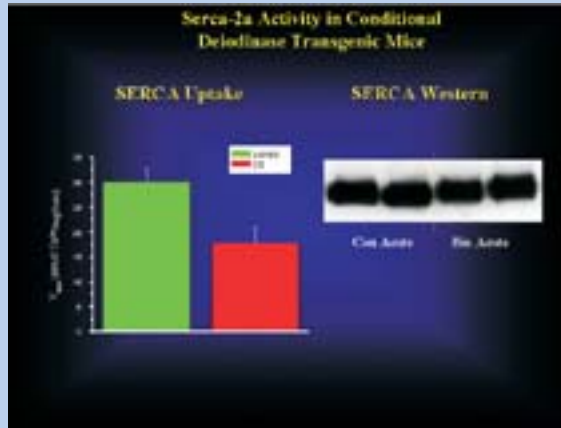


Figure 8



Figure 9

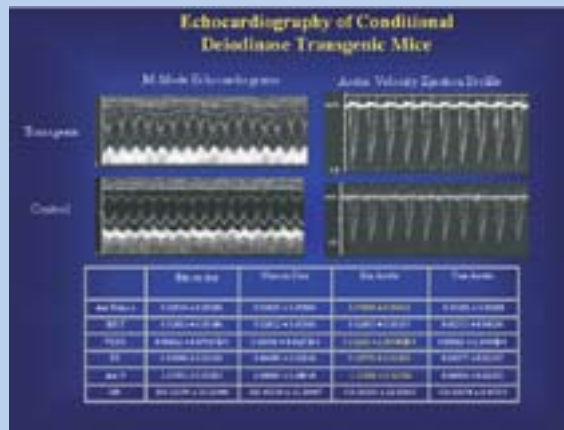
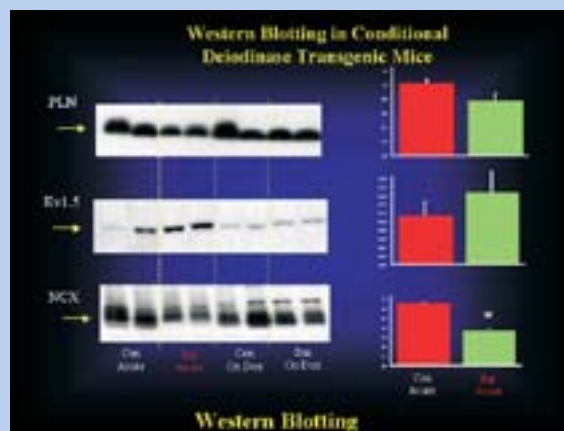


Figure 10



Platform II: Innovative Cardiovascular Therapies (Associate Director: Dr. Duncan Stewart)

The goal of Platform II of the Heart & Stroke/Richard Lewar Centre is to lead the translation of basic biomedical research discoveries of the Centre members into clinically useful applications. A number of criteria must be satisfied for a basic biomedical discovery to become a platform II initiative. A number of Toronto-based investigators must have expertise in the basic science area underlying the technology, the putative therapy must have the potential for efficacy and safety, and the therapy under development must address an unmet, serious medical need, such as end stage congestive heart failure.



Platform II facilitates the translation of research discoveries using a number of mechanisms, which include:

- Hosting strategic planning events;
- Creating partnerships with local and national groups with similar interests;
- Developing expertise to address the necessary regulatory requirements for performing clinical trials;
- Bringing together the investigators from the Centre for joint initiatives; and,
- Leading the conception, preparation and submission of group funding applications, thereby leveraging the collective expertise of Members of the Centre to fund additional cardiovascular research projects.

In the two-year period from July 2001 to June 2003, each of these mechanisms has been used for Platform II accomplishments. These include:

- Two joint workshops with the Canadian Stem Cell Network and Platform II investigators were held, with the objective of bringing cardiovascular applications of stem cell therapies to the forefront;
- Partnerships have been forged with the McLaughlin Centre, a group preparing an application for a National Centre of Excellence in Regenerative Medicine and the National Stem Cell Network;
- The NORTHERN trial is about mid term for enrolment, and will soon undergo interim safety analysis; and,
- Centre investigators lead and participated in the REVASC trial, which utilized Adenovirus delivered VEGF. This study was completed and submitted for publication.

Figure 11: Figure 1: Flow cytometry profile of encapsulated rat fibroblasts with the forward scatter of light (FSC-H) plotted on the x-axis; and indication of the size of the cells and the side scatter of light (SSC-H) plotted on the y-axis; representing the granularity of the cells.

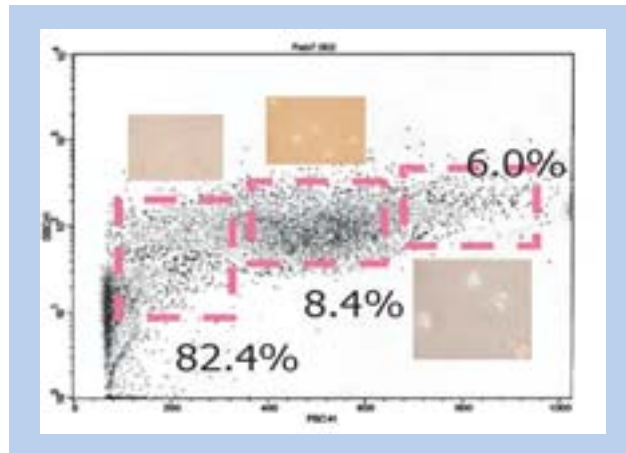


Figure 11

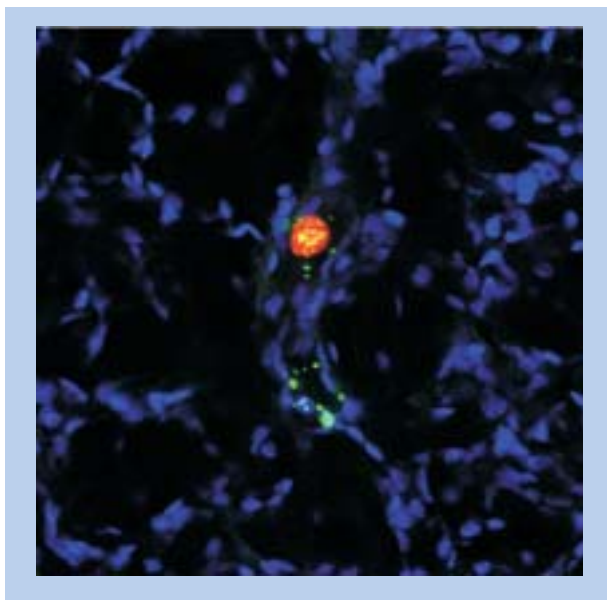


Figure 12

Figure 12: Novel application of gene therapy and cell injections could one day cure patients with pulmonary hypertension. It may be possible to take cells from a patient's own bone marrow and grow them in vitro so that when they are reintroduced back into the patient's lungs, they can promote the growth of new blood vessels. CMTMR Rhodamine-labeled (red dye) bone marrow stromal cell encapsulated in agarose supplemented with fibronectin and fluorescent fibrinogen (green). The cell was injected into the pulmonary circulation. Image was taken at 15 minutes after delivery into the lung of a normal Fisher 344 Rat.

Figure 13: Using gene therapy to promote cardiac angiogenesis will improve the recovery of heart attack patients. These transgenic rats demonstrate that growth of new blood vessels prevents tissue damage. All of the animals had their major leg artery removed, but the animals on the right lack one copy of their Tie2 gene that encodes a cell surface receptor important for new blood vessel growth. Laser Doppler flow images of hindlimbs of wild-type (left) and Tie2 +/- rats, immediately post ligation and excision of the left femoral artery (time 0) and 2 and 5 weeks post operatively. Whereas wild-type mice show restoration in blood flow to the ischemic limb, the mutant mice exhibit persistent ischemia and in some cases auto-amputation of the paw.

