

Curriculum Vitae

Mansoor Husain

A. Date Curriculum Vitae is Prepared: 2016 June 27

B. Biographical Information

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1. EDUCATION

Degrees

1986 Doctoris Medicinae (Honours, Distinction, & Gold Medal), University of Alberta
1984 Bachelor of Medical Science (Honours & Distinction), University of Alberta

Postgraduate, Research and Specialty Training

1994 Cardiology Affiliate, Joint Program in Nuclear Medicine, Harvard Medical School, Boston, Massachusetts, United States
1993 - 1997 Postdoctoral Fellow, Program of Excellence, Department of Biology, Massachusetts Institute of Technology, Cambridge, Massachusetts, United States
1992 - 1993 Senior Cardiology Resident, The Toronto Hospital, Toronto, Canada
1991 - 1992 Junior Cardiology Resident, St. Michael's Hospital, Toronto, Canada
1990 - 1991 Chief Medical Resident, St. Michael's Hospital, Toronto, Canada
1989 - 1990 Senior Medical Resident, The Toronto Hospital, Toronto, Canada
1987 - 1989 Junior Medical Resident, St. Michael's Hospital, Toronto, Canada
1986 - 1987 Rotating Intern, St. Michael's Hospital, Toronto, Canada

Qualifications, Certifications and Licenses

2011 Certificate, High Potentials Leadership Program - Harvard Business School, Boston, Massachusetts, United States
1999 Diplomate, Certification Board of Nuclear Cardiology, United States
1993 Diplomate, Cardiovascular Disease, American Board of Internal Medicine, United States
1993 Certificate of Special Competence, Cardiovascular Medicine, Royal College of Physicians & Surgeons of Canada
1991 Specialty Certificate, Internal Medicine, Royal College of Physicians & Surgeons of Canada
1990 Diplomate, Internal Medicine, American Board of Internal Medicine, United States
1987 Diplomate, National Board of Medical Examiners, United States
1987 Licentiate, Medical Council of Canada, Canada

2. EMPLOYMENT

Current Appointments

2014 Nov - present	Executive Director, Ted Rogers Centre for Heart Research, Toronto
2011 Jul - present	Professor, Medicine, University of Toronto, Toronto, Canada
2011 May - present	Director, Toronto General Research Institute, Toronto, Canada
2008 Apr - present	Senior Scientist, Toronto General Research Institute, Toronto, Canada
2006 Sep - present	Member, McEwen Centre for Regenerative Medicine, University Health Network, Toronto
2004 Sep - present	Scholar, McLaughlin Centre for Molecular Medicine, University of Toronto, Toronto, Canada
2003 Jul - present	Cross-Appointment, Department of Physiology, University of Toronto, Toronto, Canada
2001 Jul - present	Full Member, Graduate Faculty, Institute of Medical Science, University of Toronto, Toronto, Canada
2001 Jan - present	Full Member, Cardiovascular Sciences Collaborative Program, School of Graduate Studies, University of Toronto, Toronto, Canada
2000 Jul - present	Full Member, Graduate Faculty, Laboratory Medicine and Pathobiology, University of Toronto
1999 Jan - present	Attending Staff, Department of Medicine, Mt. Sinai Hospital, Toronto, Canada
1998 Jul - present	Cross-Appointment, Laboratory Medicine and Pathobiology, University of Toronto, Toronto
1998 Jan - present	Associate Staff, Department of Medical Imaging, University Health Network, Toronto
1997 Jul - present	Attending Staff, Department of Medicine, University Health Network, Toronto

Previous Appointments

HOSPITAL

2002 Jul - 2011 Jun	Associate Director, Cardiac ICU, University Health Network, Toronto, Canada
1994 Jan - 1997 Dec	Attending Staff, Department of Medicine, Beth Israel Deaconess Medical Center, Boston, Massachusetts, United States
1993 Jun - 1993 Sep	Associate Staff, Department of Medicine, The Toronto Hospital, Toronto, Canada

RESEARCH

2010 Sep - 2014 Dec	Director of Research, Peter Munk Cardiac Centre, University Health Network, Toronto
2009 Sep - 2011 Oct	Director of Research, Division of Cardiology, University of Toronto, Toronto, Canada
2006 Sep - 2012 Dec	Director, Heart & Stroke/Richard Lewar Centre of Excellence, University of Toronto, Toronto, Canada
2000 Jan - 2008 Mar	Scientist, Toronto General Research Institute, Toronto, Canada

UNIVERSITY

1998 Jul - 2001 Jun	Associate Member, Institute of Medical Science, University of Toronto, Toronto, Canada
1994 Jan - 1997 Jun	Instructor, Department of Medicine, Harvard Medical School, Boston, Massachusetts, United States

UNIVERSITY - RANK

2004 Jul - 2011 Jun	Associate Professor, Medicine, University of Toronto, Toronto, Canada
1998 Jul - 2004 Jul	Assistant Professor, Medicine, University of Toronto, Toronto, Canada
1997 Jul - 1998 Jun	Lecturer, Medicine, University of Toronto, Toronto, Canada

3. HONOURS AND CAREER AWARDS

Distinctions and Research Awards

NATIONAL

Received

2016 **Hypertension Canada Senior Investigator Award**, Hypertension Canada

OTHER

Received

2012 **Vincenzo Panagla Distinguished Lecturer Award**, University of Manitoba. (Research Award)

2006 **William Goldie Prize & Travel Award**, Department of Medicine, University of Toronto
Total Amount: 1,500

2004 **Allan Bruce Robertson Young Investigator Award**, Clinical Research Society of Toronto
Total Amount: 1,500

1996 **Sigma Xi Scientific Research Society Award**, Massachusetts Institute of Technology

1991 **1st Prize, Higgins' Residents Research Competition**, St. Michael's Hospital

1991 **Trainee Award**, American Federation of Clinical Research
Total Amount: 1,000

1988 **3rd Prize, Higgins' Residents Research Competition**, St. Michael's Hospital

1986 **Douglas E. Leitch Gold Medal in Pediatrics**, University of Alberta

1986 **E. L. Pope Memorial Award in Medicine**, University of Alberta

1986 **J. Ross Van Scholarship in Obstetrics & Gynecology**, University of Alberta

1986 **Moshier Memorial Gold Medal**, University of Alberta

1985 **Bristol Laboratories Pharmacology Award**, University of Alberta

1985 **University Hospitals Renal Trust Fund Award**, University of Alberta
Total Amount: 500

1984 **Alpha Omega Alpha Honour Society**, University of Alberta

1983 - 1984 **Nat Christie Foundation Awards for Academic Merit**, Univ. of Alberta
Total Amount: 3,000

1981 - 1985 **Louise McKinney Scholarships for Acad. Excellence**, Govt. of Alberta
Total Amount: 21,000

1980 - 1981 **University Scholarship**, Hudson's Bay Company
Total Amount: 2,000

Teaching and Education Awards

Received

2002 **E. D. Wigle Divisional Teaching Award**, Dept of Medicine, Faculty of Medicine, University Health Network

4. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Professional Associations

2008 - present	Member , American Physiological Society
1999 - present	Member , Canadian Cardiovascular Society
1999 - present	Member , Canadian Society of Atherosclerosis, Thrombosis and Vascular Biology
1998 - present	Member , American Society for Nuclear Cardiology
1997 - present	Member , Basic Science & Hypertension Councils, American Heart Association
1997 - present	Member , Hypertension Canada
1996 - present	Member , American Association for the Advancement of Science
1991 - present	Fellow , Royal College of Physicians & Surgeons of Canada
1987 - present	Member , Ontario College of Physicians & Surgeons
1986 - present	Member , Ontario Medical Association
1982 - present	Member , Canadian Medical Association
2003 - 2007	Officer , Ontario Hypertension Society
1997 - 1998	Member , American Federation for Clinical Research
1993 - 1998	Board of Registration in Medicine , Commonwealth of Massachusetts
1991 - 1998	Member , American College of Cardiology
1987 - 1998	Member , American College of Physicians

Administrative Activities

INTERNATIONAL

International Meetings

2012 - present	Member , Abstract Grading Committee, American Heart Association
2014	Member , International Academy of Cardiology, 19th World Congress on Heart Disease, Boston, Massachusetts, United States.
2012	Member , Cardiology & Diabetes at the Limits XIV 2012, British Cardiovascular Society/South African Heart Association, Cape Town, South Africa.
2010	Member , Cardiology & Diabetes at the Limits XII 2010, British Cardiovascular Society/South African Heart Association, Cape Town, South Africa.
2010	Member , European Association for the Study of Diabetes Symposium, Stockholm, Sweden.
2005	Member , International Society for Heart Research Meeting 2006 Organizing Committee, Manchester, United Kingdom.
2003 - 2011	Session Chair , Annual International Toronto Heart Summit, Toronto, Ontario, Canada.
2003	Member , International Vascular Biology Meeting 2004 Organizing Committee

NATIONAL

Alberta Heritage Foundation for Medical Research

2003 - 2006	Member , Clinical Fellowship Awards Committee
2003 - 2006	Member , Clinician Investigator Awards Committee

Canada Foundation for Innovation/Fonds de la Recherche en Santé Québec

2009 - present	Member , Leading Edge Fund and New Initiative Fund Multidisciplinary Committee
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2006 - 2007 **Member**, Proteomic Expert Committee

Canadian Cardiovascular Congress

2009 **Member**, Scientific Program Committee

2008 **Chair**, Oral Abstract Sessions

2007 **Chair**, Oral Abstract Sessions

Canadian Institutes of Health Research

2015 - present **Reviewer**, Foundation Peer Review Team

2014 - 2015 **Member**, Cardiovascular System - C Peer Review Committee, Canada.

2011 - 2012 **Chair**, Scientific Review Committee "Cardiovascular Systems C"

2005 - 2012 **Member**, Scientific Review Committee "Cardiovascular Systems C"

2000 - 2003 **Member**, Scientific Review Committee "Cardiovascular Systems A"

CIHR Emerging Vascular Network

2014 **Member**, Vascular Network Group Meeting, Canada.

Heart & Stroke Foundation of Canada

2011 - 2012 **Chair**, Scientific Review Committee II

2006 - 2009 **Member**, Clinician Scientist Review Committee

2006 - 2008 **Chair**, Scientific Review Committee II

2003 - 2006 **Co-Chair**, Scientific Review Committee II

1998 - 2000 **Member**, Scientific Review Committee IVb

Hypertension Canada

2011 - present **Council Member**

2008 - 2010 **President**

2007 - 2008 **President-Elect**

2003 - 2007 **Executive**

University of Toronto

2015 **Member**, Merit Review Committee, Toronto, Ontario, Canada.

PROVINCIAL / REGIONAL

Provincial Meetings

2009 **Chair**, Heart and Stroke Foundation of Ontario Joint Annual Research Day Oral Abstract Session, London, Ontario.

2009 **Chair**, Heart and Stroke Foundation of Ontario Joint Annual Research Day Lowell Langille Memorial Lecture, London, Ontario.

2009 **Chair**, Annual Spring Meeting Lowell Langille Memorial Lecture, Peterborough, Ontario.

University of Ottawa

2006 **External Reviewer**, Faculty of Medicine Promotions Committee

Western University

2003 **Member**, Advisory Committee for Medical Research Chair in Human Gene Function

LOCAL

Toronto General Research Institute

2011 - present **Director**, Toronto General Research Institute
2004 - present **Member**, Appointments Committee
1999 - present **Member**, Equipment Committee
2013 - 2014 **Chair**, McEwen Chair in Cardiac Regenerative Medicine Search Committee
2010 - 2013 **Chair**, Munk Chair in Cardiac Imaging Search Committee
2005 - 2008 **Member**, Basic Science Advisory Committee
2004 **Member**, Chair in Cardiac Regenerative Medicine Search Committee
2002 - 2005 **Member**, Space Planning Committee
1998 - 2000 **Member**, Animal Care Committee

University Health Network

2002 - present **Member**, Research Council Executive
2014 - 2015 **Member**, Chief of Division of Cardiology, Search Committee
2007 - 2008 **Member**, Physician-in-Chief Search Committee
2000 - 2003 **Chair**, Pharmacy and Therapeutics Subcommittee on Acute Coronary Syndromes

University Health Network/Mt. Sinai Hospital

2008 - present **Vice Chair**, Alternate Funding Plan Academic Medical Organization
2003 - present **Member**, Division of Cardiology Executive Committee
2008 **Member**, Management Committee, Alternate Funding Plan Academic Medical Organization
2003 - 2009 **Member**, Department of Medicine Economics Committee
1999 - 2003 **Member**, Divisional Research Committee
1999 - 2002 **Member**, Cardiac Intensive Care Unit Management Committee

University of Toronto

2014 - present **Executive Director**, Ted Rogers Centre for Heart Research
2013 - present **Member**, Department of Medicine Promotion Committee
2006 - present **Member**, Heart & Stroke Richard Lewar Centre of Excellence
2014 **Member**, Heart and Stroke Foundation of Ontario Chair in Cardiovascular Science Search Committee, Hospital for Sick Children, Canada.
2013 **Reviewer**, Department of Laboratory Medicine & Pathobiology External Review
2010 **Member**, Hospital for Sick Children Cardiovascular Scientist Search Committee
2010 **Member**, Institute of Medical Science Director Search Committee
2009 - 2011 **Director**, Division of Cardiology Research
2009 - 2010 **Member**, Dean's Advisory Committee for International Research
2009 **Member**, Search Committee for the Dexter Hung-Cho Man Chair in Cardiology
2007 - 2011 **Member**, Dean's Advisory Committee for Research
2007 - 2011 **Member**, Division Heads Committee, Division of Cardiology
2007 - 2010 **Member**, Institute of Medical Science Executive Committee
2006 - 2012 **Director**, Heart & Stroke Richard Lewar Centre of Excellence
2006 **Chair**, Department of Medicine Task Force on the Clinician-Investigator
2002 **Member**, Cardiovascular Physiologist Search Committee, Department of Physiology

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1999 - 2004 **Member**, Heart and Stroke Richard Lewar Centre of Excellence Basic Science Committee
1999 - 2001 **Member**, Heart and Stroke Richard Lewar Centre of Excellence Building Planning Committee
1999 - 2000 **Member**, Hospital for Sick Children Developmental Biologist Search Committee
1989 - 1992 **Member**, On-Site Program Evaluation Team, Postgraduate Education Committee

York University

2014 **Member**, External Review Team for the Muscle Health Research Centre, Toronto.

Peer Review Activities

EDITORIAL BOARDS

Member

2015 - present Clinical Sciences
2013 - present CardioRenal Medicine
2010 - 2012 Frontiers in Pharmacology: Cardiovascular and Smooth Muscle Pharmacology
2006 - 2012 Circulation Research
2000 - 2005 Current Drug Targets (CV & Hematological)

GRANT REVIEWS

External Grant Reviewer

2015 Physicians Services Fellowship in Translational Medicine
1997 - present Canadian Institutes of Health Research
1997 - present Heart & Stroke Foundation of Canada
2005 - 2008 Medical Research Council, United Kingdom
2003 American Alzheimer's Society
1997 - 1999 Human Frontier Science Program

Reviewer

2006 - present Canada Foundation for Innovation's Leading Edge Fund and New Initiative Fund, Fonds de la Recherche en Santé Québec, Multidisciplinary Assessment Committee
2000 - present Basic Science Council: Gene Therapy, American Heart Association
2010 - 2013 The Wellcome Trust, United Kingdom
2006 - 2009 Heart & Stroke Foundation of Canada, Clinician Scientist Review Committee
2005 - 2012 Canadian Institutes of Health Research, Cardiovascular Systems C
2003 - 2008 Heart & Stroke Foundation of Canada, Scientific Review Committee II
2003 - 2006 Alberta Heritage Foundation for Medical Research, Clinical Fellowship Awards Committee
2003 - 2006 Alberta Heritage Foundation for Medical Research, Clinician Investigator Awards Committee
2000 - 2003 Canadian Institutes of Health Research, Cardiovascular Systems A
1998 - 2000 Heart & Stroke Foundation of Canada, Scientific Review Committee IVb

MANUSCRIPT REVIEWS

Reviewer

2013 - present Nature Biotechnology
2012 - present Diabetes
2012 - present Journal of Cellular Physiology

2012 - present	Journal of Leukocyte Biology
2010 - present	American Journal of Physiology: Endocrinology and Metabolism
2010 - present	European Journal of Pharmacology
2010 - present	Journal of Thrombosis and Haemostasis
2010 - present	Regulatory Peptides
2009 - present	Stem Cell
2008 - present	Proceedings of the National Academy of Sciences of the United States of America
2007 - present	Journal of Clinical Investigation
2005 - present	British Journal of Pharmacology
2005 - present	Hypertension
2003 - present	Journal of American College of Cardiology
2003 - present	Journal of Histochemistry & Cytochemistry
2002 - present	Circulation
2001 - present	Arteriosclerosis, Thrombosis & Vascular Biology
2001 - present	Cardiovascular Pathology
1999 - present	American Journal of Pathology
1999 - present	Journal of Vascular Surgery
1998 - present	Pediatric Research
1997 - present	American Journal of Physiology: Cell
1997 - present	American Journal of Physiology: Heart & Circulatory Physiology
1997 - present	Cardiovascular Research
1997 - present	Circulation Research

C. Academic Profile

1. RESEARCH STATEMENTS

2000 - present	<p>Molecular regulation of vascular smooth muscle cell proliferation & differentiation.</p> <p>This represents my longest continuous research program. Here we focus on the role of the c-myc proto-oncogene and its encoded gene product, the c-Myc transcription factor, in vascular smooth muscle cell (VSMC) biology. We have shown how c-Myc facilitates G1-to-S phase cell cycle transitions in VSMC, in part, by down-regulating expression of specific plasma membrane Ca²⁺ ATPase (PMCA1 and PMCA4), and up-regulating expression of the inositol tris-phosphate receptor (IP3R1). These effects, in turn, enable critical elevations in cell Ca²⁺ concentrations that are required for cell cycle progression. We have cloned the PMCA1 and IP3R1 promoters and have demonstrated their specific structural and functional interactions with c-Myc. We have also cloned the mouse PMCA4 gene and have become particularly interested in understanding the molecular basis for regulated splicing of PMCA transcripts in general, and PMCA4 in specific. We also study the role of other Ca²⁺ regulatory genes (SERCA) in cell cycle progression and are interested in defining putative Ca²⁺-responsive cell cycle regulators. In this regard, we have studied candidate mediators such as the calcineurin/NFAT pathway, Ca²⁺/calmodulin-dependent kinases, CyclinE/CDK2 and p27kip-1. Importantly, we defined the molecular basis for Ca²⁺-sensitive CyclinE/CDK2 activity, and developed, patented and licensed a novel anti-proliferative therapy based on this discovery. We have developed in vitro SMC differentiation schema for mouse embryonic stem cells (ESC) and have characterized the transcriptional biology of differentiating embryoid bodies at specific temporal windows. We have used these techniques to explore the role of c-myc in both VSMC and cardiac differentiation. The latter led to studies of lineage specification in VSMC and cardiac myocytes, and the discovery of a specific role for c-Myc in</p>
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the formation of VEGFR2+ progenitor cells with developmental potential for VSMC. This area of research has led us to develop efficient means of differentiating functional vascular VSMC from skin-derived progenitors (SKP) of rodents and humans, and 'coronary'-like VSMC from human ESC. Our work with SKP may hold particular promise, enabling us to test the hypothesis that SKP-derived VSMC from patients with cardiovascular disease model the underlying disease.

