

CARDIOVASCULAR SCIENCES COLLABORATIVE PROGRAM

Faculty of Medicine, University of Toronto

ANNUAL REPORT **2013 – 2014**

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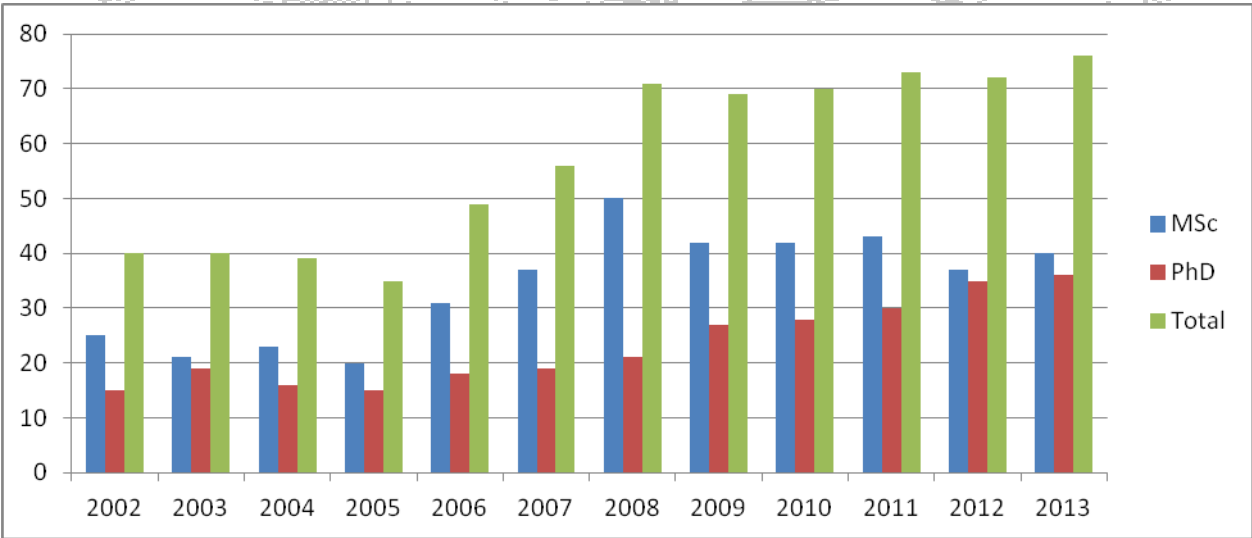
DIRECTOR'S MESSAGE



It is my pleasure to present this annual report highlighting the Cardiovascular Sciences Collaborative Program's (CSCP) activities and accomplishments for the 2013-2014 academic year. This has been another pivotal year for the CSCP as we successfully completed our 7-year review. The SGS review committee lauded the CSCP for a thorough and well-prepared self-study that highlighted the strengths of our well-established collaborative program. They commented that with steady sustained program enrolment and positive student feedback, the CSCP stood out as having a strong reputation among students at the University. The report acknowledged that the dedicated faculty members provide students with many opportunities for research engagement and clinical experience that serve as great added value for students. It summarized that we were a well-established truly interdisciplinary collaborative program with a definite focus that draws together a large and diverse number of participating programs. They praised the strong research foundation provided by core faculty members who are invested in student development and offer unique learning opportunities. We were complimented on our well documented student feedback that is collected on a regular basis and that student feedback was overwhelmingly positive with all respondents noting they would recommend the collaborative program to others. Finally, they noted the high level of student support from financial awards and faculty involvement. My thanks to Victoria Simpson for all her hard work in putting the documents together for this report and all the faculty and students who make this program as successful as it is.

This review also served as a renewal point for the participating and supporting units of the CSCP, resulting in a new MOA with some changeover of participants. We bid farewell to some of our more inactive units while welcoming new partners: Departments of Chemical Engineering and Applied Chemistry and Medical Imaging to the CSCP family.

Student enrollment in the CSCP over the last 5 years increased even with significant numbers of students graduating each year resulting in a total number of 75 trainees for this past year.



The yearly increases have been steady in the PhD category, while recent small increases in MSc students continue to make up for the dip seen in 2012. I continue to be pleased with these numbers as it reflects student enthusiasm for the program. As well, the completion numbers continue close to 100%, confirming that students value their experiences with our program. This is due, in no small part, to the ongoing commitment and dedication of our faculty. They not only supervise these students but are active contributors to all CSCP activities, including courses, seminars, and the student research day. I am also pleased to report that participation has risen by our less active academic partner units, who renewed their involvement with the CSCP.