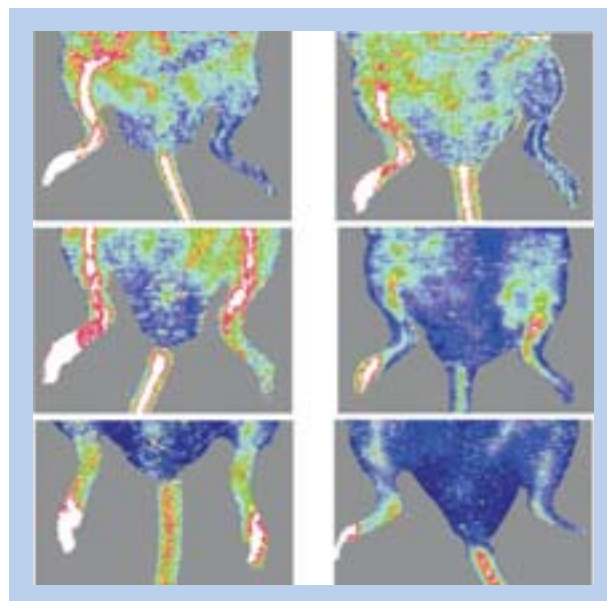


Figure 13

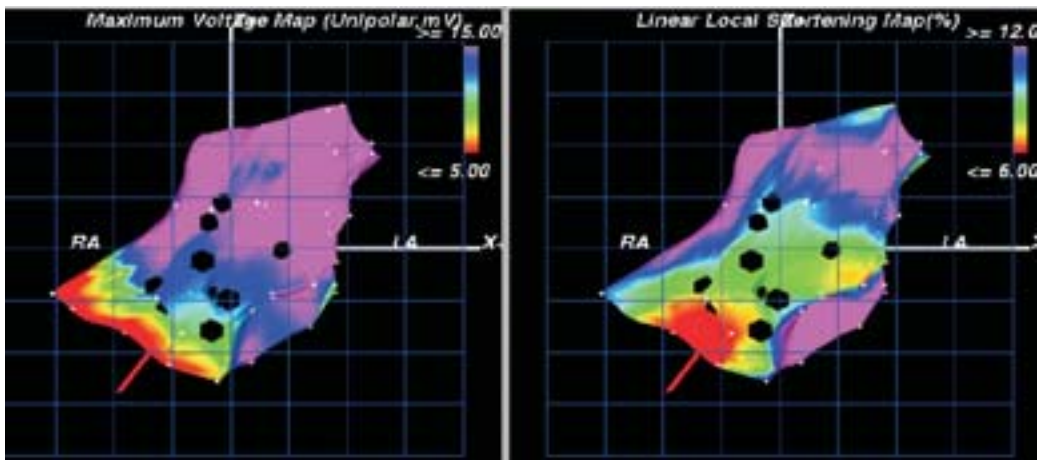


Figure 14

Figure 14: Gene therapy in action. This patient is awake and receiving injections of recombinant DNA into his damaged heart muscle. False color electromechanical maps of a patient undergoing a gene therapy procedure as part of the SMART trial obtained with a NOGA navigation catheter. Left hand panel represents the voltage map which shows normal electrical activity of the inferior wall. In contrast in the right hand panel which shows local contractility, there is a region of marked hypokinesis of the inferior wall indicative of ischemia. The black dots represent actual injection sites of VEGF plasmid DNA.

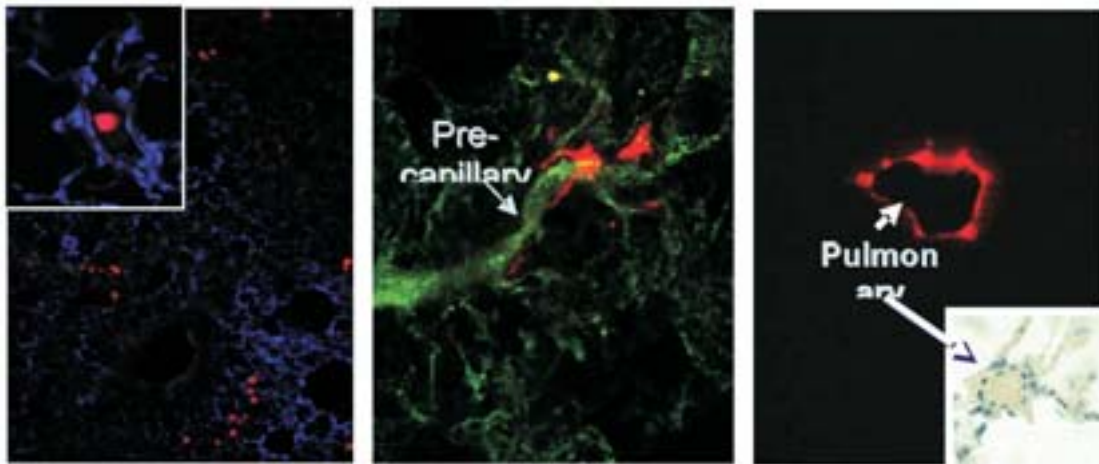


Figure 15

Figure 15: Using gene therapy to promote alveolar angiogenesis could actually reverse the lethal prognosis for patients suffering from primary pulmonary hypertension. These mice were injected with cells that could promote the growth of new blood vessels in damaged lungs. Left hand panel shows Rhodamine-labeled endothelial progenitor cells (red) 5 minutes after injection into the pulmonary circulation, showing the filtration of these cells at the level of the precapillary arteriole. Middle panel shows fluorescent microangiography (green) in an animal 10 days after injection of monocrotaline, showing engraftment of Rhodamine-labeled endothelial progenitor cells around a small pulmonary arteriole. Right hand panel shows another region of the lung in which the endothelial progenitor cells have incorporated into a small arteriole repairing the damaged endothelium.

Platform III: Clinical Genomics and Proteomics (Associate Director: Dr. Alexander Logan)

The Centre's third research platform was chosen to capitalize upon recent advances in the knowledge of the human genome and proteomes, and direct this new knowledge towards a better understanding of atherosclerosis, heart failure and congenital heart disease. The study of genomics has already revealed a number of genetic influences in the causation, modulation of progression and response to therapy in cardiovascular disease. As this type of study becomes more prevalent, an increased understanding of, and ability to, treat heart diseases will result. Proteomics is a younger field than genomics, but will undoubtedly also yield an abundance of detailed and significant information about the nature of heart disease.



The goal of Platform III is to enable members of the Centre to utilize new technologies in genomics and proteomics to achieve the Centre's goal of discovering new approaches to the diagnosis, treatment and prevention of heart disease. There are two main aspects to Platform III activities at the Centre: providing members with access to enabling genomic and proteomic technologies and understanding how and why studies in these areas can be utilized for a deeper understanding of heart disease processes.

The achievements that can be attributed to Platform III from 2001 to 2003 include:

- Development of a state of the art microarray expression analysis facility, including the expertise to analyze the data both statistically and bioinformatically;
- Establishment of successful collaborations with proteomics groups in Toronto, Vancouver and Baltimore;
- Renewal of the CIHR Group Grant, consisting of a number of Centre Members working on the molecular basis of heart failure;
- Participation in a National Gene-Environment Interdisciplinary Health Research Team program to identify novel targets for interventions in Heart Failure;
- Participation in submission of a proposal for a National collaborative group to build state-of-the-art bioinformatics computational facilities; and,
- Submission of a proposal for a large-scale proteomics project, with the ultimate objective of developing a commercial entity from the research program.

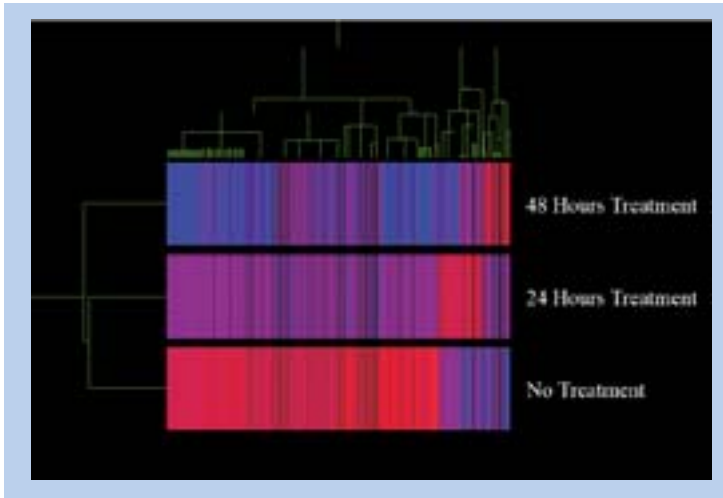


Figure 16: Differentially expressed genes by treatment

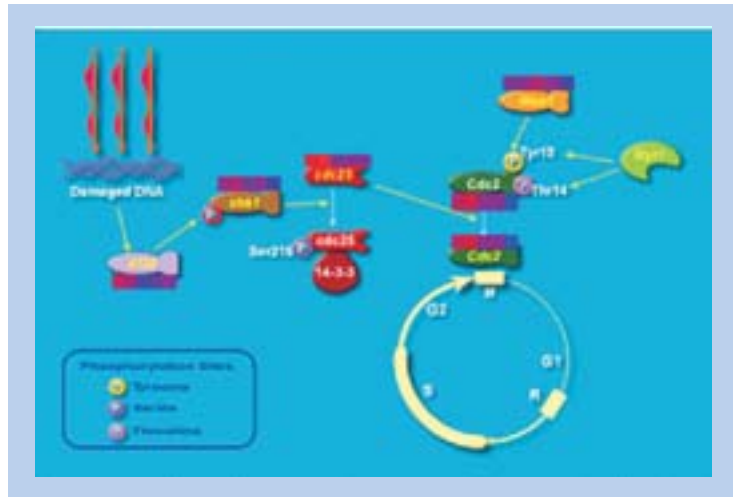


Figure 17: Functional Clustering

Figures 16 and 17: The HSRLCE is standing at the threshold of a revolution in health care empowered by the Human Genome Project (HGP). Completion of the HGP has enabled the emergence of a powerful technique, DNA microarray for Genome-scale measures of gene expression (see diagrams). DNA microarray studies have the potential to add an enormous wealth of information to the analysis of cardiovascular diseases. The HSRLCE is using microarray technology to diagnose, prognose, and identify new treatments for cardiovascular disease. Once the important genes have been identified, we progress to functional genomics. Functional genomics refers to the establishment of a verifiable link between gene expression and cell/organ/tissue function and dysfunction. As the post-genomics era is ushering in a new age of possibility and promise in molecular medicine, this area of medical biology is especially critical.

Tailored Advanced Collaborative Training in Cardiovascular Sciences for Research Fellows and Clinician Scientists (TACTICS)

(A Canadian Institutes of Health Research Strategic Training Program in Cardiovascular Science)

History

Since its inauguration in 2000, one of the mandates of the Canadian Institutes of Health Research has been:

“Innovative training initiatives that will support the next generation of health researchers and provide them with the training they need in a collaborative, interdisciplinary research environment.”