2000 - present

Tissue-specific transgene regulation informs molecular pathophysiology.

We exploit conditional cardiovascular tissue-specific gene regulation for mechanistic studies in mouse models in vivo by developing transgenic mice with arterial SMC-restricted expression of a tetracycline-responsive transcriptional activator (tTA). We used this to conditionally express a variety of tTA-dependent transgenes in vivo (Myb-Engrailed: a dominant negative Myb; PMCA1a; and PMCA4b). We characterized the function of tTA in a wire-mediated denudation model of carotid artery injury and used this model to gauge the importance of transgenes of interest. Upon breeding our conditional transactivation system into LDL receptor knockout mice (LDLr^{-/-}) we discovered that the transgenic line had undergone silencing. Prior to silencing, Myb-Engrailed over-expressing animals were shown to be protected from neointima formation following arterial injury. PMCA4b over-expressing animals were also protected in such a model, but showed an additional phenotype that became a major focus of our research. Namely, PMCA4b over-expression in arterial SMC resulted in a unique model of increased blood pressure, which is associated with enhanced myogenic tone and increased sensitivity to endogenous vasoconstrictors. We showed this to be due to heightened pharmaco-mechanical coupling of SMC contraction caused by compensatory increases in the storage of intracellular Ca²⁺, and decreased activity of neuronal nitric oxide synthase (nNOS) which has been shown to be both structurally and functionally coupled with PMCA4b. These two mechanisms are not mutually exclusive. This area of research has led us to study the regulation and role of alternative splicing of the PMCA4 gene. How and when VSMC switch between PMCA4a and 4b has emerged as a new area of our research.

2000 - present

Genetic and experimental models of cardiovascular disease.

We have been active in a number of collaborative projects employing our mouse models to study other transgenes of interest. These include Elafin, an elastase inhibitor, and Chymase, an endogenous matrix and zymogen protease (Marlene Rabinovitch, Stanford University), and iNOS and ET1 (Duncan Stewart, University of Ottawa). The latter two genes have also been expressed in a conditional cardiac-restricted pattern. The cardiac iNOS over-expressing mouse represents a unique model of sudden cardiac death due to a vulnerability of the mouse cardiac conduction system to iNOS-derived peroxynitrite and/or superoxide. The cardiac Endothelin over-expressing animal is a model of immune cardiomyopathy resulting in heart failure. In collaboration with Kumarswamy Nanthakumar (University of Toronto) we have employed intracardiac and epicardial mapping of the mouse heart to study the temporal and molecular basis of electrophysiological remodeling in our ET-1 model of heart failure. Other collaborations have revealed unique models of diastolic dysfunction and cardiac hypertrophy (GLP-1 receptor knockout; Daniel J. Drucker, University of Toronto) and vasomotor dysfunction leading to arteriovenous malformations (Endoglin knockout; Michelle Letarte, University of Toronto). Our interest in GLP-1 biology in particular has led to an active research program. We have studied the effects of GLP-1 and related peptides in small and large animal models of myocardial infarction (MI), small animal models of obesity and vascular disease, and have begun a clinical trial in patients undergoing primary PCI for acute STEMI. We have gone on to show that GLP-1 and related agonists have anti-thrombotic effects related to both direct anti-platelet actions and what is probably an endothelium-derived anti-thrombotic mechanism. Furthermore, we developed small peptide-derivatives of GLP-1 that have direct cardioprotective effects attributable to a novel mechanism of action localized in vascular cells. Our MI work stimulated interest in other cellular and molecular events involved in ventricular and vascular remodeling post-MI. To this end, we have described multifaceted failure of cell survival, arteriogenesis and fibrosis following MI in mice lacking growth differentiation factor-5 (GDF-5). Finally, working with Steffen-Sebastian Bolz

(University of Toronto), we discovered a novel molecular mechanism underlying the increased systemic resistance that complicates heart failure.

2000 - present

Clinical and experimental cardiovascular imaging.

As a board-certified Nuclear Cardiologist and member of the Joint Department of Medical Imaging at University Health Network, I work closely with Robert Mark Iwanochko and Douglas Lee (University of Toronto), to study the role of myocardial perfusion imaging (MPI) in the diagnosis and prognosis of CAD. In collaboration with Ren-Ke Li and Richard Weisel (University of Toronto), we employed MPI to gauge viability and function of autologous cardiac cell transplants in a pig model of MI. In collaboration with David Jaffray and Steffen-Sebastian Bolz (University of Toronto), we developed protocols for magnetic resonance (MR)-based measurements of cerebral blood flow in animal models of heart failure and are correlating these with vasomotor physiology of explanted cerebral arteries.

2000 - present

Clinical studies.

As an attending staff in the CICU of TGH, I was the local PI for the CURE trial (multicentre randomized placebo-controlled clinical trial of Clopidogrel in unstable angina), and for the Canadian Heart Research Centre's Registry of Acute Coronary Syndromes. We also studied the role of acute physiological scoring systems (APACHE) in the prognosis and management of patients requiring cardiac intensive care. Currently, our interest in the role of GLP-1 targeted drugs as cardioprotective agents is being explored in a UofT-led Phase II randomized double blind study placebo controlled trial of a GLP-1 analog in STEMI. I have worked closely with colleagues Vladimir Dzavik and Micheal Farkouh (University of Toronto) to attract industry funding for this investigator-initiated study. Finally, I have most recently been asked to be a PI for the multinational PIONEER-6 study exploring cardiovascular safety of an oral GLP-1 analog in diabetic subjects at high risk of cardiovascular disease. This will start in 2016.

D. Research Funding

1. GRANTS, CONTRACTS AND CLINICAL TRIALS

PEER-REVIEWED GRANTS

FUNDED

- | | |
|---------------------|---|
| 2016 Jul - 2018 Jun | Principal Applicant. Harmonized assessment of common disease mechanisms and biomarkers in rodent models of vascular cognitive impairment and heart failure). Canadian Vascular Network See Funding Grant. Collaborator(s): Fish, Jason 300,000. [Grants] |
| 2016 Jul - 2019 Jun | Principal Applicant. Mechanisms of action of the cardioprotective metabolite GLP-1 (28-36). Heart and Stroke Foundation of Canada (HSFC). 300,000. [Grants] |
| 2014 May - 2016 Jun | Co-Investigator. Circulating MicroRNA as functional biomarkers of vascular cognitive impairment. Canadian Vascular Network. Canadian Vascular Network See Funding Grant. PI: Fish, Jason. Collaborator(s): Husain, Mansoor. 93,582. [Grants] |
| 2014 Mar - 2019 Feb | Principal Investigator. Role of c-Myb in vascular smooth muscle cell biology and blood pressure regulation. Canadian Institutes of Health Research (CIHR). 978,750. [Grants] |
| 2012 Oct - 2013 Sep | Principal Investigator. "Development of an anti-proliferative therapeutic that disrupts CaM-cyclin E interactions in vivo". Canadian Institutes of Health Research. 194,700. [Grants] <i>Proof of Principle (POP) - Phase II.</i> |

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2012 Jul - 2015 Jun **Co-Principal Investigator.** "Arterial-venous specification in adult neovascularization". Heart and Stroke Foundation of Canada (HSFC). GIA. PI: Vasconcelos, Sara. Collaborator(s): **Husain, Mansoor.** 205,000. [Grants]

2010 Apr - 2011 Mar **Principal Investigator.** "Role of growth differentiation factor 5 in myocardial infarction and arterial remodelling". Canadian Institutes of Health Research. Collaborator(s): Zaidi S. 77,576. [Grants]
ICRH Mandate Bridge Funding.

2009 Jul - 2014 Jun **Principal Investigator.** "The role of glucagon-like peptide-1 in cardiac health and disease". Heart & Stroke Foundation of Ontario. Collaborator(s): Drucker D. 700,000. [Grants]
Operating Grant.

2009 Jul - 2012 Jun **Principal Investigator.** "Plasma membrane Ca²⁺ ATPase 4 isoforms: regulation and role in cardiac and smooth muscle". Heart & Stroke Foundation of Ontario. 345,690. [Grants]
Operating Grant.

2009 Apr - 2014 Mar **Principal Investigator.** "c-Myb-dependent proliferation & differentiation of vascular smooth muscle cells". Canadian Institutes of Health Research. 758,854. [Grants]
Operating Grant.

2009 Apr - 2014 Mar **Co-Principal Investigator.** "Interrogating the cardiomyogenic hierarchy to optimize cardiovascular cell therapy". Heart and Stroke Foundation of Ontario. PI: Zandstra Peter. Collaborator(s): Nanthakumar Kumaraswamy, **Husain Mansoor.** 718,500. [Grants]
Operating Grant.

2007 Jul - 2009 Jun **Co-Principal Investigator.** "Controlling bioreactor condition to optimize regenerative potential of cardiomyocytes". Heart and Stroke Foundation of Ontario. PI: Zandstra Peter. Collaborator(s): Nanthakumar Kumaraswamy, **Husain Mansoor.** 175,000. [Grants]
Operating Grant.

2007 Apr - 2008 Mar **Principal Investigator.** "Development of an anti-proliferative therapeutic that disrupts CaM-cyclin E interactions". Canadian Institutes of Health Research. 150,000. [Grants]
Proof of Principle Grant.

2006 Jul - 2009 Jun **Principal Investigator.** "Role of glucagon-like peptides in cardiac health and disease". Heart & Stroke Foundation of Ontario. Collaborator(s): Drucker D. 350,349. [Grants]
Operating Grant.

2005 Jul - 2010 Jun **Co-Investigator.** "Cell Biology of Atherosclerosis". Heart & Stroke Foundation of Ontario. Collaborator(s): Langille L (Director); Bendeck M, Courtman D, Cybulsky M, Gotlieb A, Heximer S, Marsden P, Stewart D, Strauss B, Ward M. 1,250,000. [Grants]
Group Grant.

2005 Jul - 2008 Jun **Co-Investigator.** NO-Synthase in Cardiovascular Health and Disease. Heart and Stroke Foundation of Ontario (The) (HSFO). Grant-in-Aid. PI: Stewart, Duncan. Collaborator(s): **Husain, Mansoor.** 278,047. [Grants]

2005 Apr - 2010 Mar **Co-Principal Investigator.** "Pathophysiological relevance of endothelin-1". Canadian Institutes of Health Research (CIHR). PI: Stewart, Duncan. Collaborator(s): **Husain, Mansoor.** 570,855. [Grants]
Operating Grant.

2004 Apr - 2009 Mar **Principal Investigator.** "c-Myb-dependent vascular smooth muscle cell proliferation".

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Canadian Institutes of Health Research. 576,345. [Grants]
Operating Grant.

2003 Jul - 2006 Jun **Principal Investigator.** "The role of plasma membrane Ca²⁺-ATPase isoforms in vascular pathophysiology". Heart & Stroke Foundation of Ontario. 82,373. [Grants]
Operating Grant.

2003 Apr - 2008 Mar **Principal Investigator.** "The role of plasma membrane Ca²⁺-ATPase isoforms in vascular smooth muscle cell biology". Canadian Institutes of Health Research. 506,000. [Grants]
Operating Grant.

2003 Apr - 2008 Mar **Co-Investigator.** "Determinants of host susceptibilities of Heart Failure". Canadian Institutes of Health Research. Collaborator(s): Dr. Liu P (Director); Backx P, MacLennan D, Parker T, Sole MJ, Stewart DJ. 1,961,060. [Grants]
Group Grant.

2003 Apr - 2008 Mar **Co-Principal Investigator.** "Role of ACE2 in the regulation of cardiac and vascular function". Canadian Institutes of Health Research (CIHR). PI: Backx Peter. Collaborator(s): **Husain, Mansoor.** 561,260. [Grants]
Operating Grant.

2003 Apr - 2007 Mar **Principal Investigator.** "Molecular regulation of vascular smooth muscle cell proliferation: the role of calcium pumps in atherosclerosis and hypertension". Government of Ontario. Premier's Research Excellence Award. 150,000. [Grants]
PREA.

2002 Jul - 2005 Jun **Co-Principal Investigator.** "Targeted over-expression of inducible NO synthase: relevance for the pathogenesis of cardiovascular disease". Heart & Stroke Foundation of Ontario. PI: Stewart D. Collaborator(s): Stewart D (PI). 258,000. [Grants]
Operating Grant.

2001 Apr - 2004 Mar **Co-Principal Investigator.** "Pathophysiological relevance of endothelin-1 over-expression". Canadian Institutes of Health Research (CIHR). PI: Stewart D. Collaborator(s): Stewart D (PI). 331,531. [Grants]
Operating Grant.

2001 Apr - 2004 Mar **Principal Investigator.** "c-Myb-dependent vascular smooth muscle cell proliferation". Canadian Institutes of Health Research. 213,639. [Grants]
Operating Grant.

2000 Jul - 2005 Jun **Co-Investigator.** "Cell Biology of Atherosclerosis". Heart & Stroke Foundation of Ontario. Collaborator(s): Langille L (Director); Bendeck M, Cybulsky M, Gotlieb A, Marsden P, Strauss B. 784,898. [Grants]
Group Grant.

2000 Jul - 2003 Jun **Principal Investigator.** "Conditional expression of PMCA isoforms in arterial smooth muscle of transgenic mice". Heart & Stroke Foundation of Ontario. 196,325. [Grants]
Operating Grant.

2000 Apr - 2005 Mar **Co-Investigator.** "Interdisciplinary program in cardiovascular development and disease". Canadian Institutes of Health Research. Collaborator(s): Rabinovitch M/Keeley F (Directors); Bruneau B, Hinek A, Wilson G. 1,384,531. [Grants]
Group Grant.