The high level of student satisfaction with the CSCP is confirmed during their annual meeting with the Student Affairs Committee Chair and the exit surveys routinely conducted. These annual meetings also help guide our direction and, if needed, address any student concerns early. This further assures that we stay on track to meet the ever changing student needs. Evaluation surveys we conduct also record the students' appreciation for the annual student research day, seminars held and courses we run. It continues to be true that today's discerning student is well aware that it is not enough to just fulfill their department's degree requirements if they hope to succeed post graduation. Even those who chose to enter professional degree programs know that a specialist certification, such as that issued upon successful completion of the CSCP, is a statement of excellence that provides them with an edge. All our students benefit from personal contact with our faculty. These individuals are top University of Toronto cardiovascular scientists from across the campus and because they are involved with the CSCP at every level from administration to teaching to supervision the students in our program are fully exposed to the wealth of this expertise. This has given the CSCP trainee exposure to the diversity of excellence we have both on campus and at our teaching hospitals and research centres. In the progressively more difficult financial times we face, clearly any time taken from the research done by the student could be viewed as lessening the productivity for the supervisor, yet participation in the CSCP is promoted. This is a testimonial to the value and quality offered by the CSCP to the cardiovascular research community and its' trainees.

As in previous years, details on the many highlights related to CSCP activities can be found within the body of this report and on our web site at www.cscp.utoronto.ca. The flagship event continues to be the day long Student Research Day, where students are able to network with other students across the campus in the many differing disciplines. This event is organized by the students and includes sessions not only on their research but on career guidance and other valued skills such as resume writing and interviewing skills; which was well received. In addition, by sharing their research with their peers at the day, they learn from each other and we often hear that new collaborations with groups outside the students' normal sphere evolve from their interactions within the CSCP. Another example of this, which is organized by the CSCP students, is 'Circulation Rounds', which consist of visits to the different research locations of our diverse faculty. This allows the students to meet and experience current and ongoing projects in the cardiovascular arena. The summer CSI series which has evolved to include practical visits to facilities such as Toronto Rehabilitation Centre and the Surgical Skills Laboratory further expands the awareness of the breadth and depth offered at the University of Toronto in the cardiovascular sciences. Our flagship graduate course JCV3000 series, made up of 4 modules each worth .5 FTE, continues to be very popular. The evaluations rank each module very highly. This year the JCV1060 module of Developmental Cardiovascular Physiology was added as a 0.5 FCE option for PhD students.

In addition to our own activities, this year the CSCP administrative office was instrumental in assisting a number of other collaborative programs requiring organizational guidance.

Specifically, during this year the CSCP administered the Collaborative Program in Neuroscience (CPIN) and provided guidance during the formation of the Collaborative Program in Development. We are pleased that these efforts greatly aided both programs during a critical time for them. We also continued to seriously explore more close alignments with the greater cardiovascular community. The goal ideally is to secure long term stability and further develop excellence in cardiovascular education at the University of Toronto. With ever shrinking budgets and increasing demands placed on all departments, it is imperative that for our continued growth our education efforts also align with affiliated cardiovascular focused research centres. This would ensure cementing of compatible strengths by combining world class education with research across the campus. As you read through the report, it should be immediately apparent that the CSCP does the extra to ensure that our efforts dovetail with those of our participating Faculties, Departments and Institutes/Centres to optimize our trainees' experiences. This enhances both our efforts and all those of our participating units, providing their trainees with outstanding exposure to cardiovascular sciences, making the University of Toronto, the place for graduate training in this field. This sentiment was echoed by our recent review.

It is also worth a mention that the CSCP is one of the few if not the only collaborative program that yearly allocated more than \$153,000 of student support including scholarships, bursaries and awards. The CSCP is pleased to be able to provide this tangible monetary benefit for our partner units as one of many compensations for their involvement and support. I would also like to take a moment to acknowledge the financial support provided by all our participating units during this year which allowed us to continue our operations. Special mention to our major funding supporters including the Department of Medical Imaging, the Institute of Medical Science, and the Department of Physiology in the Faculty of Medicine and the Department of Exercise Sciences in the Faculty of Kinesiology & Physical Education.