In this spirit, the Institute of Cardiovascular and Respiratory Health and the Institute of Genetics jointly sponsored a request for applications in 2001 for a CIHR Strategic Training Initiative in Health Research. In effect, this initiative serves as the long-awaited acknowledgement that increasing Canada’s research impact and competitiveness on the world stage would require sustained funding of highly qualified personnel in the form of training grants. Training grants in other countries have traditionally provided qualified institutions with relatively long-term committed funds to pay salary stipends to recruit and retain outstanding trainees in the biomedical sciences. The announcement that Canadian researchers would be able to enhance their competitiveness in the international arena was greeted with great enthusiasm.

Thus, in December 2001, under the leadership of the Centre’s Director, Dr. Peter Liu, the Heart & Stroke/Richard Lewar Centre of Excellence assembled a team of scientists and clinicians from across Canada, each with outstanding track records as mentors, and submitted a proposal entitled, A Training Program in Cardiovascular Research: Molecules to Humans, Heart Failure to Prevention, in the December, 2001 competition. The goal of this proposal was to foster future leaders of cardiovascular research both in Canada and globally, and to ensure their successful transition to fulfill their role as research leaders. The Centre wanted to target individuals during their critical post-doctoral stage of training, after graduate or medical school but prior to becoming independent investigators, and distinguished two streams: Clinician-Scientists and Ph.D. Scientists.

In March 2002, the Centre learned that our application was successful, and began to implement its different facets. Funding was also provided by the multinational pharmaceutical firm of Aventis-Pasteur and the Heart & Stroke Foundation of Canada.

The key features of the TACTICS program are:

- Access to additional training experiences, such as workshops, or conferences;
- Ability to network with TACTICS fellows across the country;
- Interaction with world-class Canadian cardiovascular scientists;
- Training in grant writing and other skills necessary to complement scientific expertise;
- Use of novel communication technologies;
- Ongoing multifaceted mentorship program; and,
- Access to a tailored modular curriculum.

The first competition was held in early 2003 and in June 2003 we announced our first nine TACTICS fellows:

Name	Institution	Mentor(s)	Project
DR. NIMESH DESAI, M.D.	Sunnybrook & Women's College Health Science Centre, Cardiovascular Surgery Program, Toronto, ON	Dr. S. Femes, Dr. R. Weisel	Intra operative patency assessment to improve outcomes of coronary artery bypass surgery
DR. SHAFIE FAZEL, M.D.	Toronto General Hospital, Division of Cardiac Surgery	Dr. R. Li	Gene-enhanced cell-transplantation to reverse-remodel the failing heart
DR. KOICHI FUSE, M.D., PH.D.	Division of Cardiology, and University Health Network Research Institute, Toronto, ON	Dr. P. Liu	The roles of innate immunity in the pathogenesis of CVB3 induced myocarditis
DR. VEENA GURU, M.D.	Sunnybrook & Women's College Health Science Centre, and Institute for Clinical and Evaluative Sciences, Toronto, ON	Dr. S. Femes, Dr. J. Tu	Quality control in cardiac surgery--how do clinical outcomes relate to quality of care
DR. CANDACE LEE, M.D.	Department of Physiology, University of Manitoba	Dr. N. Dhalla, Dr. L. Hryshko	Pharmacological profile and therapeutic potential of Novel Sodium-calcium exchange inhibitors in Diabetes
DR. MIN NIAN, PH.D.	Division of Cardiology, and University Health Network Research Institute, Toronto, ON	Dr. P. Liu	The role of FLIP in cardiac remodeling following myocardial infarction
DR. GAVIN OUDIT, M.D.	Heart & Stroke / Richard Lewar Centre of Excellence, Toronto, ON	Dr. P. Backx	Role of the L-type Ca ²⁺ channel and intracellular Ca ²⁺ signaling in iron-overload cardiomyopathy
DR. SAWSAN SADER, PH.D.	Division of Cardiology, and University Health Network Research Institute, Toronto, ON	Dr. P. Liu	Role of gelsolin in cardiac remodeling and heart failure
DR. ONDREG SEDA, M.D.	CHUM Research Centre, Laboratory of Molecular Medicine Montreal, PQ	Dr. P. Hamet	Comparative genomic analysis of genetic components of metabolic syndrome X and hypertension

TRAINEE AWARDS

Heart & Stroke/Richard Lewar Centre of Excellence Fellowship/Studentship Support 2000-2004

2000-2001*

OGSST	Trainee	Supervisor
	Nataly Kogan	D Osmond
	Wesley Leung	M Rabinovitch
	Nesime Agkin	C Wittnich
	Gary Chan	P Marseen
	Sandra Merklinger	M Rabinovitch
	Louisa Poteril	K Adali
	Nicolas Mamas	P Doran
	Li Yang	D Stewart, M Husain
	Joanne Lee	A Gellib

HSRCLE Studentship

Fellowship

Tariq Afoze	M Husain
Calvin Bescarino	C Wittnich
Rafael Ramirez	P Backe

2002-2003

OGSST	Trainee	Supervisor
	M Shanny	P Liu
	P Van Slyke	D Dumont
	R Ruzek	K Ishihama
	K Chan	M Benseck
	J Lo	P Liu
	A Hourdjabbar	L Houleau
	E Liu	D Courtman

HSRCLE Studentship

G Yang	M Husain
R Suen	D Stewart
I Adiguzel	M Benseck
G Karala	D Courtman

Fellowship

H Sun	P Backe
P Luo	P Liu
G Kiani	R K Li

Notes:

* Year of award tenure

2001-2002

OGSST	Trainee	Supervisor
	Karim Handali	C Wittnich
	Sandra Merklinger	M Rabinovitch
	Li Yang	M Husain
	Carla Cerullo	P Liu
	Nicolas Mamas	P Doran
	Deyan Wen	M Cybulsky
	Tianba Liu	R K Li
	Stephanie Fawell	M Benseck
	Hui-Yee Liu	D Courtman

HSRCLE Studentship

Nesime Agkin	C Wittnich
Renee Swin	D Stewart
S Kulandavelu	L Adamson
Caral Kob	L Adamson

Fellowship

Hwee Teoh	M Ward
Asri Cheema	B Strauss

2003-2004

OGSST	Trainee	Supervisor
	Mikn Pale*	P Backe
	Peter Sotaria	L Longino, M Benseck
	Renee Swin	D Stewart
	Deyan Wen	M Cybulsky

Fellowship	Trainee	Supervisor
	Benoit-Giles Kerfant	P Backe
	Babiche Yael Glyn	D Dumont
	Maurad Topors	M LeTang
	Maria Giovanna Traversi	P Backe

DISTINGUISHED VISITING PROFESSOR SPEAKERS SERIES

The Centre has organized a "Distinguished Visiting Professors Series" with sponsorship generously provided by Merck Frosst Canada & Co. Through this series, a forum is provided whereby experts performing cutting edge research in priority areas are invited to speak and interact with Centre's members and in turn, the activities of the Centre are profiled to the world's opinion leaders. The Centre regularly collaborates with University of Toronto Departments and teaching hospitals. Faculty, clinicians, students and visitors are encouraged to attend. Continuing Medical Education (CME) credits are also available.

Seminars held from 2001-2003 include:

September 24, 2001

"Proteomics: In Search for the Proteins that Cause Heart Disease"

Dr. Jennifer E. Van Eyk, Assistant Professor, Department of Physiology, Queen's University, Kingston, Ontario

October 29, 2001

"Treating Common Human Disease: Insights from Rare Genetic Disorders"

Dr. Simon Pimstone MD, PhD, FRCPC, Founder and Vice President, Clinical and Medical Affairs, Xenon Genetics Inc., Vancouver, British Columbia

November 26, 2001

"The Renin Angiotensin System: A Link to the Pathogenesis of Atherosclerosis"

Dr. Carlos M. Ferrario, Professor of Physiology and Pharmacology, Director, The Hypertension and Vascular Disease Center, Wake Forest University School of Medicine, Winston-Salem, North Carolina

March 25, 2002

"Inflammation in Cardiac Protection and Repair"

Dr. Mark L. Entman, Professor of Medicine and Biochemistry, Chief, Cardiovascular Sciences Section, Department of Medicine, Scientific Director, The DeBakey Heart Center, Baylor College of Medicine, Houston, Texas

April 22, 2002

"Mouse Mutagenesis – Models of Human Disease"

Dr. Janet Rossant, Professor of Molecular & Medical Genetics and Obstetrics & Gynecology, University of Toronto, Joint Head, Program in Development and Fetal Health, Samuel Lunenfeld Research Institute, Mount Sinai Hospital, Toronto, Ontario

June 17, 2002

"The Ductus Arteriosus and Gene Regulation"

Dr. Marlene Rabinovitch, MD, FRCP(C), FACC, HSFO Endowed Research Chair, Professor of Pediatrics, Medicine, Laboratory Medicine & Pathobiology, University of Toronto, Director, Cardiovascular Research Program, The Hospital for Sick Children, Toronto, Ontario

September 30, 2002

"The Use of Stem Cells in the Repair of Myocardial Infarction"

Dr. Joshua M. Hare MD, Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland

November 04, 2002

"Control of Heart Size and Heart Function by PI3K Signaling"

Dr. Josef Penninger, Staff Scientist Amgen Institute Ontario Cancer Institute/Princess Margaret Hospital, Associate Professor, Departments of Immunology and Medical Biophysics University of Toronto, Associate Professor, Department of Experimental Pathology University of Innsbruck, Austria

January 27, 2003

“Hypertension and Prolonged Vasoconstrictor Signaling in RGS-2 Deficient Mice”

Dr. Scott Heximer Assistant Professor, Department of Physiology and Heart & Stroke/Richard Lewar Centre of Excellence, University of Toronto, Toronto, Ontario

March 03, 2003

“Genotype, Phenotype: Upstairs, Downstairs in the Family of Cardiomyopathies”

Dr. Kenneth Chien Professor, University of California at San Diego Department of Medicine and the Salk Institute, San Diego, California

March 24, 2003

“Finding susceptibility Genes for Complex Genetic Pulmonary and Cardiovascular Disease”

Dr. Peter Pare, Professor, Department of Medicine, University of British Columbia, Vancouver, British Columbia

ANNUAL CARDIOVASCULAR SCIENTIFIC DAYS

The Centre holds an Annual Cardiovascular Scientific Day each year in May to bring together faculty and researchers from the Centre and across the University of Toronto. The goal is to provide updates on the frontiers of cardiovascular sciences. Symposium topics are drawn from all research themes, from basic biomedical to clinical to outcomes; it is hoped that discussion will promote cross-fertilization of ideas and research direction. CME credits are available.