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- 2000 Apr - 2003 Mar **Co-Investigator.** "The determinants of host susceptibilities of Heart Failure". Canadian Institutes of Health Research. Collaborator(s): Dr. Liu P (Director); Backx P, Parker T, Rabinovitch M, Rouleau JL, Stewart D. 1,242,952. [Grants]
Group Grant.
- 1999 Apr - 2002 Mar **Principal Investigator.** "Molecular physiology of vascular smooth muscle". Ontario Research & Development Challenge Fund. 200,000. [Grants]
Infrastructure Grant.
- 1999 Jan - 2001 Dec **Principal Investigator.** "Mouse models of vascular injury". University of Toronto Faculty of Medicine Dean's Fund Grant. 10,000. [Grants]
Operating Grant.
- 1998 Jul - 2001 Jun **Principal Investigator.** "c-Myb dependent vascular smooth muscle proliferation". Heart & Stroke Foundation of Ontario. 15,000. [Grants]
Operating Grant.
- 1998 Apr - 2001 Mar **Principal Investigator.** "c-Myb-dependent vascular smooth muscle proliferation". Medical Research Council of Canada. 198,358. [Grants]
Operating Grant.
- 1998 Apr - 2001 Mar **Principal Investigator.** "Molecular regulation of vascular smooth muscle cell proliferation". Medical Research Council of Canada. 120,000. [Grants]
Clinician Scientist Award - Phase II Research Allowance.
- 1998 Apr - 2000 Mar **Principal Investigator.** "c-Myb dependent vascular smooth muscle proliferation". University of Toronto Connaught Foundation & Department of Medicine New Staff Grant. 45,000. [Grants]
Operating Grant.
- 1998 Jan - 2002 Dec **Principal Investigator.** "Molecular physiology of vascular smooth muscle". Canada Foundation for Innovation New Opportunities Award. Infrastructure Grant. 200,000. [Grants]

NON-PEER-REVIEWED GRANTS

FUNDED

- 2012 Jan - 2014 Jan **Principal Investigator.** "Studies on the potential roles of GLP-1 and DPP4i on platelet function". Merck. Investigator-Initiated Research Trail. Collaborator(s): Ni, H. 250,671. [Industrial Grants]
- 2012 - 2015 **Co-Principal Investigator.** "EMPRES: Exenatide for Myocardial Protection during RepErfusion Study". Amylin Pharmaceuticals; Eli Lilly and Company. Investigator Initiated Clinical Trial. PI: **Husain, M**, Dzavik V, Farkouh M. 1,400,000. [Clinical Trials]
- 2011 Jul - 2013 Jan **Principal Investigator.** "Cardioprotective effects of liraglutide in a pig model of acute myocardial infarction". Novo Nordisk Canada Inc. Investigator-Initiated Research Trail. Collaborator(s): Noyan-Ashraf, MH, Overgaard, C, Strauss, B. 153,637. [Industrial Grants]
Investigator-Initiated Research Trial.
- 2010 Jan - 2012 Dec **Principal Investigator.** "Diagnostic & therapeutic potential of vascular smooth muscle cells differentiated from skin-derived precursors". McEwen Centre for Regenerative Medicine. Acceleration Award. Collaborator(s): Miller F, Zandstra P. 153,000. [Grants]

2. SALARY SUPPORT AND OTHER FUNDING

Personal Salary Support

2014 - 2016	"Molecular studies of cardiac and vascular disease". Heart and Stroke Foundation of Ontario Career Investigator Award. 162,000.
2009 - 2014	"Molecular regulation of VSMC proliferation". Heart & Stroke Foundation of Ontario Career Investigator Award. 437,500.
2004 - 2009	"Molecular regulation of VSMC proliferation". Heart & Stroke Foundation of Ontario Career Investigator Award. 325,000.
2001 - 2004	"Molecular regulation of VSMC proliferation". Canadian Institutes of Health Research (CIHR) Clinician-Scientist Award- Phase II (Final Renewal). 150,000.
1998 - 2003	"Molecular regulation of VSMC proliferation". Heart & Stroke Foundation of Canada.
1998 - 2001	"Molecular regulation of VSMC proliferation". Canadian Institutes of Health Research (CIHR) Clinician-Scientist Award- Phase II. 150,000.
1997 - 1998	"Molecular regulation of VSMC proliferation". Medical Research Council of Canada Clinician-Scientist Award- Phase I (Final Renewal). 43,000.
1995 - 1997	"Molecular regulation of VSMC proliferation". Medical Research Council of Canada Clinician-Scientist Award- Phase I (First Renewal). 86,000.
1993 - 1995	"Molecular regulation of VSMC proliferation". Medical Research Council of Canada Clinician-Scientist Award- Phase I. 86,000.
1993	"Molecular regulation of VSMC proliferation". Heart & Stroke Foundation of Canada.
1985	"NAPDH-dependent isocitrate dehydrogenase". Alberta Heritage Foundation for Medical Research Summer Studentship. 4,500.

Trainee Salary Support

2014 Jul - 2016 Jun	Clinician Scientist Training Program. Trainee Name: Mark Chandy. University of Toronto. 150,000.
2012 - 2015	"Doctoral Research Award – Priority Announcement: Hypertension (SHOPP)". Trainee Name: Aki Shikatani. CIHR, Doctoral Studentship. 105,000.
2009 - 2010	"The cell cycle and differentiation biology". Trainee Name: Sarah Steinbach. Heart & Stroke Richard Lewar Centre of Excellence Postdoctoral Fellowship. 25,000.
2009	"Role of GDF5 in VSMC proliferation". Trainee Name: Geetanjee Sadi. Canadian Hypertension Society Summer Studentship Award. 3,500.
2008 - 2011	"PGC1a in sepsis-induced myocardial depression". Trainee Name: Dr. Claudia Dos Santos. Heart & Stroke Foundation Clinician Scientist Award. 192,000.
2008 - 2009	"Cardiac progenitors in conduction system cells". Trainee Name: Masayoshi Ishida. Heart &

- Stroke Richard Lewar Centre of Excellence TACTICS Postdoctoral Fellowship Award. 45,000.
- 2008 - 2009 "Myogenic response of resistance arteries in CHF". Trainee Name: Mohammed Ali Azam. Heart & Stroke Richard Lewar Centre of Excellence TACTICS Postdoctoral Fellowship Award. 40,000.
- 2008 - 2009 "The role of GLP-1 in MI reperfusion injury". Trainee Name: Kiwon Ban. Heart & Stroke/Richard Lewar Centre for Excellence Graduate Studentship Award. 15,000.
- 2008 - 2009 "Role of ET1 in HF and cardiac conduction". Trainee Name: Erin Mueller. Ontario Graduate Studentship Award. 15,000.
- 2008 - 2009 "Ca-sensitive mechanisms in VSMC". Trainee Name: Sonya Hui. Heart & Stroke/Richard Lewar Centre for Excellence Graduate Studentship Award. 15,000.
- 2008 "Molecular basis of vascular resistance in HF". Trainee Name: Dhiraj Dhanjani. Canadian Hypertension Society Summer Studentship Award. 3,500.
- 2008 "Cardiac specific over-expression of ET-1". Trainee Name: Sarah Kawaguchi. HSFO John D Schultz Science Student Scholarship. 4,000.
- 2008 "Effects of GDF5 on smooth muscle proliferation". Trainee Name: Geetanjeelee Sadi. HSFO Martin Wills High School Student Scholarship. 2,250.
- 2007 - 2008 "The role of GLP-1 in MI reperfusion injury". Trainee Name: Kiwon Ban. Heart & Stroke/Richard Lewar Centre for Excellence Graduate Studentship Award. 15,000.
- 2007 - 2008 "Role of ET1 in HF and cardiac conduction". Trainee Name: Erin Mueller. Ontario Graduate Studentship Award. 15,000.
- 2007 - 2008 "c-Myb-dependent differentiation of VSMC from mESC". Trainee Name: Karolina Kolodziejaska-Baginska. Heart & Stroke Richard Lewar Centre Graduate Studentship Award. 15,000.
- 2007 "Molecular basis of vasomotor abnormalities in HF". Trainee Name: Vaquas Shaikh. Canadian Hypertension Society Summer Studentship Award. 3,500.
- 2007 "Electrophysiology of brachyury FLK1 derived cardiomyocytes". Trainee Name: Michael Fu. HSFO John D Schultz Science Student Scholarship. 3,500.
- 2006 - 2007 "HF model of altered resistance arterial function". Trainee Name: Judith Hoefler. Rotary Foundation Ambassadorial Scholarship. 25,000.
- 2006 - 2007 "Role of iNOS in atherogenesis". Trainee Name: Shivalika Handa. Ontario Graduate Studentship Award. 15,000.
- 2006 - 2007 "Role of ET1 in HF and cardiac conduction". Trainee Name: Erin Mueller. Ontario Graduate Studentship Award. 15,000.
- 2006 "NOS inhibitor-induced hypertension". Trainee Name: Bryan Fong. CREMS Summer Studentship Award. 5,250.

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- 2006 "PMCa²⁺ ATP-4 expression in Xenopus oocytes". Trainee Name: Amir Khoshbin. CREMS Summer Studentship Award. 5,250.
- 2006 "Endogenous versus exogenous oxidative stress". Trainee Name: Taha Tabish. HSFO Martin Wills High School Student Scholarship. 2,250.
- 2006 "Protocols for differentiating VSMC". Trainee Name: Arfeen Malick. HSFO John D. Schultz Science Scholarship. 4,000.
- 2006 "Expression of phenotypic VSMC marker genes". Trainee Name: Vanita Sharma. CHS Summer Studentship Award. 3,500.
- 2005 - 2007 "Regulated production of NO and SO in myocytes". Trainee Name: Young Min Kim. CBA Postdoctoral Fellowship Award. 38,000.
- 2005 "Role of ET1 in HF and cardiac conduction". Trainee Name: Erin Mueller. Ontario Graduate Studentship Award. 15,000.
- 2005 "Effects of SO on expression levels of iNOS". Trainee Name: Joel Hamilton. Faculty of Medicine Summer Studentship Award. 4,000.
- 2005 "Adenoviral-mediated PMCA4b gene transfer". Trainee Name: Vanita Sharma. HSFO John D. Schultz Science Scholarship. 4,000.
- 2005 "Delineation of Ca-sensitive proteins in VSMC". Trainee Name: Andrew Chaing. CHS Summer Studentship Award. 3,600.
- 2004 - 2008 "Ca²⁺-dependent cell cycle progression in VSMC". Trainee Name: Jae-Hyun Choi. CHS/CIHR Graduate Studentship Award. 80,000.
- 2004 - 2007 "c-Myb-dependent differentiation of VSMC from mESC". Trainee Name: Karolina Kolodziejska-Baginska. HSFO Doctoral Studentship. 20,000.
- 2004 - 2005 "Embryonic lethality in ET-1-over-expressing mice". Trainee Name: Hiwot Woldu. Heart & Stroke Richard Lewar Centre of Excellence Graduate Studentship Award. 15,000.
- 2004 "The generation of cardiac stem cells from ESC". Trainee Name: Priya Tanna. CSCP Life Sciences Summer Student Award. 2,400.
- 2004 "SM-specific promoter-reporter construct cloning". Trainee Name: Judy Lin. Faculty of Medicine Summer Studentship Award. 3,500.
- 2004 "Role of G-protein receptors in hypertension". Trainee Name: Bheeshma Ravi. HSFO John D. Schultz Science Scholarship. 4,000.
- 2003 - 2005 "Transgenic expression of a PMCA". Trainee Name: Al-Muktafi Sadi. CIHR/CHS Postdoctoral Fellowship Award. 76,000.
- 2003 - 2004 "c-Myb-dependent differentiation of VSMC from mESC". Trainee Name: Karolina Kolodziejska-Baginska. Ontario Graduate Studentship Award. 15,000.
- 2003 - 2004 "Ca²⁺-dependent cell cycle progression in VSMC". Trainee Name: Jae-Hyun Choi. Ontario Graduate Studentship Award. 15,000.

- 2003 - 2004 "Saptiotemporal regulation of SM gene expression". Trainee Name: Shivalika Handa. Heart & Stroke Richard Lewar Centre of Excellence Graduate Studentship Award. 15,000.
- 2003 "Role of iNOS in myocardial infarction in mice". Trainee Name: Shivalika Handa. CSCP Life Sciences Award. 1,500.
- 2003 "Role of G-protein receptors in hypertension". Trainee Name: Bheeshma Ravi. CHS Summer Studentship Award. 3,300.
- 2003 "Inducible NOS over-expression in arterial SMC". Trainee Name: Asif Pirani. Faculty of Medicine Summer Studentship Award. 3,500.
- 2003 "Changes in the signal-averaged ECG of mice". Trainee Name: Purti Papneja. HSFO John D. Schultz Scholarship. 4,000.
- 2002 - 2004 "Over-expression of ET-1 in transgenic mice". Trainee Name: Li Yang. Heart & Stroke Foundation of Canada Graduate Studentship Award. 40,060.
- 2002 - 2003 "c-Myb-dependent differentiation of VSMC from mESC". Trainee Name: Karolina Kolodziejaska-Baginska. Connaught Scholarship. 25,000.
- 2002 - 2003 "Ca²⁺-dependent cell cycle progression in VSMC". Trainee Name: Jae-Hyun Choi. IMS Continuing Fellowship Award. 7,500.
- 2002 - 2003 "Cloning of the mouse PMCA4 promoter". Trainee Name: Ge Yang. Heart & Stroke Richard Lewar Centre of Excellence Graduate Studentship Award. 15,000.
- 2002 "Role of iNOS in vasomotor regulation". Trainee Name: Asif Pirani. CHS Summer Studentship Award. 3,300.
- 2002 "Characterization of signal-averaged ECG in MI". Trainee Name: Toby Chan. HSFO John D. Schultz Science Scholarship. 4,000.
- 2002 "c-Myb-dependent VSMC proliferation in vivo". Trainee Name: Bheeshma Ravi. CSCP Life Sciences Award. 1,500.
- 2001 - 2002 "Ca²⁺ dynamics in isolated aortic SMC from TGM". Trainee Name: Ehsan Al-Hoque. Department of Medicine Postdoctoral Fellowship Award. 20,000.
- 2001 - 2002 "Conditional over-expression of ET-1 in TGM". Trainee Name: Li Yang. Heart & Stroke Richard Lewar Centre of Excellence Graduate Studentship Award. 15,000.
- 2001 - 2002 "Cloning of the mouse PMCA4 promoter". Trainee Name: Jasmine Cheung. HSFO John D. Schultz Summer Studentship Award. 3,500.
- 2001 - 2002 "APACHE Systems in CHF". Trainee Name: Hashmat Khan. Life Sciences Award. 1,800.
- 2001 "Histomorphological characterization of the AVN". Trainee Name: Asif Pirani. CSCP Life Sciences Award. 1,500.
- 2001 "Cloning of the mouse PMCA4 promoter". Trainee Name: Jasmine Cheung. HSFO John D.

Schultz Summer Studentship Award. 3,500.

- 2001 "Characterization of signal-averaged ECG in mice". Trainee Name: Toby Chan. CHS Summer Studentship Award. 3,500.
- 2001 "Ca²⁺-dependent activity of G1/S proteins". Trainee Name: Daniel Schiff. Faculty of Medicine Summer Studentship Award. 3,500.
- 2000 - 2002 "Hypertension models in disturbed Ca²⁺ regulation". Trainee Name: Robert Gros. Heart & Stroke Foundation of Ontario Postdoctoral Fellowship Award. 66,000.
- 2000 - 2002 "Regulated over-expression of iNOS in TGM". Trainee Name: Imran Mungrue. Heart & Stroke Foundation of Ontario Graduate Studentship Award. 38,000.
- 2000 - 2001 "Cell cycle-dependent regulation of Ca²⁺ pumps". Trainee Name: Talat Afroze. Heart & Stroke Richard Lewar Centre of Excellence Postdoctoral Fellowship Award. 20,000.
- 2000 "Gender/age-related differences in myogenic tone". Trainee Name: Ryan Van Wert. HSFO John D. Schultz Science Scholarship. 3,500.
- 2000 "Gender/age-related differences in myogenic tone". Trainee Name: Ryan Van Wert. CHS Summer Studentship Award. 3,500.
- 2000 "Ca²⁺-dependent cell cycle activity in VSMC". Trainee Name: Tara Hyder. CHS Summer Studentship Award. 3,300.
- 2000 "Image analysis of migrating arterial SMC in vivo". Trainee Name: Don Mehra. HSFO Martin Wills Summer Studentship. 2,000.
- 2000 "Ca²⁺ in SMC from a single mouse aorta". Trainee Name: Anil Misir. HSFO John D. Schultz Science Scholarship. 3,500.
- 2000 "Hypertension models in disturbed Ca²⁺ regulation". Trainee Name: Robert Gros. Heart & Stroke Foundation of Ontario Evelyn McGloin Fellowship. 5,000.
- 2000 "Hypertension models in disturbed Ca²⁺ regulation". Trainee Name: Robert Gros. Edward Christie Stevens Fellowship in Medicine. 6,000.
- 1999 - 2001 "Transgenic expression of dominant negative c-Myb". Trainee Name: Xiaomang You. Medical Research Council of Canada & CHS Postdoctoral Fellowship Award. 66,000.
- 1999 - 2001 "Transgenic expression of dominant negative c-Myb". Trainee Name: Xiaomang You. Medical Research Council of Canada & Canadian Hypertension Society Postdoctoral Fellowship Award. 66,000.
- 1999 "Vasomotor tone in over-expressing PMCA pumps". Trainee Name: Ryan Van Wert. CHS Summer Studentship Award. 3,300.
- 1999 "VEGF-mediated signal transduction in VSMC?". Trainee Name: Tara Hyder. CSCP Life Sciences Summer Studentship Award. 1,500.
- 1999 "Morphometry of carotid artery injuries". Trainee Name: Bheeshma Ravi. HSFO Martin Wills Summer Studentship. 2,000.

E. Publications

1. MOST SIGNIFICANT PUBLICATIONS

1. Hui S, Choi J, Zaidi S, Momen A, Steinbach SK, Sadi AM, Ban K, **Husain M**. Peptide-mediated disruption of CaM-cyclin E inhibits VSMC proliferation and neointima formation. *Circ Res*. 2011;108(9):1053-62. **Senior Responsible Author**.

This paper is a milestone in our pursuit of the molecular mechanisms regulating cell cycle progression in VSMC. We previously showed that VSMC are critically dependent on tightly-controlled increases in the intracellular Ca²⁺ concentration during G1 to S phase progression [Circ Res 1997; Am J Physiol: Cell 1997; J Biol Chem 2000; Am J Physiol: Cell 2003; ATVB 2007]. We next showed how this coordinated Ca²⁺ signal regulates in turn activity of the cell cycle-dependent kinase cdk2 [Circ Res 2006]. This discovery of a highly conserved Ca²⁺/Calmodulin Binding Site (CBS) in cyclin E was featured with an accompanying Editorial, prompted an invited 'Perspectives' article [Cell Cycle 2006,] and led to our development a new anti-proliferative termed the 'CBS peptide', which has received 3 patents and licensing. This paper describes our use of the CBS peptide as a novel therapy against restenosis.

2. Zaidi SHE, Huang Q, Momen A, Riazi A, **Husain M**. Growth Differentiation Factor 5 (BMP 14) regulates cardiac repair after myocardial infarction. *J Am Coll Cardiol*. 2010 Jan;55(2):135-143. **Senior Responsible Author**.