In wrapping up, I wish to once again take a moment to thank Drs. Margaret Rand, Scott Thomas, and Tony Gramolini, Chairs of the Scholarship & Awards Committee, Student Affairs Committee and Curriculum Committee, respectively. They volunteer their time to make that extra contribution and have dedicated many selfless hours to their additional responsibilities. This has been key to the ongoing academic success of the CSCP. Then there is our Senior Administrator and Business Officer, Victoria Simpson, who has gone beyond any call to duty during this past year of intense review process. She not only ensured our successful review but also dedicated many untold hours to adeptly guide 2 other collaborative programs through rough waters to ensure their stable footing. She is and continues to be the real soul of the CSCP. Finally, it goes without saying that the CSCP is really about the active participation by our students and faculty who teach, organize and contribute in many ways to all our activities making the CSCP exciting and vibrant. It is much appreciated and we could not be where we are today without all of you!

*Dr. Carin Wittnich, O. Ont.
Director, CSCP
Professor of Surgery & Physiology
Northrop Frye Scholar*

MISSION STATEMENT

“The Cardiovascular Sciences Collaborative Program, approved by the University and Ontario Council on Graduate Studies in 1992, and listed in the calendar of the School of Graduate Studies, exists to give formal, organized expression to cardiovascular studies and research at the graduate level. It builds on the strengths of all participating academic units, and other agencies, to enhance the visibility of cardiovascular studies and to facilitate collaborative, interdisciplinary training and research.”

The above mission is achieved by advertising and promoting the importance of, and opportunities in, cardiovascular studies, by making known the results of such studies, by recruitment of excellent students, and by coordinating the graduate collaborative program in cooperation with the academic units in which they are registered. Students in this collaborative program must fulfill the requirements of their home units as well as the Program. Upon graduation the notation “Specialization in Cardiovascular Sciences” will appear on the student’s academic transcript and the Program will present the student with a certificate and gift.

COLLABORATING FACULTIES

Applied Science and Engineering
Dentistry
Kinesiology and Physical Education
Medicine
Leslie Dan Faculty of Pharmacy

COLLABORATING GRADUATE UNITS

Biomaterials and Biomedical Engineering
Chemical Engineering & Applied Chemistry
Dentistry
Exercise Sciences
Laboratory Medicine and Pathobiology
Medical Biophysics
Medical Science
Pharmaceutical Sciences
Pharmacology and Toxicology
Physiology
Rehabilitation Science

SUPPORTING CLINICAL DEPARTMENTS

Anesthesia
Medical Imaging
Medicine
Surgery

COMMITTEES

Executive

The Executive Committee consists of the CSCP Director and 4 members of the Program Committee representing as wide a range of disciplines as possible. Each member also acts as Chairs of the various subcommittees as noted beside their name. The Executive Committee provides student counseling, screens applicants, provides advice and acts as a Steering Committee.

Dr. C. Wittnich (Fundraising)
Dr. M. Rand (Scholarships & Awards)
Dr. T. Gramolini (Membership/Curriculum)
Dr. S. Thomas (Student Affairs)

Program

The Program Committee consists of a representative from each collaborating department as well as two student representatives. It administers the Program, selects the Director, and generally meets twice per year.

C. Wittnich (Chair)
D. Brooks (Rehabilitation Science)
S. Wu (Pharmaceutical Sciences)
D. Mazer (Anesthesia)
J. Parker (Pharmacology)
S. Heximer (Physiology)
D. Steinman (Institute of Biomaterials and Biomedical Engineering)
M. Rand (Laboratory Medicine and Pathobiology)
R-K. Li (Institute of Medical Science)
J. Flanagan (Dentistry)
S. Thomas (Exercise Sciences)
G. Wright (Medical Biophysics)
TBA (Chemical Engineering)
President, CSCP Student Association
Vice-President, CSCP Student Association

COURSES OFFERED

EXS5508H Cardiovascular Disease and Exercise
JCV1060H* Developmental Cardiovascular Physiology
JCV3060H* Advanced Topics in Cardiovascular Sciences – Molecular Biology & Heart Signal Transduction
JCV3061H* Advanced Topics in Cardiovascular Sciences – Hormones
JCV3062H* Advanced Topics in Cardiovascular Sciences – Heart Function
JCV3063H* Advanced Topics in Cardiovascular Sciences – Vascular
JEB1365H Ultrasound: Theory and Applications in Biology and Medicine
JTC1331H Biomaterials Science
LMP1015H Vascular Pathobiology
LMP1504H Cell and Molecular Biology of Cardiovascular Diseases

PSL1462H Molecular Aspects of Cardiovascular Function

* Core Courses for PhD Trainees (2 of 5 modules required); JCV denotes joint listing with most of our collaborating departments.