2002 – “Cardiovascular Science: Bench to Bedside Approach”

Central Symposium (Co-Chairs: Dr. D. Alter & Dr. B. Strauss)

New Kids on the Block

- | | |
|----------------|---|
| Dr. A. Barolet | • <i>Elastolytic Activity in Restenosis</i> |
| Dr. S. Mak | • <i>Redox Control of Ventricular Contractility in Humans With and Without Heart Failure</i> |
| Dr. M. Kutryk | • <i>In Vivo Progenitor Cell Capture for the Accelerated Endothelialization of Endovascular Devices</i> |
| Dr. V. Rao | • <i>Mechanical Circulatory Support for Heart Failure</i> |

A.E. Diamond Lecture (Chair: Dr. M. Sole)

- | | |
|-----------------|--|
| Dr. Roger Laham | • <i>Angiogenesis for Coronary Artery Disease: How Lessons from the Laboratory are Entering the Clinic</i> |
|-----------------|--|

Featured Presentations (Co-Chairs: Dr. D. Stewart & Dr. R. Weisel)

- | | |
|--------------------|---|
| Jack Wallen | • <i>Steroid Hormones and the Cardiovascular System (-2002 Bigelow Prize Awardee)</i> |
| Dr. C. Bayliss | • <i>Cardiovascular Teaching into the New Millennium</i> |
| Dr. M. Rabinovitch | • <i>Reversing Cardiovascular Disease</i> |

Isadore E. Smith Lecture (Chair: Dr. P. Liu)

- | | |
|-------------|--|
| Dr. H. Blau | • <i>Stem Cell Biology and Prospects for Therapy</i> |
|-------------|--|

Simultaneous Sessions

(i) **Atherosclerosis/Treatment of Coronary Artery Disease**

Co-Chairs: Dr. M. Cybulsky & Dr. D. Fitchett

- | | |
|----------------|--|
| Dr. B. Strauss | • <i>Enzyme Therapy for Chronic Arterial Occlusions</i> |
| Dr. V. Dzavik | • <i>Interventional Cardiology: Management of the Patient with an Occluded Coronary Artery</i> |
| Dr. S. Goodman | • <i>Acute Coronary Syndromes: Pathophysiology and Treatment</i> |
| Dr. J. Parker | • <i>Nitroglycerin Therapy Causes Endothelial Dysfunction Panel Discussion</i> |

(ii) **New Insights and Approaches to Treatment of Heart Failure**

Co-Chairs: Dr. G. Moe & Dr. T. Parker

- | | |
|----------------------|---|
| Dr. G. Newton | • <i>The Oxidative Stress Hypothesis of Congestive Heart Failure – Radical Thoughts</i> |
| Dr. L. Mickleborough | • <i>Surgical Treatment for Heart Failure Due to CAD: The STICH trial</i> |
| Dr. R. Weisel | • <i>Cell Transplantation</i> |
| Dr. G. Moe | • <i>New Clinical Approaches to the Treatment of Heart Failure Panel Discussion</i> |

(iii) **New Insights into the Role of Ion Channels/Pumps in Heart Function & Disease**

Co-Chairs: Dr. P. Backx & Dr. D. Newman

- | | |
|------------------|--|
| Dr. P. Backx | • <i>The Role of Ion Channels in Heart Disease Progression</i> |
| Dr. D. MacLennan | • <i>Inhibition of Calcium Pumps and How it Affects the Heart</i> |
| Dr. G. Wilson | • <i>Role of Potassium and Chloride Channels in Ischemic Preconditioning</i> |
| Dr. E. Downar | • <i>Advances in Mapping and Ablation of Arrhythmias</i> |

2003 – “Multidisciplinary Health Research”

Central Symposium Chair: Dr. Peter Liu

Isadore Edward Smith Lectureship

- | | |
|----------------|--|
| Dean D. Naylor | • <i>Cardiovascular Outcomes: Past, Present and Future</i> |
| Dr. D. Alter | • <i>Sociodemographic factors in health services research the simplest yet most pronounced markers of outcomes</i> |
| Dr. D. Lee | • <i>Predictors of Mortality in Heart Failure Patients</i> |

Simultaneous Sessions

(i) **Transgenic Physiology**

Co-Chairs: Dr. B. Bruneau & Dr. M. Husain

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| Dr. B. Bruneau | • <i>Transcription Factors in Heart Development and Congenital Heart Defects</i> |
| Dr. L. Adamson | • <i>In vivo screens for cardiovascular function in mice</i> |
| Dr. F. Ahmad | • <i>Using Transgenic and Gene Targeting Strategies to Study Cardiomyopathies</i> |

(ii) **Regenerative Medicine: Gene, Cell or Matrix**

Co-Chairs: Dr. R-K Li & Dr. D. Stewart

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| Dr. D. Stewart | • <i>Gene Therapy - "State of the Heart"</i> |
| Dr. B. Stanford | • <i>Genetic Analysis of the Talented Mesenchymal Stem Cell</i> |
| Dr. F. Keeley | • <i>Self-assembling Materials Based on Human Elastin</i> |
| Dr. B. Strauss | • <i>Collagenase Plaque Digestion for Facilitating Guide-wire Crossing in Chronic Total Arterial Occlusions</i> |
| Dr. P. Fedak | • <i>Matrix Remodeling in the Failing Heart : New Therapeutic Targets-2003 CSCP Bigelow Prize Awardee</i> |

(iii) **Clinical Genomics and Proteomics**

Co-Chairs: Dr. A. Logan & Dr. P. Liu

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| Dr. C. Greenwood | • <i>Making Sense of Microarray data - statistical approach to data reduction and analysis</i> |
| Dr. M. Sole | • <i>The heart is a genetically different organ in the day as compared to the night.</i> |
| Dr. I. Konstantinov | • <i>Remote Ischemic Preconditioning Modifies Inflammatory Gene Expression in Humans: A Microarray Study</i> |
| Dr. Y. Pei | • <i>Integrating microarray analysis in clinical epidemiological studies of idiopathic nephrotic syndrome.</i> |

A.E. Diamond Lecture (Chair: Dr. L. Adamson)

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| Dr. H. Rockman | • <i>Novel Mechanisms of β Adrenergic Receptor Signaling in Heart Failure</i> |
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New Kids on the Block (Chair: Dr. M. Bendeck)

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| Dr. S. Heximer | • <i>Please Mind the Gap: Hypertension and Prolonged Vasoconstrictor Signaling in RGS2-Deficient Mice</i> |
| Dr. P. Harvey | • <i>Sex Hormones and Exercise</i> |
| Dr. H. Leong-Poi | • <i>Myocardial Contrast Echocardiography: Novel Applications for Therapeutic Angiogenesis</i> |

SELECTED PEER-REVIEWED PUBLICATIONS BY MEMBERS

To compile the list of publications by members of the Centre of Excellence for the period July 1, 2001 to June 30, 2003, a request was sent to each Centre member. The result was over-whelming. Over 74% of members responded, with a list of 606 publications. 410 peer-reviewed, full-length publications are listed on the pages that follow (only those publications that are cardiovascular-related have been included here).

The fundamental unit of productivity of Scientists is published papers. Thus, not all of the members' publications can be directly ascribed to the Centre. Two criteria that can be applied to the members' publications, which are related to the missions and goals of the Centre, are collaboration and excellence. As a metric for collaboration, the publications that were co-authored by more than one Centre members were counted - 34% (139 of the 410 publications listed below). For excellence, publications in a journal with a 2002 impact factor greater than 10 were considered. In total, 94 of the 410 (21%) members publications were published in high impact journals. Of these, 48 were co-authored by more than one Centre faculty Member. Thus, 51% of the high impact publications reported by members for the time frame July 2001 to June 2003 were collaborative efforts with other Centre members. While it would be premature to conclude that collaboration leads to excellence, or excellence includes collaboration, these observations will form the basis of on-going studies by the Centre to determine its impact and productivity.