Funded initially by a 2 year HSF grant for Dr. Zaidi (Lecturer, University of Toronto), this report showed that mice with genetic absence of the bone morphogenetic protein (BMP) Growth Differentiation Factor 5 (GDF5) manifest impaired cardiac remodeling after myocardial infarction (MI). Dr. Zaidi's work in my lab documented that GDF5 is involved in (i) stabilizing muscularized arteriogenesis in the peri-infarct zone, (ii) protecting against cardiomyocyte apoptosis, and (iii) regulating cardiac fibrosis. The significance of this study rests in the rationale for testing GDF5 as a potential therapeutic agent to prevent adverse cardiac remodeling post-MI. GDF5 knockout mice also show impaired re-endothelialization following carotid wire-denudation injury [manuscript in preparation], and received CIHR bridge funding for this work.

3. Hoefer J, Azam MA, Poi HL, Momen MA, Scherer EQ, Meissner A, Bolz SS, **Husain M**. S1P-dependent activation of p38 maintains elevated peripheral resistance in heart failure. *Circ Res*. 2010;107(7):923-33. **Senior Responsible Author**.

This foundational paper revealed the molecular basis of the abnormal vasomotor tone that compensates for reduced cardiac output (i.e. heart failure) following MI in mice. Its significance is that it provides a mechanistic understanding of how an initially adaptive increase in peripheral resistance develops, and subsequently becomes maladaptive, creating unwanted increases in afterload that further compromise cardiac function. Following this discovery, we have gone on to describe (in collaboration with Dr. Bolz), insights into the basis of cerebral-vascular dysfunction in heart failure [Circulation 2012; 126:196-206], and the role of the TNF α -CFTR-S1P signaling axis [Circulation 2012; 125:2739-50].

4. Kolodziejska KM, Noyan Ashraf H, Nagy A, Bacon A, Frampton J, Xin H, Kotlikoff MI, **Husain M**. c-Myb-dependent smooth muscle cell differentiation. *Circ Res*. 2008 Mar 14;102(5):554-61 (Trainee publication, Supervisor of Kolodziejska, Noyan Ashraf). **Senior Responsible Author**.

Having established that the proto-oncogene c-myb, and its gene product, the transcription factor c-Myb, plays a critical role in (i) coordinating expression levels of Ca²⁺-regulatory genes during cell cycle progression of vascular smooth muscle cells (VSMCs) [Am J Physiol: Cell 1997; J Biol Chem 2000; Am J Physiol: Cell 2003; ATVB 2007] and in (ii) controlling VSMC proliferation in vitro [Circ Res 1997] and in vivo [Circ Res 2003], this paper describes an altogether novel role played by c-myb in the differentiation/development of contractile VSMCs in embryonic stem cell (ESC)-derived embryoid bodies (EB) and in chimeric (c-myb null/wild-type) embryos in vivo. Coupled with our unexpected finding that markers of VSMC differentiation are up-regulated during the earliest stages of aortic atherosclerosis [Atherosclerosis 2008], this paper brings forth the concept that c-myb plays a dual role, promoting proliferation and differentiation of VSMC progenitors, in vessel remodeling. This report has led us to recently examine an ENU-mutagenized mouse with only 10% c-Myb function (the 0% c-myb knockout being embryonic lethal) in which we find a significant defect in vascular repair and BP homeostasis. This paper also revealed that lack of c-myb enhances cardiomyocyte differentiation in EB, implying a role for this gene in lineage selection in a common progenitor. Indeed, based on this, we recently elucidated the c-Myb-dependent mechanism for encouraging VSMC vs. cardiomyocyte fate from a VEGFR2+ progenitor [Circ Res 2012]. Finally, this work led to our studies of other unique VSMC progenitors such as human skin-derived precursors (SKP) [ATVB2011] and human ESC [Cardiovasc Res 2013].

5. Ban K, Noyan-Ashraf MH, Hoefler J, Bolz SS, Drucker DJ, **Husain M**. Cardioprotective & vasodilatory actions of GLP-1 are mediated by GLP-1R dependent & independent pathways. *Circulation*. 2008;117:2340-50. **Senior Responsible Author**.

Following our discovery of decreased heart rate, cardiac hypertrophy, and blunted hemodynamic responses in mice lacking the receptor for the gut-derived incretin peptide glucagon-like peptide 1 (GLP-1) (i.e. Glp1r-/- mice) [Endocrinology 2003, >178 cites], this paper documents expression of the GLP-1R in cardiac and vascular myocytes and endothelial cells, and showed for the first time that both GLP-1 and its metabolically 'inert' degradation product GLP-1(9-36) are vasoactive peptides capable of activating a guanylate cyclase-coupled signaling pathway distinct from the classical GLP-1R. The clinical implications of this are that structurally distinct degradation-resistant GLP-1R agonists already in use for the treatment of diabetes may have cardiovascular effects that differ from those of the dipeptidyl peptidase-4 (DPP4) inhibitors that prevent formation of GLP-1(9-36). As an extension we showed that the heart produces GLP-1(9-36) from GLP-1, and that GLP-1(9-36) exerts direct cytoprotective action in both cardiomyocytes and endothelial cells [Endocrinology 2010; >148 cites]. In the short time since this paper appeared it has already received >706 citations. Together with other closely collaborative work with the Drucker lab (reports on the ability of the Glp1r-agonist liraglutide [Diabetes 2009, >366 citations] and the Dpp4 inhibitor sitagliptin [Diabetes 2010; >182 cites] to activate cardioprotective pathways in mouse), this paper has established us as leaders in this clinically relevant area of research. Our most recent work in this area pertains to obesity-induced cardiomyopathy [Circulation 2013; >24 cites].

2. PEER-REVIEWED PUBLICATIONS

Journal Articles

1. Steinbach SK, **Husain M**. Vascular smooth muscle cell differentiation from human stem/progenitor cells. *Methods*. 2016 May 15;101:85-92. **Senior Responsible Author**.
2. Shikatani EA, Chandy M, Besla R, Li CC, Momen A, El-Mounayri O, Robbins CS, **Husain M**. c-Myb Regulates Proliferation and Differentiation of Adventitial Sca1+ Vascular Smooth Muscle Cell Progenitors by Transactivation of Myocardin. *Arterioscler Thromb Vasc Biol*. 2016 May 12. **Senior Responsible Author**.
3. Abuzeid W, Iwanochko RM, Wang X, Kim SJ, **Husain M**, Lee DS. Prognostic impact of SPECT-MPI after renal transplantation. *J Nucl Cardiol*. 2016 Apr 28. In Press. **Coauthor or Collaborator**.
4. Sauve M, Hui SK, Dinh DD, Foltz WD, Momen A, Nedospasov SA, Offermanns S, **Husain M**, Kroetsch JT, Lidington D, Bolz SS. Tumor necrosis factor / sphingosine-1-phosphate signaling augments resistance artery myogenic tone in diabetes. *Diabetes*. 2016 Apr 5. In Press. **Coauthor or Collaborator**.

5. Lee DS, **Husain M**, Wang X, Austin PC, Iwanochko RM. Cardiovascular outcomes after pharmacologic stress myocardial perfusion imaging. *Am Heart J*. 2016 Apr 1;174:138-46. **Coauthor or Collaborator**.
6. Cameron-Vendrig A, Reheman A, Siraj MA, Xu XR, Wang Y, Lei X, Afroze T, Shikatani E, El-Mounayri O, Noyan H, Weissleder R, Ni H, **Husain M**. Glucagon-like peptide-1 receptor activation attenuates platelet aggregation and thrombosis. *Diabetes*. 2016 Mar 2. **Senior Responsible Author**.
7. Ensan S, Li A, Besla R, Degousee N, Cosme J, Roufaiel M, Shikatani EA, El-Maklizi M, Williams JW, Robins L, Li C, Lewis B, Yun TJ, Lee JS, Wieghofer P, Khattar R, Farrokhi K, Byrne J, Ouzounian M, Zavitz CC, Levy GA, Bauer CM, Libby P, **Husain M**, Swirski FK, Cheong C, Prinz M, Hilgendorf I, Randolph GJ, Epelman S, Gramolini AO, Cybulsky MI, Rubin BB, Robbins CS. Self-renewing resident arterial macrophages arise from embryonic CX3CR1(+) precursors and circulating monocytes immediately after birth. *Nat Immunol*. 2016 Feb 1;17(2):159-68. **Coauthor or Collaborator**.
8. Shah A, Xia L, Masson EA, Gui C, Momen A, Shikatani EA, **Husain M**, Quaggin S, John R, Fantus IG. Thioredoxin-Interacting Protein Deficiency Protects against Diabetic Nephropathy. *J Am Soc Nephrol*. 2015 Dec 1;26(12):2963-77. **Coauthor or Collaborator**.
9. Thomas RM, Lim SY, Qiang B, Osherov AB, Ghugre NR, Noyan H, Qi X, Wolff R, Ladouceur-Wodzack M, Berk TA, Butany J, **Husain M**, Wright GA, Strauss BH. Distal Coronary Embolization Following Acute Myocardial Infarction Increases Early Infarct Size and Late Left Ventricular Wall Thinning in a Porcine Model. *J Cardiovasc Magn Reson*. 2015 Dec 1;17(1):106. **Coauthor or Collaborator**.
10. Thomas RM, Lim SY, Qiang B, Osherov AB, Ghugre NR, Noyan H, Qi X, Wolff R, Ladouceur-Wodzack M, Berk TA, Butany J, **Husain M**, Wright GA, Strauss BH. Distal coronary embolization following acute myocardial infarction increases early infarct size and late left ventricular wall thinning in a porcine model. *J Cardiovasc Magn Reson*. 2015 Dec 1;17(1):106. **Coauthor or Collaborator**.
11. Noyan H, El-Mounayri O, Isserlin R, Arab S, Momen A, Cheng HS, Wu J, Afroze T, Li RK, Fish JE, Bader GD, **Husain M**. Cardioprotective Signature of Short-Term Caloric Restriction. *PLoS One*. 2015 Jan 1;10(6):e0130658. **Senior Responsible Author**.
12. Qa'aty N, Wang Y, Wang A, Mao S, Vincent M, **Husain M**, Hinek A. The Antidiabetic Hormone Glucagon-Like Peptide-1 Induces Formation of New Elastic Fibers in Human Cardiac Fibroblasts After Cross-Activation of IGF-IR. *Endocrinology*. 2015 Jan 1;1(1):90-102. **Coauthor or Collaborator**.
13. Qiang B, Lim SY, Lekas M, Kuliszewski MA, Wolff R, Osherov AB, Rudenko D, Leong-Poi H, Noyan H, **Husain M**, Tran K, Tryggvason K, Hedin U, Tran-Lundmark K, Strauss BH. Perlecan heparan sulfate proteoglycan is a critical determinant of angiogenesis in response to mouse hind-limb ischemia. *Can J Cardiol*. 2014 Nov 1;30(11):1444-51. **Coauthor or Collaborator**.
14. Sun X, Momen A, Wu J, Noyan H, Li R, von Harsdorf R, **Husain M**. p27 protein protects metabolically stressed cardiomyocytes from apoptosis by promoting autophagy. *J Biol Chem*. 2014 Jun 13;289(24):16924-35. **Senior Responsible Author**.
15. Momen A, Afroze T, Sadi AM, Khoshbin A, Zhang H, Choi J, Gu S, Zaidi SH, Heximer SP, **Husain M**. Enhanced proliferation and altered calcium handling in RGS2-deficient vascular smooth muscle cells. *J Recept Signal Transduct Res*. 2014 May 20:1-8. **Senior Responsible Author**.
16. Cameron-Vendrig A, Mundil D, **Husain M**. Antiatherothrombotic effects of dipeptidyl peptidase inhibitors. *Curr Atheroscler Rep*. 2014 May 1;16(5):408. **Senior Responsible Author**.
17. Kelvin AA, Degousee N, Banner D, Stefanski E, León AJ, Angoulvant D, Paquette SG, Huang SS, Danesh A, Robbins CS, Noyan H, **Husain M**, Lambeau G, Gelb M, Kelvin DJ, Rubin BB. Lack of group X secreted phospholipase A₂ increases survival following pandemic H1N1 influenza infection. *Virology*. 2014 Apr 1;454-455:78-92. **Coauthor or Collaborator**.

18. Afroze T, Yang G, Khoshbin A, Tanwir M, Tabish T, Momen A, **Husain M**. Calcium Efflux Activity of Plasma Membrane Ca²⁺ ATPase-4 (PMCA4) Mediates Cell Cycle Progression in Vascular Smooth Muscle Cells. *J Biol Chem*. 2014 Mar 7;289(10):7221-31. Available from: <http://www.jbc.org/content/early/2014/01/21/jbc.M113.533638.abstract>. **Senior Responsible Author**.
19. Taniguchi K, Xia L, Goldberg HJ, Lee KW, Shah A, Stavar L, Masson EA, Momen A, Shikatani EA, John R, **Husain M**, Fantus IG. Inhibition of Src kinase blocks high glucose-induced EGFR transactivation and collagen synthesis in mesangial cells and prevents diabetic nephropathy in mice. *Diabetes*. 2013 Nov;62(11):3874-86. **Coauthor or Collaborator**.
20. Robbins CS, Hilgendorf I, Weber GF, Theurl I, Iwamoto Y, Figueiredo JL, Gorbatov R, Sukhova GK, Gerhardt LMS, Smyth D, Zavitz CCJ, Shikatani EA, Parsons M, van Rooijen N, Lin HY, **Husain M**, Libby P, Nahrendorf M, Weissleder R, and Swirski FK. Local proliferation dominates lesional macrophage accumulation in atherosclerosis. *Nature Medicine*. 2013 Sep;19(9):1166-72. **Coauthor or Collaborator**.
21. El-Mounayri O, Mihic A, Shikatani EA, Gagliardi M, Steinbach SK, Dubois N, DaCosta R, Li RK, Keller G, **Husain M**. Serum-free differentiation of functional human coronary vascular-like smooth muscle cells from embryonic stem cells. *Cardiovascular Res*. 2013 Apr 1;98(1):125-35. Epub 2012 Dec 4. (Trainee publication, Supervisor of El-Mounayri, Shikatani, Steinbach). **Senior Responsible Author**.
22. Traister A, Walsh M, Aafaqi S, Lu M, Dai X, Henkleman MR, Momen A, Zhou YQ, **Husain M**, Arab S, Piran S, Hannigan G, Coles JG. Mutation in integrin-linked kinase (ILK(R211A)) and heat-shock protein 70 comprise a broadly cardioprotective complex. *PLoS One*. 2013 Jan 1;8(11):e77331.
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3. NON-PEER-REVIEWED PUBLICATIONS

Book Chapters

1. Shikatani EA, **Husain M**. Chapter 21: The role of growth differentiation factor 5 in cardiac repair post-myocardial infarction. In: Jugdutt BI and Dhalla NS, editor(s). Cardiac Remodeling: Molecular Mechanisms, Advances in Biochemistry in Health and Disease. Volume 5. New York: Springer Science+Business Media; 2013. p. 365-382. ISBN 978-1-4614-5929-3 (Trainee publication, Supervisor of Shikatani). **Senior Responsible Author**.
2. Brunt KR, Hui S, Butany J, **Husain M**. Chapter 41: Blood Vessel Wall in Health and Disease. In: Victor J. Marder, William C Aird, Joels S. Bennett, Sam Schulman, and Gilbert C White II, editor(s). Hemostasis & Thrombosis: Basic Principles and Clinical Practice. 6th edition. Lippincott Williams & Wilkins; 2012. p. 549-559. ISBN 978-1-60831-906-0. **Senior Responsible Author**.
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Editorials

1. Hui S, Brunt KR, **Husain, M**. Temporal and spatial regulation of histone deacetylase-7 and β -catenin in endothelial cells. Circulation Research. 2010 Apr;106(7):1180-3 (Trainee publication, Supervisor of Hui). **Senior Responsible Author**.
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Letters to Editor

1. Handa S, Momen MA, Sadi AM, Afroze T, Wang C, **Husain M**. Troubles with a transgene: experiences with SM22a-tTA mice. Circ Res. 2005;97(8):e85-e87 (Trainee publication, Supervisor of Handa, Momen, Sadi, Afroze, Wang). **Senior Responsible Author**.
2. Mungrue IN, Stewart DJ, **Husain M**. The Janus faces of iNOS. Circ Res. 2003 Oct;93(7):e74 (Trainee publication, Supervisor of Mungrue). **Senior Responsible Author**.

4. SUBMITTED PUBLICATIONS

Journal Articles

1. Steinbach SK, Li A, Besla R, Li S, Carruthers MH, Johnston AP, Li RK, Ouzounian M, Robbins CS, **Husain M**. Somitic mesoderm-derived and Sox2+ stem cells give rise to Sca-1+ progenitor cells in mouse aorta. *Circ Res*. 2016 Apr 14. **Senior Responsible Author**.
2. Steinbach S, Yau TM, Ouzounian M, Abdel-Qadir H, Leligdowicz A, Chandy M, Waddell TK, **Husain M**. Skin-derived precursors from human subjects with type-2 diabetes yield dysfunctional vascular smooth muscle cells. *Circ Res*. 2016 Apr 1. **Senior Responsible Author**.
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4. Sadi AM, Momen A, Afroze T, Handa S, Ban K, Kabir MG, Trivieri MG, Gros R, Backx P, **Husain M**. Cardiac-specific inducible over-expression of human Plasma Membrane Ca²⁺ ATPase 4b is cardioprotective and improves survival from heart failure in mice following ischemic injury. *Circulation: Heart Failure*. 2015 Jun 6. **Senior Responsible Author**.