Suggested Courses (Considered valuable but does not fulfill Program requirements)

CHL5201 Introducing Biostatistics for Students in Biological Sciences I

LMP1404S Cellular and Molecular Mechanisms of Disease

PROGRAM SPONSORED ACTIVITIES

ANNUAL STUDENT RESEARCH DAY

The 15th Annual Cardiovascular Sciences Collaborative Program (CSCP) Student Research Day was held on Wednesday, April 30, 2014. Each year the Research Day provides trainees an opportunity to present their research to their peers in a welcoming environment promoting discussion and the free flow of ideas. The event provides a platform for expression of scientific ideas and inspiration for the mind, pushing the boundaries of current scientific paradigms in the field of cardiovascular research. This year, Dr. Margaret Rand, Chair, Awards & Scholarships Sub-committee and part of the CSCP Executive Committee, led the day with opening remarks highlighting the excellence and diversity of the CSCP. The morning continued with the students sharing their research aimed at improving the treatment and prevention of cardiovascular disease, followed by inspiring presentations from our guest speakers, Drs. Alan Moody, Department of Medical Imaging and Greg Wells, Faculty of Kinesiology and Physical Education. Awards were presented to students receiving the “Bigelow Book Prize” and the “Lorne Phenix Graduate Award”. As well, certificates were handed out to students who had completed their CSCP training. The afternoon continued with more excellent student presentations concerning molecular mechanisms and imaging and analysis of cardiovascular disease. A workshop on preparing an academic CV was given by Dr. Jonathan Turner, a career educator at the UoT Career Centre. Awards were also presented to students who were judged to have given the best oral presentation and most innovative presentations.

STUDENT PRESENTATIONS

As part of the CSCP requirements, all students must present their research once during their graduate training. This presentation consists of a 10-minute talk followed by a 3-5 minute question period. This year students were grouped into three main topics – seen below – with excellent and innovative presentations given throughout.

Session I: Cardiovascular Disease, Prevention & Treatment (Chair: Arash Ghashghai)

Carlos Fernando (MSc – Institute of Medical Science)
Cardiac filling pressure but not left ventricular systolic pressure predicts renal insufficiency in patients with chronic heart failure

Cedric Manhiot (PhD – Institute of Medical Science)
Coagulation system activity and heparin sensitivity in children undergoing cardiac surgery

Lee-Anne Khuu (PhD – Institute of Medical Science)
Retinal blood flow is reduced in patients with type 2 diabetes and non-proliferative diabetic retinopathy

Hao Chen (MSc – Institute of Medical Science)
Multigene delivery for therapeutic angiogenesis in chronic ischemia



These presentations were novel displays of attempting to translate research into clinical application (the classic bench to bedside approach). The first three were clinical studies involving patients, whereas the last presentation involved manipulating gene deliver *in vitro* to stimulate *in vivo* possibilities.



(L-R): Carlos Fernando, Lee-Anne Khuu, Cedric Manhiot, Hao Chen, Arash Ghashghai)

Session II: Molecular Mechanisms of Cardiovascular Disease (Chair: Robert Civitarese)

Nour Qa'aty (MSc – Institute of Medical Science)

Glucagon-like-peptide 1 cross-activates IGF-1 receptors to stimulate elastogenesis in cultured human cardiac fibroblasts

Kathryn Lipsett (MSc – Department of Physiology)

Identification of cell-specific proteins in the human heart

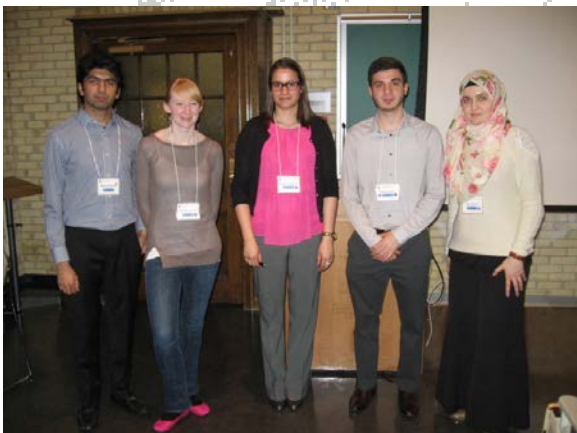
Stephanie Beadman (MSc – Department of Physiology)

Effect of RGS4 on autophagic flux in pancreatic beta cells

Mehroz Ehsan (MSc – Institute of Medical Science)

Adiponectin limits monocytic microparticle-induced inflammasome activation and endothelial dysfunction

These presentations highlighted the importance of basic research and how understanding fundamental processes can drive the discovery of new treatment approaches. Three of these presentations demonstrated how a specific protein could influence physiological and pathophysiological responses with the other attempting to discover new proteins that may play a vital role.