The following is a list of member's publications:

" α 4 integrin signaling activates phosphatidylinositol 3-kinase and stimulates T cell adhesion to intercellular adhesion molecule-1 to a similar extent as CD3, but induces a distinct rearrangement of the actin cytoskeleton", Hyduk S.J., **Cybulsky M.I.** *J Immunol* 168: 696-704, 2002

"ACE2 and the heart", Oudit G.Y., Crackower M.A., **Backx P.H., Penninger J.M.** *Trends in Cardiovascular Medicine* 13: 93-101, 2003

"Activation of the cardiac sarcoplasmic reticulum calcium release channel by cardiac glycosides", Sagawa T., Sagawa K., Kelly J.E., **Tsushima R.G.**, Wasserstrom J.A. *American Journal Physiology* 282: H1118-H1126, 2002

"Acute bacterial endocarditis on myxomatous mitral valve", Dias B., Scully H., Black R., Iwanochko R.M., Graba J., **Butany J.** *Can J Cardiol* 17(9): 983-985, 2001

"Acute mitral regurgitation due to a torn porcine bioprosthetic cusp", **Butany J.**, Dias B., Iyengar P., **Brister S.J.** *Circulation* 105: 58e-60e, 2002

"Acute myocardial infarction late after Mustard Procedure for dextrotransposition on the great arteries", Malik P., Therrien J., **Webb G.D.** *Can J Cardiol* 18(2): 187-91, 2002

"Adherence with statins in patients with and without acute coronary syndromes: Use without benefit?", Jackevicius C., Mamdami M.M., **Tu J.V.** *JAMA* 288: 464-467, 2002

"Adhesion of monocytes to arterial endothelium and initiation of atherosclerosis are critically dependent on VCAM-1 gene dosage", Dansky H.M., Barlow C.B., Lominska C., Sikes J.L., Kao C., Weinsaft J., **Cybulsky M.I.**, Smith J.D. *Arterioscler Thromb Vasc Biol* 21: 1662-1667, 2001

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"Aerobic capacity in adults with Tetralogy of Fallot", Fredriksen P.M., Therrien J., Veldtman G., Ali Warsi M., Liu P.P., Thaulow E., **Webb G.D.** *Cardiol Young* 12(6): 554-9, 2002

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"ALIVE: A randomized blinded trial of intravenous amiodarone vs lidocaine in shock resistant ventricular fibrillation", **Dorian P.**, Cass D., Gelaznikas R., Cooper R., Schwartz B. *Circulation* 104: II-765, 2001

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"Altered K(+) channel gene expression in diabetic rat ventricle: isoform switching between Kv4.2 and Kv1.4", Nishiyama A. Ishii D.N., **Backx P.H.**, Pulford B.E., Birks B.R., Tamkun M.M. *Am. J Physiol (Heart Circ)* 281: H1800-7, 2001

"Ameliorated hepatic insulin resistance is associated with normalization of microsomal triglyceride transfer protein expression and reduction in very low density lipoprotein assembly and secretion in the fructose-fed hamster", Carpentier A., Taghibiglou C., Leung N., Szeto L., Van Iderstine S.C., Uffelman K.D., Buckingham R., **Adeli K., Lewis G.F.** *J Biol Chem.* 277(32): 28795-802, 2002

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GRANTS OBTAINED BY MEMBERS

The following is a list of research grants reported by members between July 2001 and June 2003:

S.L. Adamson, *Canadian Institutes of Health Research*, 'Genes regulating cardiovascular function during pregnancy in mice.' 2001-2004

S.L. Adamson, F.S. Foster, S.J. Lye *Medical Research Council of Canada*, 'Cardiovascular phenotyping of juvenile mice using ultrasound biomicroscopy.' 2000-2004

S.L. Adamson, J. Rossant, *Medical Research Council of Canada*, 'Generation and physiological analysis of genome-wide mutations in mice.' 1999-2004

P.H. Backx, *Heart & Stroke Foundation of Ontario*, 'Role of inward rectifier K⁺ channels in heart.' 2002-2005

P.H. Backx, *Canadian Institutes of Health Research*, 'Modulation of cardiac function by thyroid hormone.' 2001-2004

P.H. Backx, P.P. Liu, *Canadian Institutes of Health Research*, 'Iron overload cardiomyopathy: A unique heart failure model of calcium dysregulation and oxidative stress.' 2001-2006

G. Wilson, **P.H. Backx**, *Heart & Stroke Foundation of Ontario*, 'Myocardial preconditioning: Role of cell volume regulation.' 2002-2007

J. Belik, *Ontario Thoracic Association*, 'Culture myography system.' 2002

J. Belik, *Canadian Institutes of Health Research*, 'Myosin light chain phosphatase and the control of pulmonary and systemic vascular resistance from fetal to adult life.' 2000-2004

S.J. Brister, M. Turek, H. Arthur, M.R. Buchanan, L. Daniel, P. Harvey, D. Isaac, E. Jolly R. McPherson, J. Richards, P. Slaughter, *Heart & Stroke Foundation of Canada*, 'Task force for the development of a research agenda for cardiovascular disease in women.' 2001-2002

G. Tang, **S.J. Brister**, *The Physician's Services Incorporated Foundation*, 'Intimal hyperplasia: Will inhibition of matrix metalloproteinase inhibit it?' 2001

S.L. Grace, S. Jaglal, **D. Brooks**, B. Abramson, **R.P. Nolan**, *The Ontario Ministry of Health and Long Term Care*, 'Evaluating an education tool to increase referral of women to cardiac rehabilitation.' 2002

S.L. Grace, **D. Brooks**, *Toronto Rehabilitation Institute*, 'Evaluating an education tool to increase referral of women to cardiac rehabilitation.' 2002-2003

D. Brooks, S. Thomas, *Toronto Rehabilitation Institute*, 'Prediction of participation in cardiac rehabilitation by coronary artery bypass graft patients from pre-operative measures.' 2002-2003

B. Bruneau, *Canada Research Chair in Developmental Cardiology*, 2002-2007

B. Bruneau, *The March of Dimes Birth Defects Foundation*, 'Dissecting the transcriptional basis of congenital heart disease.' 2001-2004

B. Bruneau, *Canada Foundation for Innovation/Ontario Innovation Trust Infrastructure*, 'Advanced gene expression and microscopy facilities for congenital heart disease research.', 2001-2005

J. Butany, M. Ojha, *Heart & Stroke Foundation of Ontario*, 'Cellular and molecular events in bypass grafts, pathology. Hemodynamics and surgery.' 2001-2002

J. Butany, M. Ojha, *Heart & Stroke Foundation of Canada*, 'Pathology and hemodynamics of human bypass grafts.' 2002-2004

D. Courtman, *Heart & Stroke Foundation of Ontario*, 'Eutrophic arterial remodeling.' 2002-2004

D. Courtman, G. Wilson, *Canadian Institutes of Health Research*, 'Tissue engineering approaches for pediatric cardiovascular reconstruction.' 2000–2003

D. Courtman, D.J. Stewart, *Canadian Institute of Health Research*, 'Microvascular endothelial cell loss in pulmonary hypertension.' 2002–2005

M. Cybulsky, *Heart & Stroke Foundation of Canada*, 'Mechanisms of atherosclerotic lesion formation.' 2001–2004

M. Cybulsky, L. Langille, M. Bendeck, A. Gotlieb, M. Husain, P. Marsden, B. Strauss, *Heart & Stroke Foundation of Ontario*, 'Cell biology of atherosclerosis.' 2000–2005

M. Cybulsky, G. Levy, *Canadian Institutes of Health Research*, 'Cellular and molecular mechanisms of organ injury.' 2000–2003

P. Dorian, D. Roy, *Canadian Institutes of Health Research*, 'Atrial fibrillation and congestive heart failure.' 2000–2005

P. Dorian, F. Desperance, *Canadian Institutes of Health Research*, 'A randomized controlled trial of interpersonal psychotherapy and Citalopram for depression in coronary artery disease.' 2001–2005

P. Dorian, J. Irvine, *Heart & Stroke Foundation of Ontario*, 'Psychological support for implantable defibrillator patients.' 2003–2006

P. Dorian, *Heart & Stroke Foundation of Ontario*, 'Optimizing ACLS: Prolonging action potential duration and preventing cell injury in experimental cardiac arrest.' 2003–2005

D. Dumont, *National Cancer Institute of Canada*, 'Defining the role of the angiopoietins in angiogenesis.' 2003–2006

D. Dumont, J. Semple, *Advanced Regenerative Tissue Engineering Research; Ontario Research and Development Challenge Fund*, 'Establishment of an advanced regenerative tissue engineering research centre.' 2001–2006

D. Dumont, *Canadian Institutes of Health Research*, 'Biochemical and genetic characterization of the Tek/Tie2 signaling pathway.' 2001–2006

D. Dumont, *National Institute of Health*, 'Genetic control of vascular remodeling.' 2001–2005

D. Dumont, R. Kerbel, *Canada Foundation for Innovation*, 'The Toronto Angiogenesis Research Centre (TARC).' 2000–2006

D. Dumont, K. Alitalo, *Human Frontier Science Program Organization*, 'Molecular controls of lymphangiogenesis and angiogenesis.' 2001–2004

D. Dumont, D.J. Stewart, *Canada Foundation for Innovation*, 'Cardiovascular gene therapy initiative.' 2001–2004

D. Dumont, *National Cancer Institute*, 'Defining the role of the angiopoietins in angiogenesis.' 2000–2003

C.R. Ethier, *Natural Sciences and Engineering Research Council of Canada*, 'Computational hemodynamics.' 2001–2005