F. Intellectual Property

1. PATENTS

Calmodulin-binding peptides that reduce cell proliferation in cancer and smooth muscle proliferation diseases. Applied. Patents #: US12/674,368, United States.
Patent - pending, filing date 2/19/2010.

Calmodulin-binding peptides that reduce cell proliferation in cancer and smooth muscle proliferation diseases. Applied. Patents #: CA2,697,252, Canada.
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Calmodulin-binding peptides that reduce cell proliferation in cancer and smooth muscle proliferation diseases. Applied. Patents #: EP08783384.4.
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Calmodulin-binding peptides that reduce cell proliferation in cancer and smooth muscle proliferation diseases. Applied. Patents #: Application No. HK11102840.5, File No. 10723-356, Hong Kong.
Patent pending, filing date 3/19/2010.

Methods for inhibiting platelet aggregation using GLP-1 receptor agonists. Applied. Patents #: US61/721,819, United States. Joint Holder Name(s): Alison Cameron-Vendrig.
Patent pending, filing date 11/2/2012.

Peptides and methods for preventing ischemic tissue injury. Applied. Patents #: US61/719,075, United States. Joint Holder Name(s): Dhanwantee Mundil.
Patent pending, filing date 10/26/2012.

G. Presentations and Special Lectures

1. INTERNATIONAL

Invited Lectures and Presentations

- 2016 Jun 10 **Invited Speaker.** GLP-1 RA and Cardiovascular Physiology: Will the Clinic Ever Confirm the Mechanistic Studies? American Diabetes Association. New Orleans, United States.

- 2015 Nov 20 **Invited Speaker.** The Mechanisms of Increased Heart Failure Risk in Type 2 Diabetes. 13th WCIRDC. Los Angeles, United States.
- 2015 Oct 30 **Invited Speaker.** Insights on GLP-1 effects beyond the pancreas. Diabetes Dialogue 2015. Berlin, Germany.
- 2015 Sep 14 **Invited Speaker.** Mechanisms in cardiovascular effects of GLP-1. EASD symposium. Stockholm, Sweden.
- 2015 Jul 25 **Invited Speaker.** Targeting Molecular Pathways in Diabetes Associated Cardiovascular Disease. The 20th World Congress on Heart Disease. Vancouver, British Columbia, Canada.
- 2015 Jul 19 **Invited Speaker.** MSD Asia-Pacific. Kulla Lumpur, Malaysia.
- 2015 Jul 17 **Invited Speaker.** MSD Asia-Pacific. Hong Kong, Hong Kong.
- 2015 Feb 20 **Invited Speaker.** The challenge of diabetes and cardiovascular disease: does it matter how we treat hyperglycemia? Cardiovascular Grand Rounds, University of Washington. Seattle, Washington, United States.
- 2015 Feb 19 **Invited Speaker.** Studies in Vascular Smooth Muscle Cell Biology: From Cell Calcium to Vessel Remodeling, by way of Bone Marrow and Blood Pressure. University of Washington. Seattle, Washington, United States.
- 2014 Dec 17 **Invited Speaker.** Targeting metabolism – Exploring new therapeutic strategies for the heart. British Society for Cardiovascular Research (BSCR) and British Pharmacological Society (BPS). London, London, City of, United Kingdom.
- 2014 Oct 5 **Invited Speaker.** Cardiovascular effects of GLP-1 analogues. National Advisory Board, Japan. Tokyo, Japan.
- 2014 Mar **Invited Speaker.** Cardiovascular Effects of DPP-4 inhibitors and Cardiovascular Outcomes. Scientific Symposium and Speaker Forum for Asia Pacific. Seoul, Korea, Republic Of.
- 2013 Nov 19 **Invited Speaker.** “Incretin Hormones in CVD: New Kids on the Block.”. American Heart Association. Dallas, Texas, United States.
- 2013 Nov 19 **Invited Speaker.** “Diabetes and Heart Failure: The Joint Epidemics.”. American Heart Association. Dallas, Texas, United States.
- 2013 Oct 19 **Invited Speaker.** Cardiovascular Effects of DPP-4 inhibitors and Cardiovascular Outcomes Trials and Implications for Patients with Type 2 Diabetes. Diabetes Stand Alone Scientific Symposium. Rome, Italy.
- 2013 Sep 23 **Invited Speaker.** CV Effects of DPP-4 Inhibitors. Satellite Symposium, 49th EASD Annual Meeting. Barcelona, Spain.
- 2013 May 8 **Invited Speaker.** Incretin effect in the cardiovascular system. Philippine College of Physicians Annual Convention. Manila, Philippines.
- 2013 May 8 **Invited Speaker.** Will novel diabetes therapies promise cardiovascular benefit? Philippine College of Physicians Annual Convention. Manila, Philippines.
- 2013 Apr 14 **Invited Speaker.** Potential Cardiovascular Effects of DPP-4 inhibitors. Latin America Speaker Forum. Buenos Aires, Argentina.
- 2013 Mar 23 **Invited Speaker.** Modern drug therapy for type 2 diabetes: a cardiovascular perspective. 15th Annual Cardiology and Diabetes at the Limits Symposium. Cape Town, South Africa.
- 2013 Mar 13 **Invited Speaker.** Incretin biology of the cardiovascular system. Molecular Cardiology Faculty Seminar Series, Cleveland Clinic. Cleveland, Ohio, United States.

- 2013 Feb 22 **Invited Speaker.** Global epidemic of obesity and needs for weight control intervention. Novo Nordisk Diabetes Update Forum. Zhao Qing, China.
- 2012 Dec 5 **Invited Speaker.** Potential Cardiovascular Effects of DPP-4 Inhibitors. Treatment of Type 2 Diabetes in the Middle East: The New Role of DPP-4 Inhibition, 1st American Diabetes Association Middle East Congress. Dubai, United Arab Emirates.
- 2012 Nov 2 **Invited Speaker.** GLP-1 and its cardiovascular effects. Global Scientific Expert Meeting. Berlin, Germany.
- 2012 Oct 4 **Invited Speaker.** GLP-1 and cardiovascular disease. GLP-1 beyond the pancreas, 48th EASD Annual Meeting. Berlin, Germany.
- 2012 Apr 27 **Invited Speaker.** GLP-1 and its cardiovascular effects. Hong Kong, China.
- 2012 Mar 17 **Invited Speaker.** Cardiovascular effects of GLP-1. Bangkok, Thailand.
- 2012 Mar 10 **Invited Speaker.** Cardiovascular effects of GLP-1. Hanoi, Viet Nam.
- 2012 Feb 4 **Invited Speaker.** Cardiovascular effects of GLP-1-targeted therapies. Istanbul, Turkey.
- 2012 Jan 28 **Invited Speaker.** Cardiovascular effects of incretin: Focus on DPP4 inhibitors. Portuguese Society of Endocrinology, Diabetes & Metabolism. Coimbra, Portugal.
- 2011 Nov 13 **Invited Speaker.** GLP-1 receptor agonists: Physiology behind possible CVD benefits and future directions. American Heart Association Scientific Sessions. Orlando, Florida, United States.
- 2011 Sep 30 **Invited Speaker.** GLP-1 beyond the pancreas- cardiovascular effects. LEADER global expert forum. Monte Carlo, Monaco.
- 2011 Sep 12 **Invited Speaker.** Incretin Research. Symposium, EASD Congress. Lisbon, Portugal.
- 2011 Sep 2 **Invited Speaker.** GLP-1 beyond the pancreas- cardiovascular effects. LEADER global expert forum. Cannes, France.
- 2011 May 27 **Invited Speaker.** GLP-1 beyond the pancreas- cardiovascular effects. LEADER global expert forum. Cannes, France.
- 2011 May 6 **Invited Speaker.** Cutting edge science within the field of GLP-1. Liraglutide Obesity Investigator Meeting. Singapore, Malaysia.
- 2010 Nov 26 **Invited Speaker.** The potential of GLP-1 in cardiovascular disease. LEADER Investigator Meeting. San Paulo, Brazil.
- 2010 Nov 12 **Invited Speaker.** Cardiovascular promise of GLP-1-targeted therapeutics. D-CVD EASD Meeting. Belgrade, Serbia.
- 2010 Sep 20 **Invited Speaker.** Vascular effects of GLP-1. EASD Symposium 2010. Stockholm, Sweden.
- 2010 Jun 3 **Invited Speaker.** The potential of GLP-1 in cardiovascular disease. LEADER Investigator Meeting. Budapest, Hungary.
- 2010 Apr 28 **Invited Speaker.** Effects of GLP-1 and liraglutide on cardiovascular function and risk factors in patients with type 2 diabetes. LEADER global expert forum. Copenhagen, Denmark.
- 2009 Aug 3 **Invited Speaker.** Manipulating gene expression and protein function in vascular smooth muscle cells: studies of differentiation & proliferation. FASEB Conference. Lucca, Italy.
- 2008 Nov 8 **Invited Speaker.** An update on the cardiovascular effects of agents that modulate the incretin system. American Heart Association. New Orleans, Louisiana.
- 2008 May 15 **Invited Speaker.** Vascular effects of GLP-1. American Society of Hypertension Scientific Sessions. New Orleans, Louisiana.

- 2008 Mar 20 **Visiting Professor.** Cardiovascular effects of novel anti-diabetic drugs: lessons from mouse models. University of Utah Grand Cardiology Rounds. Salt Lake City, Utah.
- 2007 May 22 **Invited Speaker.** c-Myb-dependent smooth muscle cell differentiation in embryoid bodies. 4th MYB Conference: Myb Proteins in Death, Differentiation and Disease. Civitella Alfedena, Italy.
- 2007 May 21 **Invited Speaker.** c-Myb-dependent inositol 1,4,5-trisphosphate receptor type-1 expression in vascular smooth muscle cells. 4th MYB Conference: Myb Proteins in Death, Differentiation and Disease. Civitella Alfedena, Italy.
- 2006 Nov 13 **Invited Moderator.** Oxidative stress therapies. Scientific Sessions of the American Heart Association. Chicago, Illinois.
- 2006 Sep 3 **Invited Speaker.** Cardiomyocyte-specific conditional over-expression of Plasma Membrane Ca²⁺ ATPase 4-C-I increased cardiac mass and performance. European Society of Cardiology. Barcelona, Spain.
- 2006 Jun 19 **Invited Speaker.** Clinical rationale for the use of anti-platelet agents. Peri-Operative Medicine Symposium, Canadian Anesthesiologists' Society. Toronto.
- 2006 Jun 14 **Invited Chair.** Neurohumoral modulators in heart failure. Heart Failure Summit. Toronto.
- 2006 Jun 14 **Invited Co-Chair.** Advanced topics in vascular biology. International Society for Heart Research. Toronto.
- 2006 May 11 **Co-Chair.** Genetic diseases of the heart muscle: Where are we now? Annual Cardiovascular Scientific Day, Heart and Stroke/Richard Lewar Centre of Excellence. Toronto.
- 2006 Apr 3 **Invited Speaker.** c-Myb-dependent vascular smooth muscle cell differentiation from embryonic stem cells. Molecular Vascular Biology, Keystone Conference. Colorado.
- 2005 Apr 15 **Visiting Professor.** Role of the PMCA4 gene in arterial and cardiac myocyte biology. Cardiovascular Research Group, Temple University Medical School. Philadelphia, Pennsylvania.
- 2004 Dec 22 **Invited Speaker.** Management of acute coronary syndromes. Plenary Sessions, Golden Jubilee Symposium, Khyber Medical College. Peshawar, Pakistan.
- 2004 Dec 20 **Invited Speaker.** Advance Concepts in STEACS and NSTEACS. Scientific Sessions, Dow Medical College Symposium. Karachi, Pakistan.
- 2004 Jun 5 **Invited Speaker.** Role of the arterial smooth muscle cell in hypertension: physiology vs. pathology. International Vascular Biology Meeting XIII. Toronto, Canada.
- 2004 Feb 29 **Invited Speaker.** Tissue-specific conditional gene expression: a tool enabling unique models of cardiovascular disease. Gordon Conference: Angiotensin 2004. Ventura, California.
- 2004 **Invited Speaker.** Update on Acute Coronary Syndromes: Canada vs. USA. Current Strategies for Common Medical Problems: Expert Opinions for Practicing Clinicians. 5th National Conference of the University of Pittsburgh Medical Centre. Pittsburgh, Pennsylvania, United States.
- 2003 Jun 14 **Invited Speaker.** Diagnosis MD. The Life Network, Alliance Atlantis Studios. Toronto, Ontario. Episodes 4021-4023 and 4133-4135 (June 14 and July 24, 2003).
- 2003 Jun 12 **Invited Chair.** Novel genetic and clinical insights in congestive heart failure. Plenary Session, American College of Cardiology International Heart Failure Summit. Toronto, Ontario.
- 2003 Apr 5 **Invited Speaker.** Role of c-Myb in vascular smooth muscle cell development, differentiation, and disease. Myb 2003, Oxford University. Oxford, United Kingdom.
- 2002 Oct 28 **Invited Speaker.** Mouse models of hypertension: tools, tricks & surprises. Canadian Hypertension Society: Basic Science Breakfast.

- 2001 May 28 **Invited Speaker.** Over-expression of iNOS: A Mouse Model of Heart Failure and Heart Block. Featured Session: Genetic Forms of Cardiomyopathy, World Congress of Pediatric Cardiology. Toronto, Ontario.
- 2000 Nov 11 **Invited Speaker.** New Strategies for Selective Targeting of Transgenes to Vascular Smooth Muscle and for Achieving Conditional Expression. American Heart Association Scientific Session. New Orleans, Louisiana. Featured Lecture of Sunday Morning Sessions. Cardiopulmonary Knockout Mice: Lessons from Existing Mice and Strategies for Tissue Specific Targeting and Conditional Expression, Gene Expression/Regulation.
- 1997 Nov 7 **Invited Speaker.** Conditional transgene regulation in arterial smooth muscle cells in mice. Scientific Sessions, American Heart Association. Orlando, Florida.
- 1996 Nov 10 **Invited Speaker.** Overexpression of plasma membrane calcium ATPase-1 reduces intracellular calcium and slows growth of vascular smooth muscle cells. Scientific Sessions, American Heart Association. New Orleans, Louisiana.
- 1995 Nov 8 **Invited Speaker.** Dominant negative c-Myb constructs lower intracellular calcium levels and slow cell cycle progression in vascular smooth muscle cells. Scientific Sessions, American Heart Association. Atlanta, Georgia.
- 1995 Apr 15 **Invited Speaker.** Dominant negative c-Myb constructs lower inhibit cell cycle progression through dysregulated Ca²⁺ homeostasis in vascular smooth muscle cells. Symposium on Molecular Medicine, Harvard Medical School. Boston, United States.
- 1992 Apr 23 **Invited Speaker.** An escape phenomenon of lipoprotein(a) in sustained plasma exchange. Scientific Meeting, American Federation for Clinical Research. New York City, New York. (Winner of an AFMR Trainee Award).

Presented Abstracts

- 2008 Jun The GLP-1R agonist liraglutide protects cardiomyocytes and improves survival and cardiac function after experimental murine myocardial infarction. American Diabetes Association Scientific Sessions Annual Meeting. San Francisco, California, United States. Noyan-Ashraf MH, Ban K, Sadi AM, Momen MA, **Husain M**, Drucker DJ.
- 2006 Jun Evidence for increased pulmonary vascular resistance in endoglin heterozygous mice. NIH Workshop—Hereditary Hemorrhagic Telangiectasia (HHT). Bethesda, Maryland, United States. Jerkic M, Toporsian M, Yu ZQ, Kabir MG, **Husain M**, Henkelman M, Letarte M.
- 2005 Sep An Endothelin Converting Enzyme-1 Inhibitor Prevents Cardiomyopathy in Mice Over-Expressing Big-ET-1. 9th International Conference on Endothelin. Park City, Utah, United States. Mueller EE, Kabir, G, Momen, A, Stewart, DJ, and **Husain, M**.
- 2005 Apr Association of endoglin with the endothelial NO synthase is essential for the maintenance of vascular integrity. HHT Sixth International Scientific & Medical Conference. Lyon, France. Toporsian M, Gros R, Kabir MG, Vera S, Govindaraju K, Eidelman DH, **Husain M**, Letarte M.
- 2003 May Echocardiography and invasive pressure monitoring in vivo can demonstrate adaptive changes in myocardial function in a mouse model of sepsis. American Thoracic Society Annual Conference. Seattle, Washington, United States. Gattas DJ, Kabir G, Parker TG, **Husain M**, Sibbald WJ.
- 2003 Apr Endoglin haploinsufficiency impairs the arterial myogenic response via an endothelial NO-dependant mechanism. 5th HHT Scientific Conference. Bonaire, Netherlands Antilles. Toporsian M, Gros R, Govindaraju K, Kabir MG, Eidelman DH, **Husain M**, Letarte M.
- 2002 May The role of re-expressed fetal genes and inducible nitric oxide synthase in the myocardial response to sepsis. American Thoracic Society Annual Conference - ATS 2002. Atlanta, Georgia, United States. Gattas DJ, Tsoporis JN, Yu P, Parker TG, **Husain M**, Sibbald WJ.
- 2001 Oct Myocardial Adaptation to Sepsis is Associated with the Expression of Fetal Genes, Antioxidant Defenses,

and Apoptosis. 8th World Congress of Intensive and Critical Care Medicine. Sydney, Australia. Gattas DJ, Yu P, **Husain M**, Sibbald WJ.