(L-R): Mehroz Ehsan, Kathryn Lipsett, Stephanie Beadman, Robert Civitarese, Nour Qa'aty

Session III: Imaging and Analysis of Cardiovascular Disease (Chair: Tina Marvasti)

Zhen Lu (MSc – Department of Physiology)

Bioinformatic analysis of human fetal atria and ventricles

Hany Kashani (PhD – Institute of Medical Science)

Motion compensation in coronary CT imaging

Susith Kulasekara (PhD – Institute of Medical Science)

Spectral imaging of the retina

Adrienne Siu (MSc – Department of Medical Biophysics)

Detection of diffuse myocardial fibrosis using collagen-specific magnetic resonance (MR) contrast

The final session covered new approaches to image and analyze cardiovascular disease and symptoms. Two of these student presenters demonstrated a clear gap in imaging techniques and sought to investigate alternative approaches. In the two others, one student emphasized approaches to discover new and important proteins that differ based on area of the heart (ie. atria vs. ventricles), with the other attempting to use an imaging technique to detect myocardial fibrosis, a pathological remodeling process that occurs in most heart diseases, non-invasively.

(no picture of Session speakers available)

GUEST SPEAKERS

The CSCP thanks our guest speakers for their very insightful and interesting talks. Dr. Moody highlighted that, while a career path may not always be certain, having a positive attitude and a good work ethic ensures success. He also discussed leveraging past experiences and planning ahead as key elements of his success. Dr. Greg wells emphasized the value of education, yet placing even greater importance on utilizing tools to market yourself. He also spoke about how networking and collaborations, highlighted by our event, is key for future careers – the more people you know and stay in contact with the better! At the end, both stimulated an interesting discussion and answered the student's eagerly awaiting questions in a thought provoking and helpful manner. These talks are a great way for students to hear from individuals they aspire to become and we certainly are grateful for the excellent talks provided!

Alan Moody, Professor and Chair

Department of Medical Imaging, Faculty of Medicine,
University of Toronto

Following medical and radiology training in Oxford and London, and an imaging Fellowship in Toronto, Professor Moody was appointed as Senior Lecturer at Leicester University followed by a similar post at Nottingham University. He was then appointed as Chair of Academic Radiology in 1998 and Clinical Director of the Radiology department at Queen's Medical Centre, Nottingham, where he served until joining the University of Toronto in 2003. He is currently Chair of Medical Imaging University of Toronto, and previously was Radiologist in Chief at Sunnybrook Health Sciences Centre until 2012. He is currently an associate scientist within the Imaging Research Discipline of the Sunnybrook Research Institute as part of the Schulich Heart Research program. His research interests broadly include imaging and vascular biology and specifically the application of imaging in the understanding and management of atherosclerosis. He is currently one of the principal investigators within the



Canadian Atherosclerosis Imaging Network and co-director of the research imaging program using MRI to investigate nutrition and disease based at St Michael's Hospital.



Greg Wells, PhD

Assistant Professor, Faculty of Kinesiology & Physical Education, University of Toronto Associate Scientist, Physiology and Experimental Medicine, The Hospital for Sick Children

Dr. Greg Wells is a health and high performance expert who inspires better living through better nutrition and better fitness. As a coach, scientist and physiologist Dr. Wells has amassed more than 20 years of world-class experience with the extremes of human health and performance. As a result, he understands how it is possible for anyone to have better health, energy and fitness.

Dr. Wells is an Assistant Professor in Kinesiology and Physical Education at the University of Toronto. He is also an Associate Scientist in Physiology and Experimental Medicine at The Hospital for Sick Children. Previously, Dr. Wells served as the Director of Sport Science at the Canadian Sport Centre, taught elite sport coaches at the National Coaching Institute and worked with the Royal Canadian Golf Association as its Exercise Physiologist.

Dr. Wells has coached, trained and inspired dozens of elite athletes to win medals at the Commonwealth Games, World Championships and the Olympics. He makes regular appearances on national television and radio as a health and performance expert, contributes articles for numerous magazines, research papers for scientific journals and is a high-demand speaker for better health, fitness and performance around the world.