C.R. Ethier, Tier 2 Canada Research Chair in Computational Technology

C.R. Ethier, D.W. Zingg, *Connaught Foundation*, 'Development and application of LES algorithms for simulation of turbulent flows.' 2002–2005

I.G. Fantus, *Canadian Institutes of Health Research*, 'Insulin action in health and disease' 2000–2003

J. Floras, *Heart & Stroke Foundation of Ontario*, 'Cardiovascular regulation in men and women with heart failure and hypertension.' 2002–2007

J. Floras, *Canadian Institutes of Health Research*, 'By what mechanisms does conversion from conventional intermittent dialysis to nocturnal hemodialysis lower blood pressure?' 2002–2005

- J. Floras**, *Medical Research Council of Canada*, 'Cardiopulmonary interactions in health and disease.' 2000–2005
- J. Floras**, *Medical Research Council of Canada*, 'Multicentre trial of continuous positive airway pressure (CPAP) for chronic therapy of heart failure.' 1998–2003
- J. Floras**, *Heart & Stroke Foundation of Ontario*, 'Investigations concerning the control and modulation of cardiac and renal sympathetic activity in chronic heart failure.' 2001–2004
- J. Floras**, *Heart & Stroke Foundation of Ontario*, 'Endothelial dysfunction in SLE: its contribution to abnormalities in coronary perfusion and the role of ACE inhibition.' 2001–2003
- S.E. Femes, E. Cohen**, C.D. Naylor, G. Fradet, C. Buller, J. Able, R. Carrera, E. Gelfand, W. Tymchak, A. Menkis, D. Almond, M. Myers, L. Erret, R. Watson, **T.M. Yau**, L. Schwartz, F. Rubens, L. Higginson, M. Carrier, G. Cote, J. Morin, D. Doyle, O. Gleeton, *Medical Research Council*, 'Multi centre radial artery patency study.' 2001
- J.V. Tu, S.E. Femes**, Canadian Cardiovascular Outcomes Research Team, *Canadian Institutes of Health Research*, 'Interdisciplinary health research team.' 2001-2005
- P.C. Hebert, **S.E. Femes**, *Canadian Institutes of Health Research*, 'Blood conservation using antifibrinolytics: A randomized trial in high risk cardiac surgery – The BART Trial.' 2001-2005
- J. Rowlands, D. Keep, P. Burns, V. Chauhan, **E. Cohen**, S. Fort, S. Foster, **S.E. Femes, D.J. Stewart**, B. Wilson, **G. Wright**, *Canada Foundation for Innovation*, 'Imaging research centre for cardiac intervention – IRCCI.' 2002-2005
- S.E. Femes**, Multi-Centre Radial Artery Study Participants: *Canadian Institutes of Health Research*, 'Multicentre radial artery patency study: 5 year results.' 2001-2006
- M. Myers, **S.E. Femes**, *Parke-Davis Pharmaceutical Research*, 'Ischemia management with Accupril post-bypass graft via inhibition of converting enzyme (IMAGINE).' 2001
- S.E. Femes**, *Aventis Pharmaceuticals Inc.*, 'The EXPEDITION trial (Na⁺/H⁺ exchange inhibition to prevent events in acute cardiac conditions).' 2002
- S.E. Femes**, Multi-Centre Collaboration: *Proctor & Gamble (Quintiles)*, 'A phase III randomized parallel, double-blind, multi-centre, placebo-controlled study of the effects of Pexelizumab on all-cause mortality and myocardial infarction in patients undergoing coronary artery bypass graft (CABG) surgery with cardiopulmonary bypass.' 2003
- S.E. Femes**, G.T. Christakis, B.S. Goldman, M.P. Pelletier, *Numico Inc.* The Netherlands 'Improving cardiac function and exercise tolerance in patients undergoing coronary artery bypass surgery who receive a nutritional supplement: MyoVive.' 2003
- S.E. Femes**, K.M. King, WREST Study Co-Investigators: University of Calgary, *Canadian Institutes of Health Research*, 'Women's recovery from sternotomy (WREST) study.' 2006
- J. Goodman**, K. Allison, *Heart & Stroke Foundation of Ontario*, 'Patterns of physical activity in youth.' 2002–2007
- J. Goodman**, *Toronto Rehabilitation Institute*, 'Aerobic and resistance training in coronary patients.' 2001–2003
- S. Goodman**, *Sanofi/Bristol Myers Squibb*, 'CHARISMA Study (Clopidogrel for High Atherothrombotic Risk and Ischemic Stabilization, Management and Avoidance).' 2002–2004
- S. Goodman**, *Aventis*, 'EXTRACT TIMI 25 Study (Enoxaparin and Thrombolysis Reperfusion for Acute Myocardial Infarction Treatment (ExTRACT)-Thrombolysis in Myocardial Infarction (TIMI)25 Study).' 2002–2004
- S. Goodman**, *Aventis*, SYNERGY Study (Superior Yield of the New strategy of Enoxaparin, Revascularization and GLYcoprotein IIb/IIIa inhibitors (SYNERGY)).' 2002–2004
- S. Goodman**, *Bristol Myers Squibb*, 'PROVE IT-TIMI 22 (Pravastatin or Atorvastatin Evaluation And Infection Therapy (PROVE IT)- Thrombolysis in Myocardial Infarction (TIMI) 22 Study).' 2001–2004

A. Gotlieb, L. Langille, *Canadian Institutes of Health Research*, 'The endothelium in atherogenesis: Influences of hemodynamic stresses.' 2001–2006

A. Gotlieb, M. Bendeck, *Heart & Stroke Foundation of Ontario*, 'Heart valve repair: Regulation by cell and matrix.' 2002–2004

A. Gotlieb, L. Langille, *Heart & Stroke Foundation of Ontario*, 'Cell biology of atherosclerosis.' 2000–2005

M. Sefton, A. Gotlieb, E. Yeo, *National Institutes of Health*, 'Modular tissue engineering components for vascularized 3-D constructs.' 2002–2005

S. Heximer, *Canada Research Chair in Cardiovascular Physiology*, Tier 2, 2003

M. Husain, *Canadian Institutes of Health Research*, 'Molecular regulation of vascular smooth cell proliferation.' 2001–2004

M. Husain, *Canadian Institutes of Health Research*, 'c-Myb-dependent vascular smooth muscle proliferation.' 2001–2004

M. Husain, *Heart & Stroke Foundation of Ontario*, 'Conditional expression of PMCA isoforms in arterial smooth muscle of transgenic mice.' 2000–2003

M. Husain, *Ontario Research & Development Challenge Fund*, 'Molecular physiology of vascular smooth muscle.' 1999–2002

D.J. Stewart, M. Husain, *Heart & Stroke Foundation of Ontario*, 'Targeted over-expression of inducible NO synthase: Relevance for the pathogenesis of cardiovascular disease.' 2002–2005

D. J. Stewart, M. Husain, *Canadian Institutes of Health Research*, 'Pathophysiological relevance of endothelin-1 over-expression.' 2001–2004

M. Rabinovitch, **F. Keeley, B. Bruneau, A. Hinek, M. Husain, G. Wilson**, *Canadian Institutes of Health Research*, 'Interdisciplinary program in cardiovascular development and disease.' 2000–2005

J. Irvine, *Canadian Institutes of Health Research*, 'Improving cardiac rehabilitation participation in women and men.' 2002–2005

J. Irvine, *Heart & Stroke Foundation*, 'Interventions to promote the prevention of cardiovascular disease: Physical activity for the secondary prevention of CAD.' 2001–2006

J. Irvine, *Heart & Stroke Foundation*, 'Improving the population impact of telephone-based counseling for the treatment of smoking.' 2001–2006

J. Irvine, *Canadian Institutes of Health Research*, 'The relationship between socio-economic status, quality of care, and outcomes following acute myocardial infarction.' 2001–2004

J. Irvine, *Medical Research Council*, 'Assisting stem cell transplant patients with the first year of post transplant recovery.' 2000–2003

J. Irvine, *Heart & Stroke Foundation of Ontario*, 'Home exercise training for patients with intermittent claudication.' 2000–2003

F. Keeley, *Medical Research Council of Canada and Canadian Institutes of Health Research*, 'Post-transcriptional regulation of vascular elastin synthesis in development and disease.' 2001–2006

F. Keeley, *Heart & Stroke Foundation of Ontario*, 'Recombinantly expressed polypeptides of human elastin as a novel tool for investigations of the structure and assembly of Elastin.' 2001–2004

F. Keeley, *National Science and Engineering Research Council of Canada*, 'Characterization of extracellular matrix proteins in lamprey cartilage' 2001–2005

G.F. Lewis, *Canada Research Chair in Vascular and Metabolic Biology*, Tier 2, 2001 - 2006