Presented and Published Abstracts

2016 Jun 11 The Effect of SGLT2 Inhibition on Adenosine Excretion in Patients with Type 1 Diabetes. American Diabetes Association. New Orleans, Louisiana, United States.

Publication Details:

Rajasekeran H, Lytvyn Y, Hladunewich M, Cattran D, **Husain M**, Bozovic A, Diamandis E, Perkins B, Reich H, Kulasingam V, Cherney D. The Effect of SGLT2 Inhibition on Adenosine Excretion in Patients with Type 1 Diabetes. American Diabetes Association. 2016 Jun 11. **Coauthor or Collaborator**.

2012 Nov Normal c-Myb activity is required for bone marrow-derived cells to contribute to arterial remodeling following injury. American Heart Association (AHA) 2012 Scientific Sessions. Los Angeles, California, United States.

Publication Details:

Shikatani EA, Momen A, **Husain M**. Normal c-Myb activity is required for bone marrow-derived cells to contribute to arterial remodeling following injury. Circulation. 2012 Nov;126:A14294. **Senior Responsible Author**.

2. NATIONAL

Invited Lectures and Presentations

2016 Oct 20 **Distinguished Speaker**. Molecular studies of vascular smooth muscle: looking back and jumping forward. Canadian Hypertension Congress. Montreal, Quebec, Canada.

2014 Mar 20 **Invited Speaker**. Managing Diabetes-Specific Mechanisms of Heart Failure. Diabetes Update Plus 2014. Vancouver, British Columbia, Canada.

2013 Oct 18 **Invited Speaker**. Topical Issues in Diabetes and Coronary Heart Disease. Canadian Cardiovascular Congress. Montreal, Quebec, Canada.

2013 Jan 29 **Invited Speaker**. What do incretins have to do with cardiovascular disease? Cardiology Grand Rounds, University of Calgary. Calgary, Alberta, Canada.

2013 Jan 29 **Invited Speaker**. Diabetes & Cardiovascular Disease: Two Birds - One Stone. Calgary Community Specialists. Calgary, Alberta, Canada.

2012 Nov 30 **Distinguished Speaker**. Diabetes, cardiovascular disease and incretins: Two birds, one stone. Institute of Cardiovascular Sciences, St. Boniface General Hospital Research Centre, University of Manitoba. Winnipeg, Manitoba, Canada.

2012 Jun 27 **Invited Speaker**. "Diabetes & cardiovascular disease: two birds - one stone". Mazankowski Alberta Heart Institute and the Alberta Diabetes Institute. Edmonton, Alberta, Canada.

2012 Jun 27 **Invited Speaker**. "Molecular studies of the vascular smooth muscle". Mazankowski Alberta Heart Institute and the Alberta Diabetes Institute. Edmonton, Alberta, Canada.

2011 Feb 11 **Invited Speaker**. Incretin biology of the cardiovascular system. University of British Columbia. Vancouver, British Columbia, Canada.

2010 Oct 30 **Invited Speaker**. Cardiovascular Effects of GLP-1. CSIM Conference Symposium. Vancouver, British Columbia, Canada.

2010 Oct 20 **Invited Speaker**. GLP-1 biology and cardiovascular disease: is there a relationship. 2010 Canadian Diabetes Association. Edmonton, Alberta, Canada.

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- 2010 Oct 1 **Invited Speaker.** Diabetes, GLP1 and the Heart. 2010 National Atherosclerosis Forum. Montreal, Quebec, Canada.
- 2008 Jan 11 **Invited Speaker.** Smooth muscle cell proliferation and differentiation: Insights from in vitro system and in vivo models. iCAPTURE Centre for Cardiovascular and Pulmonary Research. Vancouver, British Columbia, Canada.
- 2007 Sep 19 **Plenary Speaker.** Stem cell-derived vascular smooth muscle cell differentiation. R.W. Gunton Symposium, Robarts Research Institute. London, Ontario, Canada.
- 2007 Jun 6 **Invited Speaker.** Discovery of a novel anti-proliferative for vascular smooth muscle cells. HSFO Team Grants Meeting Robarts Research Institute & University of Toronto. London, Ontario, Canada.
- 2006 May 13 **Invited Speaker.** Management of the post myocardial infarction patient. Ontario Hypertension Society. Toronto, Ontario, Canada.
- 2005 Feb 19 **Invited Speaker.** Congestive heart failure: with outcomes worse than most cancers, where is palliative care? Advanced Concepts in Palliative Care Conference. Mont Tremblant, Quebec, Canada.
- 2004 May 7 **Invited Speaker.** Insights into pathogenesis from unique mouse models. CIHR Young Investigators Meeting, Institute of Circulatory & Respiratory Health. Winnipeg, Manitoba, Canada.
- 2004 Apr 22 **Visiting Professor.** Single enzyme manipulations in transgenic mice create unique models of cardiovascular disease: it's all about the company you keep. Department of Biochemistry, McMaster University. Hamilton, Ontario, Canada.
- 2003 Oct 24 **Organizer & Chair.** Hypertension Toronto: Physiology Big & Small. CHS Symposium at Canadian Cardiovascular Congress. Toronto, Ontario, Canada.
- 2003 Oct 24 **Invited Speaker.** Surprising effects of a calcium regulator. CHS Symposium. Toronto, Ontario, Canada.
- 2003 May 27 **Visiting Professor.** Altering Ca²⁺ homeostasis in vascular smooth muscle: mouse models of hypertension. Department of Medicine, IRCM. Montreal, Quebec, Canada.
- 2003 Apr 9 **Invited Speaker.** Heart Failure, CAD, Hypertension & Endothelial Dysfunction: ACEs vs. ARBs. CME Ottawa. Ottawa, Ontario, Canada.
- 2003 Jan 15 **Visiting Professor.** Regulated expression of PMCA4b in transgenic mice. Research Seminar, Queen's University. Kingston, Ontario, Canada.
- 2002 Apr 3 **Visiting Professor.** Pathogenicity of inducible nitric oxide synthase: transgenic models. Cardiovascular Research Institute, St. Boniface General Hospital Research Centre, University of Manitoba. Winnipeg, Manitoba, Canada.
- 2002 **Visiting Professor.** Transgenic models of hypertension and heart disease. Research Seminar, University of Ottawa. Ottawa, Ontario, Canada.
- 2001 Jun 1 **Guest Speaker.** Regulated tissue-specific over-expression of iNOS in transgenic mice. University of Alberta Cardiac Sciences Day. Edmonton, Alberta, Canada.
- 2001 May 31 **Visiting Professor.** Transcriptional Regulation: The New Frontier of Molecular Medicine. Department of Medicine, University of Alberta. Edmonton, Alberta, Canada.
- 2000 Nov 24 **Visiting Professor.** Emerging trends in Acute Cardiac Care. Department of Anesthesia, University of Calgary. Calgary, Alberta, Canada.
- 2000 Nov 23 **Visiting Professor.** Vascular Biology: Past Present & Future Impacts. Department of Anesthesia, University of Calgary. Calgary, Alberta, Canada.
- 2000 Sep 16 **Invited Speaker.** How will vascular biology influence future therapy for coronary disease and stroke? GUSTO IV ACS, Investigators Meeting. Toronto, Ontario, Canada.

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- 1999 Nov 23 **Invited Speaker.** Conditional expression of iNOS in the mouse cardiovascular system. Symposium on Atherosclerosis, Department of Laboratory Medicine & Pathobiology, University of Toronto. Toronto, Ontario, Canada.
- 1999 Oct 21 **Invited Speaker.** Mouse models of arterial injury. Symposium on Animal Models of Human Disease, Canadian Society for Atherosclerosis and Vascular Biology. Quebec City, Quebec, Canada.
- 1999 Sep 10 **Invited Speaker.** Regulating vascular smooth muscle cell physiology: lessons learned from transgenic mice. 10th Annual R. W. Gunton Symposium on Therapeutics, Robarts Research Institute. London, Ontario.
- 1999 Mar 25 **Visiting Professor.** Transgenic studies of vascular proliferation: the role of PMCA4. London Cardiovascular Society, Robarts Research Institute. London, Ontario, Canada.
- 1999 Feb 11 **Invited Speaker.** The role of c-Myb in vascular smooth muscle cell proliferation. Research Rounds, Montreal Heart Institute. Montreal, Quebec, Canada.
- 1999 Feb 10 **Visiting Professor.** Transgenic regulation of vascular smooth muscle: Overexpression of PMCA. Department of Pharmacology, University of Montreal. Montreal, Quebec, Canada.
- 1997 **Invited Speaker.** c-Myb-dependent vascular smooth muscle cell proliferation. Research Seminars, Robarts Research Institute, University of Western Ontario. London, Ontario, Canada.
- 1996 **Invited Speaker.** Overexpression of plasma membrane Ca²⁺ ATPase inhibits vascular smooth muscle cell proliferation. Cardiovascular Research Seminars, University of Calgary. Calgary, Alberta, Canada.
- 1995 **Invited Speaker.** Transcription factors involved in vascular smooth muscle cell proliferation. Joint Symposium of the Medical Research Council of Canada and the Canadian Society of Clinical Investigation. Montreal, Quebec, Canada. (Winner of a Travel award).
- 1995 **Invited Speaker.** c-Myb-dependent vascular smooth muscle cell proliferation. Cardiovascular Research Rounds, University of Alberta. Edmonton, Alberta, Canada.
- 1993 Oct 10 **Invited Speaker.** Endothelial necrosis and basic FGF: early features of neointimal formation. Scientific Meeting, Canadian Cardiovascular Society. Vancouver, British Columbia.

Presented Abstracts

- 2015 Oct 27 Origins of adventitial Sca1+ progenitor cells. Canadian Cardiovascular Congress. Toronto, Ontario, Canada.
- 2015 Oct 27 Modeling type II diabetes-associated vasculopathies with skin-derived precursors (SKPs). Canadian Cardiovascular Congress. Toronto, Ontario, Canada.
- 2015 Oct 22 Modeling type II diabetes-associated vasculopathies with skin-derived precursors (SKPs). Hypertension Canada. Mississauga, Ontario, Canada.
- 2015 Oct 22 A primitive somitederived stem cell in the adult mouse is capable of myelopoiesis. Hypertension Canada. Mississauga, Ontario, Canada.
- 2015 Oct 22 Origins of adventitial Sca1+ progenitor cells. Hypertension Canada. Mississauga, Ontario, Canada.

3. LOCAL

Invited Lectures and Presentations

- 2016 Apr 14 **Chair.** Diabetes and Cardiovascular Disease. HSRLCE Scientific Day - Innovation and International Partnerships. Toronto, Ontario, Canada.
- 2014 May 20 **Invited Speaker.** Impact of glycemic control on cardiovascular outcomes. Regional Cardiac Care

Education Rounds. Toronto, Ontario, Canada.

- 2014 Jan 25 **Invited Speaker.** How can GLP-1 based therapies protect the heart in ongoing trials? Incretins 2014, St. Michael's Hospital. Toronto, Ontario, Canada.
- 2013 Dec 16 **Distinguished Speaker.** Molecular studies of cardiovascular disease: Toronto-style. Heart and Stroke Richard Leward Centre. Toronto, Ontario, Canada.
- 2013 Jun 20 **Invited Speaker.** Cardiovascular Risks and Benefits of Diabetic Therapies. Cardiology Critical Care Journal Club. Cambridge, Ontario, Canada.
- 2013 May 29 **Panel member.** Launching a Successful Career in Research. Institute of Circulatory and Respiratory Health's 2013 Young Investigators Forum. Toronto, Ontario, Canada.
- 2013 May 21 **Invited Speaker.** Should cardiologists care about diabetes management? David Braley Cardiac Vascular and Stroke Research Institute. Hamilton, Ontario, Canada. Hamilton Regional Cardiology Rounds.
- 2013 Apr 23 **Invited Speaker.** Diabetic therapy and cardiovascular disease. Credit Valley Hospital Grand Rounds. Mississauga, Ontario, Canada.
- 2013 Apr 15 **Invited Speaker.** Does it matter which agent we use for glycemic control in the ACS patient. Acute Coronary Syndrome in the Patient with Diabetes Consultant's Meeting. Toronto, Ontario, Canada.
- 2013 Feb 9 **Invited Speaker.** Diabetic drugs and ACS: are there mechanisms beyond glycemic control? The Toronto ACS Summit, Canadian Cardiovascular Research Network. Toronto, Ontario, Canada.
- 2013 Jan 28 **Invited Speaker.** The cardiovascular biology of GLP-1 and its metabolites. Society of Chinese Bioscientists in America (SCBA), Toronto Chapter 2012 Conference. Toronto, Ontario, Canada.
- 2012 Oct 30 **Invited Lecturer.** Vascular smooth muscle cells: understanding their role in pathophysiology through regenerative medicine. Department of Physiology, University of Toronto. Toronto, Ontario, Canada.
- 2012 Oct 29 **Invited Speaker.** Cardiovascular impact of Incretins: do we see light at the end of the tunnel? Canadian Cardiovascular Congress. Toronto, Ontario, Canada.
- 2012 Apr 25 **Invited Speaker.** The molecular basis of incretin actions in the heart. Physiology & Exp Med Seminar, Hospital for Sick Children. Toronto.
- 2011 Nov 22 **Invited Speaker.** A surprisingly complex case in the CCU: clots, anticoagulants, and irregular rhythms. University of Toronto, Division of Cardiology Core Lecture Series.
- 2011 Jun 11 **Invited Speaker.** Incretin from Bench to Bedside. Toronto Heart Summit.
- 2011 May 13 **Invited Speaker.** Cytoprotective and regenerative approaches to cardiovascular disease. St. Michael's Research Seminar Series.
- 2011 Mar 30 **Invited Speaker.** Incretin biology of the cardiovascular system. Endocrine Journal Club. Toronto, Ontario, Canada.
- 2011 Feb 8 **Invited Speaker.** STEMI: Beyond Reperfusion. University of Toronto, Division of Cardiology Core Lecture Series.
- 2010 May 21 **Invited Speaker.** Biological actions of GLP-1 in the heart and vasculature. University of Toronto City-Wide Endocrine Rounds.
- 2010 Feb 8 **Invited Speaker.** MaRS: Lost in Translation. Division of Cardiology Rounds, St. Michael's Hospital.
- 2010 Jan 19 **Invited Speaker.** Vignettes from MaRS: examples of molecular and cellular targeting for cardiovascular diseases. Cardiology Rounds, Division of Cardiology, University Health Network.
- 2009 Nov 10 **Invited Speaker.** Three vignettes of basic cardiovascular science with potential for clinical translation. Division of Cardiology Rounds, Sunnybrook Health Sciences Centre.

- 2009 Oct 20 **Invited Speaker.** Careers in Research. Division of Cardiology Core Curriculum Lecture Series.
- 2009 Jan 27 **Invited Speaker.** Will incretin-targeted therapeutics improve cardiovascular outcomes in diabetics, The rationale for a University of Toronto-led clinical trial in acute myocardial infarction. Cardiology Rounds, Division of Cardiology, University Health Network.
- 2008 Apr 30 **Invited Speaker.** Assessment of viability and correlation to outcome post revasc. St Michael's Hospital Teaching Rounds, St. Michael's Hospital.
- 2008 Apr 18 **Invited Speaker.** Mechanisms of GLP-1 mediated cardiac protection in mice: Implications for the treatment of diabetes. St. Michael's Hospital Research Seminar Series, St. Michael's Hospital.
- 2008 Apr 3 **Invited Speaker.** Long-term management of acute coronary syndrome (ACS). Head to Toe Interactive Workshop.
- 2007 Oct 30 **Invited Speaker.** Insights in vascular smooth muscle cell differentiation: from animal models to stem cells. Cardiovascular Workshop, McEwen Centre for Regenerative Medicine.
- 2007 Aug 29 **Invited Speaker.** ES cell derived smooth muscle cell differentiation. McEwen Centre for Regenerative Medicine Mini-Symposium.
- 2007 Mar 7 **Invited Speaker.** Exploring calcium: How doggedly pursuing seemingly boring questions can result in important discoveries. LMP 10th Annual Graduate Student Research Day.
- 2006 Jul 18 **Invited Speaker.** Career Paths: Bench-to-bedside. Cardiology Rounds, Division of Cardiology, University Health Network.
- 2006 Jul 12 **Invited Speaker.** An update on the NaSTy Acute Coronary Syndrome. Grand Medical Rounds, Toronto General Hospital. Toronto, Ontario.
- 2006 Jun 2 **Invited Speaker.** Why does the heart have receptors for glucagon-like peptides, and what do they do. Cardiac and Circulatory Physiology Rounds, Mount Sinai Hospital.
- 2006 May 19 **Invited Speaker.** Role of glucagon like peptides in cardiovascular disease. Mount Sinai Hospital, Cardiac Physiology Rounds. Toronto, Ontario.
- 2006 Apr 21 **Invited Speaker.** A Transgenic mouse with superior cardiac performance: could this be a therapy for heart failure? Mount Sinai Hospital, Cardiac Physiology Rounds. Toronto, Ontario.
- 2005 Jun 29 **Invited Speaker.** How do you decide on targets for potential translation? Heart & Stroke Richard Lewar Centre of Excellence – Workshop on Translational Medicine. Toronto.
- 2005 Mar 31 **Invited Speaker.** Critical review of calcium channel blockers and ACE inhibitors in cardiovascular disease. Pfizer Consultants Meetings. Richmond Hill, Ontario.
- 2005 Jan 28 **Invited Speaker.** Role of Ca²⁺ in arterial and cardiac myocytes: its not just a contractile signal. Inter-Disciplinary Research Seminar, Hospital for Sick Children. Toronto.
- 2004 Apr 30 **Invited Speaker.** Chair and Organizer. Ontario Hypertension Society – Annual Scientific Meeting 2004. Gravenhurst, Ontario.
- 2003 May 2 **Invited Speaker.** Co-Chair and Organizer. Ontario Hypertension Society – Annual Scientific Meeting 2003. Gravenhurst, Ontario.
- 2002 Oct 31 **Invited Speaker.** Modeling hypertension in the mouse: trick or treat. Toronto CIHR Group Grants Seminar Series.
- 2002 Mar 7 **Invited Speaker.** Over-expression of plasma membrane Ca²⁺ ATPase in arterial smooth muscle of transgenic mice: serendipitous challenges of an unexpected phenotype. Inter-Disciplinary Research Seminar, Hospital for Sick Children. Toronto.