In his free time, Dr. Wells practices what he preaches. Once an international level competitive swimmer, he has also competed in three marathons including the Nanisivik Marathon, one of the world's toughest marathons 600 miles north of the Arctic circle, Ironman Canada and the Tour D'Afrique – which at 11,000 kilometers is the longest bike race in the world.

CERTIFICATES/AWARDS

Dr. Rand presented certificates to students who successfully completed the Cardiovascular Sciences Collaborative Program over the past year:

MSc

Cynthia Abbasi, PSL (Supervisor: A. Gramolini)
Richard Cheng, PSL (Supervisor: C. Hudson)
Zackary Goodman, EXS (Supervisor: S. Thomas)
Taylor Gray, EXS (Supervisor: J. Goodman)
Timothy Mak, PSL (Supervisor: G. Hare)
Amelia Mociornita, IMS (Supervisor: V. Rao)
Ethan Ruderman, EXS (Supervisor: G. Wells)
Uswa Shahzad, IMS (Supervisor: T. Yau)
Stephen Wright, EXS (Supervisor: J. Goodman)
Nima Zamiri, IMS (Supervisor: K. Nanthakumar)



PhD

Mitesh Badiwala, IMS (Supervisor: V. Rao)

Laura Banks, IMS (Supervisor: B. McCrindle)
Emma O'Donnell, EXS (Supervisor: J. Goodman)

Congratulations to all the students and success in their future career endeavours!

Continuing the spirit of success and achievement, the annual CSCP student awards were presented by Dr. Margaret Rand.

2014 Bigelow Book Prize Recipient – Amish Jain



The CSCP congratulates Amish Jain, a doctoral candidate in the Department of Physiology, supervised by Dr. R. Jankow, The Hospital for Sick Children, who was presented with the 2014 Bigelow Book Prize for his continued and sustained academic scientific excellence. Birth is a complex physiological process where several cardio-pulmonary adaptations occur for a fetus to change from a high pressure intra-uterine to a low pressure extra-uterine pulmonary 'circuit'. Although most babies undergo this process successfully, a significant proportion suffers from 'failure' or 'delay' in transition. This is a very common reason for newborn babies to need intensive care treatment and in its most severe form, which is said to occur in 4 to 10% of admissions in tertiary intensive care facilities, carries a high risk of death. Even though this disease and associated complications is a common occurrence during the neonatal period, currently no tools are available for clinicians to objectively diagnose or monitor disease progression. Further, the underlying determinants for adverse outcomes are poorly described. My research program is focused on improving the current 'state of affairs' for this population. This research primary involves studying human babies with the use of high resolution ultrasound (echocardiography), which is the only clinically feasible investigation in babies. Using longitudinal functional echocardiographic evaluations, I am looking to describe cardio-pulmonary hemodynamic changes associated with normal birth in well babies and generate clinically applicable normative data. Further, using the same methodology, I am studying the relevance of right heart function as a determinant of adverse outcomes in babies who suffer from pathological alternations in postnatal transition. This includes studying the use of new echocardiography methods to quantify right heart function as well as establish normative data for further comparison with disease population.



L-R: Dr. Amish Jain, Margaret Rand

2013-14 Lorne Phenix Graduate Award Recipient – Mark Blaser



The CSCP congratulates Mark Blaser, a doctoral candidate in the Institute of Biomaterials and Biomedical Engineering, supervised by Dr. C. Simmons, who was presented with the 2013-14 Lorne Phenix Graduate Award for his continued and sustained academic scientific excellence. Aortic valve disease (AVD) is a common cardiac condition which afflicts ~25% of individuals over 65. It is associated with a 50% increased risk of mortality and incidence rates differ substantially between the two sexes. There are no pharmacological treatments, and risky surgical replacement of the valve is required when it becomes fibrotic, calcified, and impedes proper pumping of the heart. Little is known about how AVD develops, and so the purpose of my research is to better understand this process. I have focused on a small peptide whose expression in the aortic valve is three times higher in males than females. Using mice genetically deficient in this protein, my work has determined that it plays a key role in protecting against AVD onset. I also found that its loss spurred congenital (existing prior to birth) malformations of the aortic valve which predispose individuals to AVD later in life. As with AVD, congenital malformations of the valve are strongly linked to patient sex in humans. This work has furthered our understanding of why AVD progresses differently in men and women, and will aid in the development of novel treatment strategies for this disease (more effective and targeted pharmaceutical intervention).