- R-K. Li**, *Heart & Stroke Foundation of Ontario*, 'Angiogenesis by uterine cell transplantation.' 2001–2003
- R-K. Li**, *Heart & Stroke Foundation of Ontario*, 'Autologous tissue-engineered grafts for congenital heart surgery.' 2001–2003
- R-K. Li**, *Heart & Stroke Foundation of Ontario*, 'Cell transplantation for cardiovascular disease.' 2001–2006
- R-K. Li**, *Ontario Ministry of Energy, Science and Technology*, 'Cell transplantation to improve heart function.' 2001–2006
- R-K. Li**, *Canadian Institutes of Health Research*, 'Prevention of the progressive cardiac failure of dilated cardiomyopathy by gene-transfected cell transplantation.' 2001–2004
- R-K. Li**, *Canadian Diabetes Association*, 'Cell Transplantation for diabetic cardiomyopathy.' 2002–2004
- T. Lindsay**, *Physicians' Services Incorporated Foundation*, 'Mechanistic studies in organ injury after ruptured aortic aneurysm.' 2000–2002
- T. Lindsay**, *Physicians' Services Incorporated Foundation*, 'Ruptured abdominal aortic aneurysm: Early organ injury prevention strategies.' 2002–2004
- P. P. Liu**, *Canadian Institutes of Health Research*, 'Interdisciplinary health research on gene-environment factors in heart failure.' 2002–2007
- P. P. Liu**, *Canadian Institutes of Health Research*, 'CV health research advancements Molecule to populations (TACTICS).' 2002–2008
- P. P. Liu**, *Canadian Institutes of Health Research*, 'Host response patterns in heart failure.' 2000–2003
- P. P. Liu**, *Canadian Institutes of Health Research*, 'Molecular mechanisms of viral myocarditis.' 1999– 2004
- P. P. Liu**, *Canadian Institutes of Health Research*, 'Cytokines in heart failure.' 2001–2006
- P. P. Liu, P. Backx, M. Husain, T. Parker, M. Rabinovitch, J.L. Rouleau, M.J. Sole, D.J. Stewart**, *Canadian Institutes of Health Research*, 'The determinants of host response and susceptibility in the development of health network.' 2001-2004
- P. P. Liu, J.V. Tu**, *Canadian Institutes of Health Research*, 'CCORT: The impact of report cards on MI and heart failure outcomes.' 2001–2006
- A. Logan**, *Heart & Stroke Foundation of Ontario*, 'Uncontrolled hypertension and obstructive sleep apnea', 2001-2004
- A. Logan**, *University-Industry/Canadian Institutes of Health Research*, 'Multicentre trial of continuous positive airway pressure (CPAP) for chronic therapy of heart failure', 1998-2007
- A. Logan**, *Canadian Institutes of Health Research*, 'CHIPS (control of hypertension in pregnancy study): A pilot study', 2003-2005
- D. MacLennan**, *Canadian Genetic Diseases Network of Centers of Excellence*, 'Genetic diseases resulting from defects in proteins regulating calcium metabolism.' 1998–2005
- D. MacLennan**, *Canadian Institutes of Health Research*, 'Ca²⁺ release channel.' 1999–2004
- D. MacLennan**, *Canadian Institutes of Health Research*, 'Ca²⁺-ATPase.' 1999–2004
- D. MacLennan**, *Canadian Institutes of Health Research*, 'Genetic diseases.' 2001–2006
- D. MacLennan**, *Heart & Stroke Foundation of Ontario*, 'Sites of interaction between phospholamban, sarcolipin and the cardiac calcium pump.' 2002–2007
- P. Marsden**, *Heart & Stroke Foundation of Canada*, 'Structure and function of the non-coding regions of the eNOS mRNA.' 2002–2005

- P. Marsden**, *Canadian Institutes of Health Research*, 'Regulation of endothelial gene expression by epigenetic signaling pathways.' 2002–2005
- R. Maunder, G.R. Greenberg, **R.P. Nolan**, W. Lancee W, D. Tannenbaum, *Canadian Institutes of Health Research*, 'Identifying a subtype of ulcerative colitis that is sensitive to stress'. 2001-2004
- G. Reid, P. Seidelin, E. Yeo, **J. Irvine**, L. Schwartz, S. Bradley, **R.P. Nolan**, W. Kop, H. Lau, *Heart & Stroke Foundation of Ontario*, 'Psychological factors and platelet activation: Predictors and mechanisms of restenosis following PTCA.' 2002-2003
- R. P. Nolan**, J.L. Rouleau, **D.E. Stewart**, E. Rukholm, J. Angus, L. Picard, I. Michelle, D. Alter, R.L. Franche, T. Crichton, W. Rosser, S. Grace, A. Haider, V. Micevski, G. Rodin, H.L. Veenstra, *Heart & Stroke Foundation of Ontario*, 'Community outreach and heart health risk reduction trials – COHRT.' 2001-2006
- R.P. Nolan**, J.L. Rouleau, **D.E. Stewart**, E. Rukholm, J. Angus, L. Picard, I. Michelle, D. Alter, R.L. Franche, T. Crichton, W. Rosser, S. Grace, A. Haider, V. Micevski, G. Rodin, H.L. Veenstra, *The Ontario Ministry of Health and Long Term Care*, 'Community outreach and heart health risk reduction trials – COHRT. 2002
- M. Opas**, *Canadian Institutes of Health Research*, 'The role of calreticulin in cardiac hypertrophy.' 1999–2007
- M. Opas**, *Canadian Institutes of Health Research*, 'Total internal reflection fluorescence imaging system' 2002
- M. Opas**, *Heart & Stroke Foundation of Ontario*, 'Cardiac calreticulin: Cell and developmental biology.' 1999–2004
- M. Opas**, Academic Research Fund, *Nanyang Technological University*, Singapore '3D bio-visualization and bio-VR for microstructural imaging.' 2002–2005
- M. Opas**, *Canadian Institutes of Health Research*, 'Digital imaging.' 2001
- T. Parker**, *Canadian Institutes of Health Research*, 'Inhibition of the cardiac hypertrophic phenotype by the calcium-binding protein, S100B.' 2002–2005
- T. Parker**, *Medical Research Council of Canada*, 'S100 proteins, S100a and calyculin, in health and disease.' 1999–2002
- H. Ross**, *Canadian Health Services Research Foundation*, 'Pharmaceutical care for patients with heart failure.' 2003-2007
- B. Rubin**, *Canadian Institutes of Health Research*, 'Molecular regulation of myocardial cyclooxygenase-2 expression and prostaglandin biosynthesis in neonatal rat myocytes.' 2002–2007
- G. Wright, B. Rubin**, N. Merchant, *Canadian Institutes of Health Research*, 'Magnetic resonance imaging for ischemia.' 2000–2004
- B. Rubin**, *Corgentech Incorporated*, 'Role of the transcription factor E2F in peripheral bypass graft patency.' 2003-2005
- M. Sefton**, *Ontario Research and Development Challenge Fund*, 'Establishment of an Advanced Reconstructive Tissue Engineering Centre' 2001–2006
- M. Sefton**, *Canadian Foundation for Innovation*, 'Centre for Cellular and Biomolecular Research.' 2000–2005
- M. Sefton**, *Canadian Institutes of Health Research*, 'Immunoisolation of mammalian cells in a synthetic polymer.' 2000–2003
- M. Sefton**, *Natural Sciences and Engineering Research Council of Canada*, 'Tissue engineering.' 1999–2007
- M. Sefton**, *Whitaker Foundation*, 'The New Institute of Biomaterials and Biomedical Engineering.' 2000– 2003
- M. Sefton**, *Materials & Manufacturing Ontario (with Rimon Therapeutics)*, 'Biomaterial-induced blood vessels: wound dressing.' 2001–2002
- M. Sefton**, Ontario Innovation Trust, 'McLaughlin Centre for Biomaterials and Tissue Engineering.' 2001–2006

- M. Sefton**, *Canadian Institutes of Health Research*, 'Training program in regenerative medicine.' 2002–2007
- S. Siu**, *Canadian Institutes of Health Research*, 'Astronomer study: Effect of cholesterol lowering on progression of aortic stenosis in patients with mild to moderate aortic stenosis.' 2000–2005
- S. Siu**, *Heart & Stroke Foundation of Canada*, 'Effect of ACEI therapy in patients with systemic right ventricles.' 2002–2004
- S. Siu**, *Canadian Institutes of Health Research*, 'Pregnancy and long-term prognosis in women with heart disease.' 2002–2004
- S. Siu**, *Heart & Stroke Foundation of Canada*, 'Adults with Tetralogy of Fallot: Right ventricular abnormalities.' 2002–2005
- M.J. Sole**, *Heart & Stroke Foundation of Ontario*, 'The genetics of hypertrophic cardiomyopathy.' 2000–2003
- D.J. Stewart**, *Medical Research Council of Canada*, 'Clinical relevance of endothelial dysfunction.' 2001–2002
- S. Nag, **D.J. Stewart**, *Heart & Stroke Foundation of Canada*, 'Regulation of cerebrovascular homeostasis and repair by angiogenic factors.' 2000–2001
- P. Cernacek, J.L. Rouleau, **D.J. Stewart**, *Medical Research Council of Canada*, 'Endothelin blockade in heart failure and hypertrophy: Which receptor and when?' 2000–2004
- D.J. Stewart**, *Heart & Stroke Foundation of Canada*, 'Biological and therapeutic potential of angiopoietins.' 2001–2003
- D.J. Stewart**, D.H. Fitchett, W.B. Batchelor, *Heart & Stroke Foundation of Canada*, 'Controlled trial of VEGF DNA in severe angina.' 2001–2003
- D.J. Stewart**, *Heart & Stroke Foundation of Canada/Canadian Institutes of Health Research*, 'Gene and cell-based therapies for cardio-respiratory disorders.' 2001–2003
- D.J. Stewart** et al., *Canadian Institutes of Health Research/Industry Clinical Trials*, 'Multicentre randomized double blind placebo control clinical trial of DNA for VEGF165 in the treatment of angina pectoris.' 2001–2004
- D.J. Stewart**, **M. Husain**, *Heart & Stroke Foundation of Canada*, 'Regulation of cerebrovascular homeostasis and repair by angiogenic factors.' 2002–2004
- H. Leong-Poi, **D.J. Stewart**, *Canadian Institutes of Health Research*, 'Novel diagnostic and therapeutic applications of myocardial contrast echocardiography and targeted microbubbles for therapeutic angiogenesis.' 2003–2006
- B. Strauss**, *Heart & Stroke Foundation of Canada*, 'Psychological factors and platelet activation: Restenosis predictors.' 2001–2003
- B. Strauss**, *Heart & Stroke Foundation of Canada*, 'Role of optimal glycemic control on reducing restenosis following coronary stenting in patients with diabetes.' 2001–2004
- B. Strauss**, *Canadian Institutes of Health Research*, 'The role of adventitial angiogenesis in the arterial response to injury.' 2002–2005
- B. Strauss**, *Heart & Stroke Foundation of Canada*, 'Collagenase therapy for chronic total occlusions.' 2002–2004
- L. Langille**, **B. Strauss**, *Heart & Stroke Foundation of Canada*, 'Cell biology of atherosclerosis.' 2000–2005
- R. Tsushima**, *Heart & Stroke Foundation of Ontario*, 'Regulation of cardiac calcium-activated nonselective cation channels.' 2000–2002
- R. Tsushima**, *Heart & Stroke Foundation of Ontario*, 'SNARE protein interaction with cardiac ion channels.' 2002–2004