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- 2001 Jul 26 **Invited Speaker.** Cardiovascular Effects of iNOS: mouse models of surprising complexity. Department of Medicine, Grand Rounds, University Health Network. Toronto.
- 2001 Jan 17 **Invited Speaker.** Transcription factors and calcium pumps: molecular studies of smooth muscle cell proliferation. Toronto General Hospital Research Institute.
- 2000 Feb 19 **Invited Speaker.** Endothelial dysfunction: Can it be reversed? Parke-Davis Symposium on ACE Inhibitors and Endothelial Dysfunction. Collingwood, Ontario.
- 1999 Oct 27 **Invited Speaker.** Molecular biologist performs coronary artery bypass: New England Journal of Medicine or National Enquirer? Cardiology Rounds, William Osler Health Centre. Brampton, Ontario.
- 1999 Jun 7 **Invited Speaker.** Transgenic over-expression of PMCA4b in arterial smooth muscle cells. Cardiology Research Rounds, St. Michael's Hospital. Toronto, Ontario.
- 1999 May 7 **Invited Speaker.** Transgenic over-expression of PMCA4b in arterial smooth muscle cells: an unexpected phenotype. Seminar, Department of Physiology, University of Toronto. Toronto, Ontario.
- 1999 Apr 22 **Invited Speaker.** Myocardial revascularization: molecular approaches to angiogenesis. Grand Medical Rounds, North York General Hospital. North York, Ontario.
- 1999 Mar 2 **Invited Speaker.** Transgenic tools for cardiovascular research. Cardiology Research Rounds, Toronto General Hospital. Toronto, Ontario.
- 1999 Feb 18 **Invited Speaker.** The role of c-Myb in vascular smooth muscle cell proliferation. Vascular Biology Seminars, Hospital for Sick Children. Toronto.
- 1999 Feb 16 **Invited Speaker.** Myocardial revascularization: molecular approaches to angiogenesis. Cardiac Care Rounds, Centenary Health Centre. Toronto.
- 1998 Sep 19 **Invited Speaker.** State-of-the-Art Overview: Myocardial Revascularization. Sunnybrook Health Sciences Centre CME Event "Contemporary Cardiac Care". Deerhurst.
- 1998 Apr 14 **Invited Speaker.** Transgenic studies of cardiovascular physiology. Scientific Day, Institute of Medical Science, University of Toronto.
- 1997 Dec 3 **Invited Speaker.** c-Myb-dependent vascular smooth muscle cell proliferation. Vascular Biology Seminars, Hospital for Sick Children. Toronto, Ontario.
- 1997 Nov 17 **Invited Speaker.** Molecular biology of the platelet GpIIb/IIIa receptor. City-Wide Cardiology Rounds, University of Toronto.
- 1997 Apr 15 **Invited Speaker.** c-Myb-dependent vascular smooth muscle cell proliferation. Cardiology Rounds, Mt. Sinai Hospital, University of Toronto.
- 1995 May 20 **Invited Speaker.** c-Myb regulates vascular smooth muscle cell cycle progression. Scientific Day, Centre for Cardiovascular Research, University of Toronto.

Presented Abstracts

- 2016 Jun 3 Quantification of serum Oxidized LDL-specific immunoglobulins in murine models of atherosclerosis with a novel Enzyme-linked immunosorbent assay. Division of Vascular Surgery, University of Toronto. Toronto, Ontario, Canada.

4. OTHER

Presented and Published Abstracts

- 2014 Oct 23 A somite-derived Sox2+ stem cell in the adult mouse aorta gives rise to myeloid cells.

Publication Details:

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H. Teaching and Design

I have maintained a high Teaching Effective Score (TES) in both General Internal Medicine teaching and Cardiology teaching. My TES average is 8.83 in General Internal Medicine (Hospital Mean 8.80; City/Division Mean 8.76) and 9.46 in Cardiology (Hospital Mean 9.04; City/Division Mean 9.01).

Since my last promotion in 2011, I have supervised 5 Post-Doctoral Fellows, 10 PhD students, 8 Master's Students, 1 Undergraduate and 6 Summer Students. Cumulatively, I have supervised 16 Post-Doctoral Fellows, 30 PhD students, 34 Master's Students, 2 Undergraduate and 32 Summer Students. I am particularly proud of the fact that my 1st PhD trainee is now a young investigator with an early career award (USA), the 2nd is an academic clinician (USA), and the 3rd

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is an industry scientist (Toronto). Similarly, all 3 of my Nuclear Cardiology fellows have jobs in academic medicine (Australia, Romania, and Toronto), and 2 of my post-doctoral fellows are now Assistant Professors (1 in USA), with 1 a CIHR-funded researcher (UWO).

I also enjoy the privilege of mentoring young faculty in Medicine (4), Pediatrics (2), and Physiology (2).

I. Research Supervision

1. PRIMARY OR CO-SUPERVISION

Undergraduate Education

2016 May - 2016 Aug	Primary Supervisor. Summer Student. Jane Seo, Engineering. Supervisee Institution: University of Toronto. <i>Quantifying the expression of SGLT1 and SGLT2 in the atria and ventricle of mice.</i>
2016 May - 2016 Aug	Primary Supervisor. Summer Student. Eli Minkowitz. Supervisee Institution: York University. <i>Endothelial cell isolation from the microvasculature of the mouse heart</i>
2015 Jul - 2016 Aug	Primary Supervisor. Summer Student. Colin White Dzuro, Biochemistry. Supervisee Institution: Vassar College. <i>Proteomics analysis of the over-expression of PMCA4b pre/post heart failure.</i> , Completed 2015.
2013 Jun - 2013 Aug	Primary Supervisor. Summer Student. Martha Carruthers. <i>"Localization of Sox2+ progenitors in the adult murine aorta"</i> .
2013 May - 2013 Aug	Primary Supervisor. Summer Student. Cedric Li, Immunology. Supervisee Institution: University of Toronto. <i>"Morphometric assessment of timepoint and strain-dependent differences in the role of the c-myc oncogene in carotid artery injury"</i> .
2012 May - 2012 Aug	Primary Supervisor. Summer Student. Martha Carruthers. <i>"Multipotent Mesoderm-Derived Stem Cells of the Murine Aorta: Histological Analysis"</i> .
2012 May - 2012 Jul	Primary Supervisor. Summer Student. Beverly Guan. <i>"c-myc regulate miR-143/145 expression in mouse ESCs-derived and mature smooth muscle cell"</i> .
2011 Jun - 2011 Aug	Primary Supervisor. Summer Student. Beverly Guan. <i>"Examining smooth muscle specific-gene expression in human primary coronary smooth muscle cell in vitro culture at different confluency"</i> .
2011 May - 2011 Jul	Primary Supervisor. Summer Student. Martha Carruthers. <i>"Investigation of the effects of Activin-A on rat aortic neurospheres and rat skin derived precursors"</i> .
2010 Jul - 2011 Jul	Primary Supervisor. B. Sc. Jong Park. Supervisee Position: Undergraduate Student, Supervisee Institution: Victoria College. <i>"Effects and mechanisms of actions of a DPP4 inhibitor vs. GLP-1R agonist in a mouse model of stroke"</i> .
2010 Jul - 2010 Aug	Primary Supervisor. International Summer Research Student. Wesam Tulba. <i>"Cloning of selectable reporter constructs enabling derivation of pure populations of human smooth muscle cells from human embryonic stem cells"</i> .
2009 Jul - 2009 Aug	Primary Supervisor. Summer Student. Geetanjalee Sadi. <i>"Role of glucagon-like peptides in cardiovascular health and disease"</i> .
2008 Jul - 2008 Sep	Primary Supervisor. Summer Student. Dhiraj Dhanjani. <i>"Molecular basis of vascular resistance in heart failure"</i> .
2008 Jul - 2008 Sep	Primary Supervisor. Summer Student. Sarah Kawaguchi. <i>"Cardiac over-expression of ET-1 during embryogenesis results in heart defects and intrauterine death"</i> .
2008 Jul - 2008 Aug	Primary Supervisor. Summer Student. Geetanjalee Sadi. <i>"Role of glucagon-like peptides in cardiovascular health and disease"</i> .
2008 Jul - 2008 Aug	Primary Supervisor. Summer Student. Tamal Firoz. <i>"Effects of GDF5 on smooth muscle cell proliferation"</i> .
2007 Jul - 2007 Aug	Primary Supervisor. Summer Student. Sarah Kawaguchi. <i>"Cardiac over-expression of ET-1"</i> .

- during embryogenesis results in heart defects and intrauterine death".
- 2007 Jul - 2007 Aug **Primary Supervisor.** Summer Student. Michael Fu. "Electrophysiological characterization of Brachyury Flk1 precursor cardiomyogenesis in vitro and their in vivo electromechanical integration".
- 2007 Jul - 2007 Aug **Primary Supervisor.** Summer Student. Vaquas Shaikh. "Molecular basis of vasomotor abnormalities in heart failure".
- 2006 Jul - 2006 Aug **Primary Supervisor.** Summer Student. Amir Koshbin. "Plasma membrane Ca²⁺ ATPase-4 isoform expression in Xenopus oocytes".
- 2006 Jul - 2006 Aug **Primary Supervisor.** Summer Student. Taha Tabish. "The role of endogenous versus exogenous sources of oxidative stress on vascular cell biology".
- 2006 Jul - 2006 Aug **Primary Supervisor.** Summer Student. Vanita Sharma. "Expression patterns of phenotypic marker genes in vascular smooth muscle cells".
- 2006 Jul - 2006 Aug **Primary Supervisor.** Summer Student. Bryan Fong. "Vasomotor function in mice with NOS inhibitor-induced hypertension".
- 2006 Jul - 2006 Aug **Primary Supervisor.** Summer Student. Arfeen Malick. "Protocols for differentiating vascular smooth muscle cells".
- 2005 Jul - 2005 Aug **Primary Supervisor.** Summer Student. Joel Hamilton. "Effects of SO on expression levels of iNOS".
- 2005 Jul - 2005 Aug **Primary Supervisor.** Summer Student. Andrew Chiang. "Delineation of calcium-sensitive cell cycle proteins in vascular smooth muscle".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Jennifer Skinner. "Endothelin-dependent cardiac development".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Andrew Chiang. "CyclinE/CDK2 mediates Ca²⁺ sensitive G1/S transitions in vascular smooth muscle cells".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Priya Tanna. "The generation of cardiac muscle stem cells from embryonic stem cells in mice".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Judy Lin. "Cloning of a smooth muscle-specific promoter-reporter constructs and its functional assessment in an in vitro model of ES cell differentiation".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Bheeshma Ravi. "Role of G-protein-coupled receptors in hypertension in mice".
- 2004 Jul - 2004 Aug **Primary Supervisor.** Summer Student. Vanita Sharma. "Adenoviral-mediated PMCA4b gene transfer in cardiac myocytes".
- 2001 Jun - 2003 Sep **Primary Supervisor.** Summer Student. Asif Pirani. "Cloning PMCA4 promoter". Completed 2003.
- 2001 Jun - 2003 Sep **Primary Supervisor.** Summer Student. Toby Chan. "Signal-averaging of mouse ECG". Completed 2003.
- 1999 Aug - 2000 Aug **Primary Supervisor.** Summer Student. Ryan Van Wert. "Perfusion myography in mice". Completed 2000.

Graduate Education

- 2016 May - 2018 Aug **Primary Supervisor.** MSc. Dorrin Zarrin-Khat, Laboratory Medicine and Pathobiology. Supervisee Position: MSc Candidate, Supervisee Institution: University of Toronto.
- 2012 Sep - 2016 Sep **Co-Supervisor.** PhD. Wafa Althali, Laboratory Medicine and Pathobiology. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. "Arterial and venous identity in adult health and diabetes".
- 2011 Sep - 2013 Aug **Primary Supervisor.** MSc. Alison Cameron Vendrig, Physiology. Supervisee Position: Masters Candidate, Supervisee Institution: Physiology Department, University of Toronto. "Effects of GLP-1 on Thrombosis".
- 2010 Sep - 2015 Sep **Primary Supervisor.** PhD. Dhanwantee Mundil, Physiology. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. "Studies of GLP-1 metabolites in

- cardiac health and disease”.*
- 2010 Aug - 2012 Oct **Primary Supervisor.** MSc. Hussein Butt, Physiology. Supervisee Position: MSc. Candidate, Supervisee Institution: University of Toronto. *“Is IQGAP a calcium-sensitive modulator of cell cycle in vascular smooth muscle cells?”.*
- 2010 Jul - 2016 Jul **Primary Supervisor.** PhD. Aki Shikatani, Laboratory Medicine and Pathobiology. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. *“Differentiating vascular and hematopoietic roles of c-myc in mouse models of vascular and cardiac disease”.*
- 2007 Sep - 2010 Sep **Primary Supervisor.** MSc. Sonya Hui, Physiology. Supervisee Institution: Department: Physiology, U of T. *“Calcium-sensitive mechanisms of cell cycle progression”.* Completed 2010.
- 2006 Sep - 2010 Mar **Primary Supervisor.** PhD. Kiwon Ban, Physiology. Supervisee Position: Postdoctoral Fellow, Supervisee Institution: Emory University. *“Role of GLP1R signaling in cardiac pathophysiology”.* Completed 2010.
- 2006 Jun - 2008 Jun **Primary Supervisor.** MSc. Judith Hoefer, Medical Science. Supervisee Position: M.D. Supervisee Institution: University of Vienna, Austria. *“Vasomotor properties of resistance arteries in congestive heart failure”.* Completed 2008.
- 2006 Jan - 2007 Aug **Primary Supervisor.** PhD. Shivalika Handa, Laboratory Medicine and Pathobiology. Supervisee Position: Global Markets Trainee, Supervisee Institution: RBC Capital Markets. *“Stem cell based differentiation of smooth muscle cell precursors”.*
- 2004 Sep - 2011 Aug **Primary Supervisor.** PhD. Erin Mueller, Laboratory Medicine and Pathobiology. Supervisee Position: PDF. *“Molecular and structural characterization of disorders of cardiac conduction in mice”.* Completed 2011.
- 2004 Jun - 2007 Aug **Primary Supervisor.** PhD. Jaehyun Choi, Medical Science. Supervisee Position: Scientist, Supervisee Institution: Transition Therapeutics, Toronto. *“Molecular mechanisms of calcium sensitive G1/S cell cycle progression in vascular smooth muscle cells & its therapeutic applications for the treatment of vascular proliferative diseases”.* Completed 2007.
- 2004 Feb - 2010 Sep **Primary Supervisor.** PhD. Karolina Kolodziejska, Laboratory Medicine and Pathobiology. Supervisee Position: PhD Candidate, Supervisee Institution: Laboratory Medicine & Pathobiology, University of Toronto. *“c-Myb-dependent vascular smooth muscle cell differentiation in embryoid bodies”.* Completed 2010.
- 2003 Sep - 2006 Jan **Co-Supervisor.** MSc. Shivalika Handa, Laboratory Medicine and Pathobiology. Supervisee Position: Global Markets Trainee, Supervisee Institution: RBC Capital Market. *“Smooth muscle cell heterogeneity in murine atherosclerosis”.* Completed 2006.
- 2003 Sep - 2005 Apr **Co-Supervisor.** MSc. Hiwot Woldu, Laboratory Medicine and Pathobiology. Supervisee Position: Medical Student, Supervisee Institution: Temple University, USA. *“Endothelin-dependent signaling and cytokine expression in cardiac and vascular myocytes of transgenic mice”.* Completed 2005.
- 2002 Sep - 2004 May **Primary Supervisor.** MSc. Jaehyun Choi, Medical Science. Supervisee Position: Transferred to Ph.D. program. *“Identifying mediators of the Ca²⁺-sensitive G1/S transition of vascular SMC”.*
- 2002 Jul - 2004 Jan **Primary Supervisor.** MSc. Karolina Kolodziejska, Laboratory Medicine and Pathobiology. Supervisee Position: Transferred to PhD Program. *“c-Myb-dependent vascular smooth muscle cell differentiation in embryoid bodies”.*
- 2001 Sep - 2004 Apr **Primary Supervisor.** MSc. Ge Yang, Medical Science. *“Cloning and analysis of mouse PMCA4 gene expression and splicing”.* Completed 2004.
- 1999 Sep - 2004 Apr **Co-Supervisor.** PhD. Li Yang, Laboratory Medicine and Pathobiology. Supervisee Position: Resident, Supervisee Institution: UCLA. *“Effects of endothelin over-expression in the cardiovascular system of transgenic mice”.* Completed 2004.
- 1998 Jan - 2003 Aug **Co-Supervisor.** PhD. Imran Mungrue, Laboratory Medicine and Pathobiology. *“Effects of iNOS over-expression in the cardiovascular system of transgenic mice”.* Completed 2003.
- 1998 Jan - 1999 Apr **Co-Supervisor.** MSc. Imran Mungrue, Laboratory Medicine and Pathobiology. Supervisee Position: Transferred to Ph.D. Program, Supervisee Institution: Laboratory Medicine &

Pathobiology, U of T. *“Effects of iNOS over-expression in the cardiovascular system of transgenic mice”*.