L-R: Dr. Margaret Rand, Mark Blaser, Kathryn Phenix

Following the awards presentations, students socialized and networked during the complimentary lunch.



ACADEMIC CV WORKSHOP

This year Dr. Jonathan Turner, a career educator at the UoT Career Centre, was invited to provide a short academic CV workshop to the students. Dr. Turner's presentation was well received and tailored specifically to CSCP students. The talk provided a great opportunity to think about how to construct a competitive and enticing CV for academic positions, a very important lesson for aspiring scientists. He also provided resources for developing an academic CV,

including one-on-one sessions provided by the UoT Career Centre. Dr. Turner's talk was excellent and we hope to invite him back again next year.

SESSION PRESENTATION AWARD WINNERS

Each presenter was evaluated for the best oral presentation and most innovative research by members of the organizing committee. Criteria, which was objectively scored, included content (quality of research, research knowledge), visuals (clarity, readability), delivery (voice level, pacing), translational potential of research, data interpretation and analysis (research techniques), ability to answer questions and overall impression. Certificates and gifts were presented to the winners by the Organizing Committee Co-Chair Co-Chair, Robert Civitarese and Committee Member, Karen Bai.



Congratulations to awardees Cedric Manlhiot (Session I) for "*Most Innovative Research*" for his novel research attempting to reevaluate current treatments for children undergoing cardiac surgery.

(L-R) Cedric Manlhiot, Robert Civitarese

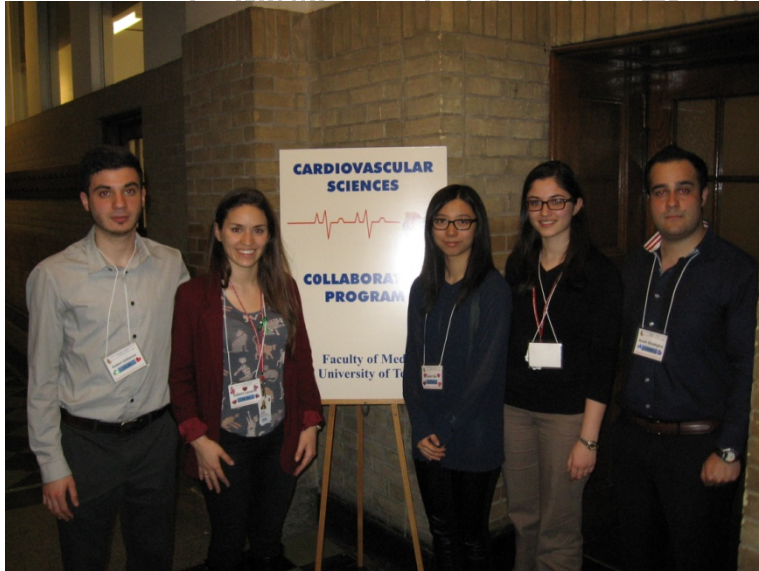


Congratulations to Kathryn Lipsett (Session II) for "*Best Oral Presentation*" for her uplifting and charismatic presentation and ability to fascinate and persuade questioners.

(L-R): Karen Bai, Kathryn Lipsett

CLOSING

The Student Research Day was a success and would not have been possible without the combined efforts of several individuals. Thank you to the Organizing Committee (*Arash Ghashghai (Co-Chair), Robert Civitarese (Co-Chair), Tina Binesh Marvasti, Ji Dong (Karen) Bai and Julieta Lazarte*) for all their hard work, Victoria Simpson for her support and knowledge in making this day successful, Professors Moody and Wells for their outstanding and inspiring presentations, and the Sessions Chairs, Arash Ghashghai, Robert Civitarese and Tina Binesh Marvasti for keeping the sessions running smoothly.



(L-R): Robert Civitarese, Julieta Lazarte, Karen Bai, Tina Binesh Marvasti, Arash Ghashghai

We are also grateful to the generous financial sponsorship of Hart House – the good ideas fund;



the Bigelow family; the Phenix family; and the contributions from our participating units.

Thank you to all the CSCP students and to all involved in making the 15th Annual CSCP Student Research Day a great success!

STUDENT FORUM

This event is an excellent opportunity for new students of the CSCP to meet one another and for senior students to catch up with old friends, and develop relationships with the up and comers. Discussions range from basic research, laboratory trials and triumphs, to future academic /career directions. Connections for research collaboration, as well as friendships are developed, and all those in attendance thoroughly enjoy the festive dinner and the change to meet other students. Due to a lack of funding we were unable to provide the CSCP student body with the 2013 CSCP Forum and Dinner. We hope to resume this event in 2014.