W. McIsaac, K. Tu, **J.V. Tu**, *The Change Foundation*, 'Incorporating heart disease guidelines in family medicine: Integrated physician and patient tools.' 2002–2003

L. Pilote, **J.V. Tu**, M.J. Eisenberg, *Heart & Stroke Foundation of Ontario*, 'Determinants of variation in the management of acute myocardial infarction (AMI).' 2002–2004

M.K. Kapral, **J.V. Tu**, A. Laupacis, *Heart & Stroke Foundation of Ontario*, 'Gender differences in stroke care and outcomes.' 2002–2004

W.A. Ghali, P. Faris, M. Graham, M. Knudtson, **J.V. Tu**, *Canadian Institutes of Health Research*, 'Cardiac procedure waiting times: Exploratory analyses toward the development of national reporting standards.' 2002–2004

P.P. Liu, P. Backx, N. Dhalla, I. Dixon, L. Kirshenbaum, **J.V. Tu**, et al., *Canadian Institutes of Health Research*, 'A training program in cardiovascular research: Molecules to populations, heart failure to prevention.' 2002–2008

L. Pilote, M. Abrahamowicz, M.J. Eisenberg, K.H. Humphries, E. Rahme, **J.V. Tu**, *Canadian Institutes of Health Research*, 'A population-based analysis of the effectiveness of cardiac drugs after acute myocardial infarction.' 2002–2003

L. Pilote, P. Austin, M.J. Eisenberg, K.H. Humphries, L. Joseph, J.R. Penrod, **J.V. Tu**, *Canadian Institutes of Health Research*, 'Estimating the effectiveness of invasive and non-invasive management strategies for acute myocardial infarction using administrative databases.' 2002–2003

L. Pilote, M.J. Eisenberg, K.H. Humphries, L. Joseph, **J.V. Tu**, *Heart & Stroke Foundation of Canada*, 'A population-based study of determinants of variation in the management of acute myocardial infarction.' 2002–2003

J.V. Tu, W.A. Ghali, J.L. Cox, M. Knudtson, A. Laupacis et al., *Heart & Stroke Foundation of Canada*, 'Canadian cardiovascular outcomes research team.' 2001–2005

J.V. Tu, W.A. Ghali, J.L. Cox, M. Knudtson, A. Laupacis et al., *Canadian Institutes of Health Research*, 'Canadian cardiovascular outcomes research team.' 2001–2005

D.A. Alter, **J.V. Tu** et al., *Canadian Institutes of Health Research*, 'The relationship between socioeconomic status, quality of care, and outcomes following acute myocardial infarction.' 2001–2003

J.V. Tu, *Canada Research Chair in Health Services Research*, Tier 2, 2001–2005

T. Feasby, **J.V. Tu**, *Canadian Stroke Network*, 'Carotid endarterectomy survey.' 2000–2001

J.V. Tu, B. Chan, C.D. Naylor, *Medical Research Council of Canada*, 'Quality of acute myocardial infarction care.' 2000–2005

R.D. Weisel, *Heart & Stroke Foundation of Ontario/Canadian Institutes of Health Research*, 'Protection from perioperative ischemia.' 2003

R.D. Weisel, *Heart & Stroke Foundation*, 'Endothelin, perioperative ischemia and diabetes.' 2003

R.D. Weisel, T.M. Yau, *Heart & Stroke Foundation*, 'Myocardial transgene expression in transplanted cells.' 2003

R.D. Weisel, *Heart & Stroke Foundation*, 'Stem cells and restenosis: Defining the new paradigm.' 2003

G. Wright, P. Burns, G. Coates, E. Downar, S. Fort, A. Hendler, B. Hu, C. McKerlie, N. Merchant, L. Mickleborough, **C. Wittnich**, *Medical Research Council of Canada*, 'Magnetic resonance imaging for ischemic heart disease.' 1999–2002

C. Wittnich, *Heart & Stroke Foundation of Canada*, 'Chronically hypoxic newborn hearts response to stress.' 1999–2002

C. Wittnich, *Heart & Stroke Foundation of Canada*, 'Impact of gender on myocardial pathology and ischemia/reperfusion.' 2001–2004

C. Wittnich, *Heart & Stroke Foundation of Ontario*, 'Oxygen stress in newborn hearts.' 2002–2006

T.M. Yau, R.D. Weisel, *Heart & Stroke Foundation*, 'Insulin cardioplegia for poor left ventricular function.' 1999–2001

S.E. Fremes, T.M. Yau, *Medical Research Council of Canada*, 'Multi-centre radial artery patency study.' 2000–2001

T.M. Yau, R.D. Weisel, *Canadian Institutes of Health Research*, 'Insulin cardioplegia for poor left ventricular function.' 2001–2003

T.M. Yau, *Heart & Stroke Foundation of Ontario*, 'Myocardial transgene expression in transplanted cells.' 2002–2004

T.M. Yau, *St. Jude Medical Inc.*, 'A prospective evaluation of the St. Jude Inc., Cardiovascular Group aortic connector.' 2000–2004

T.M. Yau, R.D. Weisel, *Aventis Pharma*, 'EXPEDITION Trial (Na⁺/H⁺ exchange inhibitor to prevent coronary events in acute cardiac conditions.' 2001–2003

R.D. Weisel, V. Rao, T.M. Yau, *Quest Medical Inc.*, 'Quest trial.' 2001–2005

W.C. Yeh, *Canadian Network for Vaccines and Immunotherapeutics*, 'Signal transduction in vivo inflammatory networks.' 2002–2004

W.C. Yeh, *Canadian Institutes of Health Research*, 'Studies of the signaling mechanisms mediated by Toll-like receptor and IL-1.' 2002–2005

SELECTED AWARDS TO MEMBERS

Listed below are just a few awards reported to the HSRLCE received by members.

Adeli, Khosrow

2002 International Visitor Award, Canadian Society of Clinical Chemists

Backx, Peter

1999 – 2003 Premier's Award for Research Excellence
1999 – 2004 Heart & Stroke Career Investigator Award

Cheung, Angela

1998 – 2003 Five-Year Ontario Ministry of Health, Health Services Research Career Scientist Award

Cybulsky, Myron

2002 – 2007 Career Investigator Award, Heart & Stroke Foundation

Dorian, Paul

2001 Critical Care Best Abstract Award: American Heart Association Annual Meeting
2003 St. Michael's Hospital Electrophysiology Professorship

Floras, John

2001-2006 Heart & Stroke Foundation of Ontario, 'Career Investigator Award.' 2001–2006

Lindsay, Thomas

2001 Award for Individual Teaching Excellence, The Wrightman-Berris Academy
2002 External Referee, Heart & Stroke Foundation of Canada

Liu, Peter

2002 A.C. Burton Lecturer, University of Western Ontario
2003 John Foester Award for Cardiovascular Research Excellence, University of Manitoba

MacLennan, David

2002-2003 Heart & Stroke Foundation of Ontario, 'Rick Gallop Award'

Weisel, Richard

2001 Pfizer Lake Louise Research Prize, Annual Meeting of the American College of Cardiology
2002 Charles Tator Surgeon-Scientist Mentoring Award, University of Toronto
2002 John Foester Lecturer Award, Institute of Cardiovascular Sciences Awards, Winnipeg, MB
2002 Council on Cardiothoracic and Vascular Surgery Mentor Award, American Heart Association, Chicago, ILL

Wittnich, Carin

2002 Queen's Jubilee Medal

Yeh, Wen-Chen

2003 – 2008 CIHR New Investigator Award

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The administrative and organizational support of the Faculty of Medicine, its component departments, and University-wide departments more broadly.

The many granting agencies that support all the investigators of the Centre with operating grants, and particularly the CIHR Institute of Circulatory and Respiratory Health and the Heart and Stroke Foundation of Canada, which actively oversee some of the group grant programs that the Centre is involved in.

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The contributions and dedication of all the members and staff whose participation in Trainee Award review, the Annual Cardiovascular Scientific Day, the Annual Strategic Planning retreat, Platform centered research programs, Group Grants, administrative committee meetings, and day-to-day administrative operations that make it all happen.

Thank you.