Postgraduate MD

- 2012 Jul - 2015 Jun **Primary Supervisor.** Mark Chandy. Supervisee Position: Postdoctoral Fellow, Supervisee Institution: University Health Network. *“Role of miRNA in smooth muscle cell differentiation”*.
- 2002 Jan - 2003 Jun **Co-Supervisor.** David Gatta. Supervisee Position: Assistant Professor, Supervisee Institution: University of Sydney. *“Molecular mechanisms underlying cardiac adaptations to sepsis”*. Completed 2003.

Postdoctoral Research Fellow (PhD)

- 2015 Jan - 2019 Dec **Primary Supervisor.** Muhammad Ahsan Siraj. Supervisee Position: Post doctoral Fellow, Supervisee Institution: Toronto General Research Institute. *Cardioprotective effects of GLP-1 (28-36), Non-thesis Project*.
- 2009 Jun - 2013 May **Primary Supervisor.** Omar El-Mounayri. Supervisee Position: Postdoctoral Fellow, Supervisee Institution: University Health Network. *“Derivation of distinct and pure populations of contractile smooth muscle cells from human embryonic stem cells”*.
- 2008 Sep - 2013 Aug **Primary Supervisor.** Sarah Steinbach. Supervisee Position: Postdoctoral Fellow, Supervisee Institution: University Health Network. *“Molecular genetic analysis of human embryonic stem cells and other cardiovascular progenitors.”*.
- 2008 May - 2010 Jun **Primary Supervisor.** May Khalili. *“The design and creation of new transgenic models of smooth muscle cell specific gene expression”*.
- 2007 Oct - 2010 Mar **Primary Supervisor.** Mohammed Ali Azam. Supervisee Position: Research Associate, Supervisee Institution: University Health Network. *“Molecular mechanisms underlying abnormal vasomotor function on heart failure”*. Completed 2010.
- 2007 Sep - 2012 Jun **Primary Supervisor.** Masayoshi Ishida. Supervisee Position: Assistant Professor, Supervisee Institution: University of Tokushima. *“Cardiac regenerative potential of bioreactor-derived progenitors”*.
- 2006 Aug - 2008 Dec **Primary Supervisor.** Mohammad Hossein Noyan Ashraf. Supervisee Position: Scientific Associate, Supervisee Institution: Toronto General Hospital Research Institute. *“The role of glucagon like peptide-1 in cardiovascular system in health and disease”*. Completed 2008.
- 2006 Jan - 2009 Jan **Co-Supervisor.** Sylvia Niebrugge. *“Optimizing transplantation potential of embryonic stem cell-derived cardiac myocytes”*. Completed 2009.
- 2005 Apr - 2006 Aug **Primary Supervisor.** Young Min Kim. Supervisee Position: Internal Medicine Resident, Supervisee Institution: University of British Columbia. *“Role of iNOS in the oxidative stress of atrial and ventricular cardiomyocytes in mouse and human models of disease”*. Completed 2006.
- 2003 Apr - 2005 Apr **Primary Supervisor.** Abdul Momen. Supervisee Position: Research Technician, Supervisee Institution: Toronto General Hospital Research Institute. *“Molecular basis for altered Ca²⁺ regulation in arterial myocytes lacking RGS2”*. Completed 2005.
- 2002 Jul - 2005 Sep **Primary Supervisor.** Radu Petrovici. *“Superiority of myocardial perfusion imaging vs. exercise electrocardiography in the post-bypass surgery population”*. Completed 2005.
- 2002 May - 2006 Jun **Primary Supervisor.** Al Muktafi Sadi. Supervisee Position: Research Associate, Supervisee Institution: Toronto General Hospital Research Institute. *“The role of smooth muscle cell proliferation in arterial remodeling in hypertension”*. Completed 2006.
- 2001 Jul - 2003 Aug **Primary Supervisor.** Douglas S. Lee. Supervisee Position: Assistant Professor, Supervisee Institution: University of Toronto. *“Utility of the Duke-treadmill scoring and thallium infusion imaging in post-bypass and heart failure patients respectively”*. Completed 2003.
- 2001 Jul - 2003 Aug **Primary Supervisor.** Adel Elmoselhi. Supervisee Position: Assistant Professor, Supervisee Institution: Ross University Medical School. *“Conditional over-expression of human ET-1 in arterial SMC causes hypertension”*. Completed 2003.
- 2001 May - 2005 Apr **Primary Supervisor.** M. Golam Kabir. Supervisee Position: Research Associate, Supervisee

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- Institution: St. Michael's Hospital. *"Molecular basis for the treatment effects of the anti-oxidant Tempol in a mouse model of myocardial infarction"*. Completed 2005.
- 2001 Jan - 2002 Jan **Primary Supervisor.** Ehsan Hoque. Supervisee Position: Research Associate, Supervisee Institution: Yale University. *"Intracellular Ca²⁺ concentrations in arterial SMC over-expressing PMCA4b"*. Completed 2002.
- 2001 Jan - 2002 Jan **Primary Supervisor.** Abunasar Al-Hoque. Supervisee Position: Research Associate, Supervisee Institution: Yale University. *"Effects of PMCA overexpression on CA²⁺ - concentrations in VSMC"*. Completed 2002.
- 2000 Jul - 2002 Sep **Primary Supervisor.** Robert Gros. Supervisee Position: Scientist, Assistant Professor, Supervisee Institution: Robarts Research Institute, University of Western Ontario. *"Conditional expression of human PMCA4b in arterial SMC of transgenic mice"*. Completed 2002.
- 2000 Feb - 2001 Jan **Co-Supervisor.** Louise Emmett. Supervisee Position: Assistant Professor, Supervisee Institution: University of Sydney. *"Improved detection of coronary artery disease with gated wall motion but not attenuation correction of myocardial perfusion images"*. Completed 2001.
- 1998 Feb - 2002 Jan **Primary Supervisor.** Talat Afroze. Supervisee Position: Research Associate, Supervisee Institution: Toronto General Hospital Research Institute. *"c-Myb-dependent regulation of PMCA expression"*. Completed 2002.
- 1997 Nov - 2000 Aug **Primary Supervisor.** Xiaomang You. Supervisee Position: Perfusionist, Supervisee Institution: Portland, USA. *"Conditional expression of a dominant-negative Myb in arterial SMC of mice"*. Completed 2000.

2. OTHER SUPERVISION

Graduate Education

Thesis Committee Member

- 2011 Sep - present **MSc.** Petra Lucker. Supervisee Position: MSc Candidate, Supervisee Institution: University of Toronto. *"Protein therapeutics for myocardial infarction - Proliferation and maturation of cardiomyocytes in vitro and in vivo"*.
- 2009 Sep - present **PhD.** Anton John Mihic. *"Cyclic Stretch Enhances the Maturation of hES-derived Cardiomyocytes and the Formation of a 3D Tissue Patch"*.
- 2013 Sep - 2019 Apr **PhD.** Abdalla Ahmed, Molecular Genetics. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. *Embryonic Pre-programming of Postnatal Cardiac Disease*.
- 2012 Sep - 2014 Jun **MSc.** Nour Qa'aty, Medical Science. Supervisee Position: MSc Candidate, Supervisee Institution: University of Toronto. *"GLP1 peptides promote beneficial ECM remodelling in skin and heart fibroblasts"*.
- 2012 Jul - 2014 Jun **MSc.** John Joo Yiul Lee, Laboratory Medicine and Pathobiology. Supervisee Position: MSc Candidate, Supervisee Institution: University of Toronto. *"Role of shear stress in epigenetic modifications during in-vitro embryonic stem cell differentiation"*.
- 2011 Sep - 2014 Jun **MSc.** Reuben Thomas, Laboratory Medicine and Pathobiology. Supervisee Position: MSc Candidate, Supervisee Institution: University of Toronto. *"Determining the impact of distal coronary embolization on acute myocardial infarction"*.
- 2010 Sep - 2012 Aug **MSc.** Heng Wang, Laboratory Medicine and Pathobiology. *"Regulation of Slit/Robo Signaling"*.
- 2010 Jan - 2014 Dec **PhD.** Megan Sauve, Physiology. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. *The TNF α /S1P Signalling Axis Mediates Elevated Myogenic Tone in Diabetes Mellitus*.
- 2009 Sep - 2012 Sep **MSc.** Naim Panjwani, Medical Science. *"The Role of the GLP-1R in Atherosclerosis"*.
- 2008 Sep - 2013 Aug **PhD.** Iran Rashedi. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. *"Characterization of bone marrow mesenchymal stromal/stem cells undergoing cardiac lineage differentiation"*.

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- 2008 Sep - 2010 Aug **MSc.** Alisha Jamal, Laboratory Medicine and Pathobiology. *“Investigating epiallelic heterogeneity at the VCAM-1 promoter”*.
- 2006 Sep - 2011 Aug **PhD.** Andrew Ramadeen, Pharmacology and Toxicology. *“The effect of omega-3 polyunsaturated fatty acids on vulnerability to atrial fibrillation”*.
- 2006 Sep - 2010 Sep **PhD.** Carlo Cifelli, Physiology. *“Sinoatrial pacemaker cell regulation by regulator of G-protein signaling 4”*.
- 2006 Sep - 2009 Jun **MSc.** Megan Sauve, Medical Science. *“The role of DPP-4 inhibition in the cardiovascular system”*. Completed 2009.
- 2005 Oct - 2009 Oct **MSc.** Dmytro Sednev, Physiology. *“Regulation of Contractility”*. Completed 2009.
- 2005 Sep - 2010 Aug **PhD.** Gianni Ciavarra, Laboratory Medicine and Pathobiology. *“Role of Rb and related factors in skeletal myogenesis”*.
- 2005 Sep - 2007 Sep **MSc.** Winsion Chow, Laboratory Medicine and Pathobiology. *“The role of NFATc1 in vascular smooth muscle cell response to injury”*. Completed 2007.
- 2005 Sep - 2007 Aug **MSc.** Golnaz Madadi, Physiology. *“Circadian Rhythms in Cardiovascular Disease”*. Completed 2007.
- 2004 Oct - 2009 Apr **PhD.** Peter Sabatini, Laboratory Medicine and Pathobiology. *“Polarity Control in Migrating Vascular Smooth Muscle Cells”*. Completed 2009.
- 2004 Sep - 2007 Mar **MSc.** Rami Bishay, Physiology. *“Non-invasive imaging of transplant vasculopathy in mice”*. Completed 2007.
- 2004 Jul - 2006 Nov **MSc.** Anya McLaren, Physiology. *“The role of VEGF in the cerebral cortex following severe acute isovolemic anemia”*. Completed 2006.
- 2004 Jan - 2010 Jun **PhD.** Celine Bauwens. *“Human ES cell-derived cardiomyocytes: improving yield”*.
- 2004 Jan - 2006 Dec **MSc.** Erin Butler, Medical Science. *“Effects of intra-myocardial endothelial progenitor cell transplantation following myocardial infarction”*. Completed 2006.
- 2004 Jan - 2006 Mar **MSc.** Mikin Patel, Physiology. *“Role of ACE2 in myocardial function”*. Completed 2006.
- 2003 Sep - 2007 Jun **PhD.** Akis Amfilochiadis, Medical Science. *“Mechanisms underlying the cardiovascular effects of coagulation beta-factor XIIa”*. Completed 2007.
- 2003 Sep - 2005 Sep **MSc.** Julie Basu Ray, Laboratory Medicine and Pathobiology. *“Hypoxic regulation of vascular smooth muscle cell proliferation”*.
- 2003 Sep - 2005 Sep **MSc.** Gianni Ciavarra, Laboratory Medicine and Pathobiology. *“Role of Rb and related factors in skeletal myogenesis”*.
- 2003 Sep - 2004 Sep **MSc.** Ken Wong, Laboratory Medicine and Pathobiology. *“Characterization of fish and chicken glucagons-like receptors”*. Completed 2004.
- 2003 Aug - 2007 Jun **PhD.** Dorota Pszczolko, Laboratory Medicine and Pathobiology. *“Acute vasoregulation and chronic tissue reorganization in arterial remodeling”*. Completed 2007.
- 2003 Jul - 2007 Jun **PhD.** Renee Suen, Medical Science. *“Role of endothelin-1 in accelerated atherosclerosis & aortic aneurysm formation”*. Completed 2007.
- 2003 May - 2005 Aug **MSc.** Nazneen Tata, Physiology. *“Circadian rhythms in blood vessels”*. Completed 2005.
- 2003 Jan - 2004 Sep **MSc.** Peter Sabatini, Laboratory Medicine and Pathobiology. *“Polarity Control in Migrating Vascular Smooth Muscle Cells”*.
- 2002 Sep - 2004 Aug **MSc.** Danny Costantini, Physiology. *“Myocardial stunning reduces coronary blood flow and impairs cardiac contractility in ACE-2 knockout mice”*. Completed 2004.
- 2002 Sep - 2003 Aug **MSc.** Dorota Pszczolko, Laboratory Medicine and Pathobiology. Supervisee Position: Transferred to PhD Program. *“Acute vasoregulation and chronic tissue reorganization in arterial remodeling”*.
- 2002 Jul - 2004 Jun **MSc.** Danny Ramzy, Medical Science. *“Endothelial injury in the cardiac transplant patient”*.
- 2000 Sep - 2004 Jun **PhD.** Gavin Oudit, Medical Science. *“Iron overload cardiomyopathy: Role of L-type Ca²⁺ channels & taurine”*. Completed 2004.
- 2000 Sep - 2003 Jul **MSc.** Renee Suen, Medical Science. Supervisee Position: Transferred to PhD Program. *“Role of endothelin-1 in accelerated atherosclerosis & aortic aneurysm formation”*.

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2000 Sep - 2002 Oct **MSc.** Peter Papageorgiou, Physiology. Supervisee Institution: Physiology, U of T. *“Studies on the mechanism of action and clinical relevance of human newpressor protein and its relationship to coagulation factor XII and role of the kidney and adrenal medulla”*. Completed 2002.

1998 Jan - 2002 Jun **PhD.** Zamineh Kassiri. *“Reduction of transient outward K⁺ current and hypertrophy in neonatal rat ventricular myocytes: Role of Ca²⁺-dependent signaling pathways”*.

Thesis Examiner

2011 Apr **PhD.** Elizabeth Pham. *“Engineering Protein Switches to Control Cellular Function”*. Completed 2011.

2003 Aug - 2005 Aug **MSc.** Kiwon Ban, Physiology. *“Role of PI3K isoforms in myocardial ischemia pre-conditioning”*. Completed 2005.

2000 Sep - 2004 Aug **PhD.** Sandra Merklinger, Laboratory Medicine and Pathobiology. *“Role of MTS100 in pulmonary hypertension”*.

2000 Sep - 2003 Sep **PhD.** Nathalie Lapointe. Supervisee Institution: Institute of Medical Science, U of T. *“Effect of endogenous vasodilator substances before, during, and after myocardial infarction in rats with or without insulin resistance”*. Completed 2003.

1999 - 2001 **MSc.** Mara Jones, Laboratory Medicine and Pathobiology. *“N-Cadherin mediated cell-cell adhesion in the arterial wall”*. Completed 2001.

1999 - 2001 **PhD.** Sabrena Noria. Supervisee Institution: Department of Laboratory Medicine and Pathobiology, U of T. *“Shear stress-induced morphological adaptations of endothelial cells: reorganization of cell adhesion complexes and the actin cytoskeleton”*. Completed 2001.

Chair, PhD Transfer Exam

2012 Mar **PhD.** Joshua Lopes, Laboratory Medicine and Pathobiology. Supervisee Position: Masters student, Supervisee Institution: University of Toronto. *“The role of type VIII collagen in atherosclerotic plaque development”*.

Chair, Thesis Examination

2008 Jun **PhD.** Kimberley Anne Marsh, Molecular Genetics. *“Examination of unspliced HIV-1 mRNA Translation”*. Completed 2008.

Ph.D. Thesis External Examiner

2010 Feb **PhD.** Katherine Chiang. *“Differentiation of cardiovascular stem cells”*. Completed 2010.

PhD Advisory Committee

2013 May - 2017 Sep **PhD.** Marsel Lino, Laboratory Medicine and Pathobiology. Supervisee Position: PhD Candidate, Supervisee Institution: University of Toronto. *“The role of Discoidin Domain Receptor 1 on vascular calcification in diabetes”*.

PhD Transfer Examiner

2004 Sep - 2008 Aug **PhD.** Karen Sison. *“Role of VEGF-A in Diabetic Nephropathy and Glomerular Permeability”*. Completed 2008.

J. Creative Professional Activities

1. PROFESSIONAL INNOVATION AND CREATIVE EXCELLENCE

2014 Nov - present Executive Director.
Background: Establishment of Ted Rogers Centre for Heart Research.

2009 - present Research Leadership.
Background: Research Leadership (Division of Cardiology; Peter Munk Cardiac Centre; Toronto General Hospital; broadly in the CV science community at University of Toronto).
Rationale: Promoting cardiovascular research at the University of Toronto and its affiliated

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research hospitals (on an International stage).

2008 - 2010

Member.

Background: Establishment of Hypertension Canada.