CARDIOVASCULAR SUMMER INITIATIVE (CSI)

The CSI program provides the graduate cardiovascular student community, as well as the undergraduate community, a more inclusive feel for the cardiovascular field. It gives them a broader frame of reference than just the lab experience and offers them chances to delve into areas they might not considered. The CSI program is a field trip experience where students are given the opportunity to go and learn more about various areas of cardiovascular research and potential alternative career paths. Field trips have included the MRI/CT Imaging Centre at St. Michael's Hospital, the Toronto Cardiac Rehabilitation outpatient centre, tour of an exercise physiology Lab, tour a pharmaceutical research division, tour a retinal blood flow lab, or a tour of the Surgical Skills Centre at Mt. Sinai Hospital, to name a few.

CIRCULATION ROUNDS

The CSCP student body organizes and runs this event which highlights the diverse nature of research carried out by our faculty. These academic rounds rotate through the various research sites at the University of Toronto and each event is hosted by a faculty member where their research focus is the topic of the day. The goal of this event is to provide graduate students, post-doctoral fellows, research associates, undergraduates and project/summer students with the chance to develop an appreciation of the vast range of excellent research being conducted in our widespread community. The students do a great job organizing these events.

Title: Role of Nrf2 in Cardiac Allograft Vasculopathy

Location: Toronto General Hospital, Department of Cardiac Surgery

Date: November 28, 2013

Host: Arash Ghashghai, PhD Candidate (Supervisor: Dr. Vivek Rao)

Summary:

Cardiac allograft vasculopathy (CAV) remains a troublesome long-term complication of heart transplantation. It is manifested by a unique and unusually accelerated form of coronary disease affecting both intramural and epicardial coronary arteries and veins. CAV is characterized by vascular injury induced by a variety of noxious stimuli, including the immune system response to the allograft, ischemia-reperfusion injury, viral infection, immunosuppressive drugs, and classic risk factors such as hyperlipidemia, insulin resistance, and hypertension. The obstructive vascular lesions are thought to progress through repetitive endothelial injury followed by repair response.

Arash discussed mechanisms of Cardiac Allograft Vasculopathy (CAV) with focus on non-immune mediated injuries. With focus on the relationship between Nrf2 and cyclosporine, he discussed how cyclosporine could lead to CAV. He further discussed and justified for his methodology and introduced via a video a heterotrophic heart transplant mouse model in which they have developed in the lab. Finally, he concluded that increased oxidative stress due to cyclosporine seems to be associated with impairment in Nrf2 signalling which leads to CAV. During the round, we were also given a tour of the Toronto General Hospital's Cardiovascular Surgery Department and Dr. Rao's laboratory to look at various technologies used for this study.



Fig. 1: Arash Ghashghai presenting his research to CSCP students

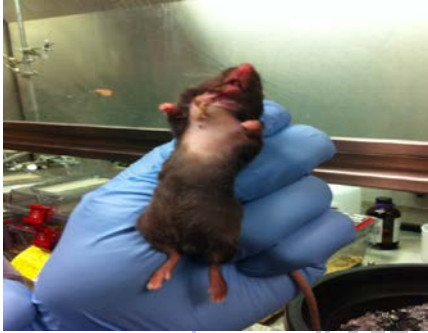


Fig. 2: Heterotrophic mouse model developed by Dr. Rao's team for studying CAV

Title: Genomics of Congenital Heart Disease

Location: Ontario Heart Centre Biobank, Peter Gilgan Centre for Research and Learning

Date: February 13, 2014

Host: Dr. Ashok Kumar Manickaraj, post-doctoral fellow in Dr. Seema Mital laboratory

Summary:

Congenital heart defects occur in one out of every 100 newborns. The causes of most forms of congenital heart defects are not known. Today, advances in technology permit us to sequence the entire genome of an individual. This has opened up new opportunities to do large-scale studies to find out which genes cause heart disease in children and adults.

Heart Centre Biobank provides a resource to investigators to study the genetic and environmental causes of congenital heart disease. This multi-centre research network has resulted in the establishment of the first Ontario province-wide biorepository and registry of patients with congenital and other forms of heart disease. The network provides a resource to investigators to study the genetic and environmental causes of heart defects and other diseases through the study of DNA, tissue, and skin samples from affected individuals. The ultimate goal is to develop better ways to diagnose, prevent and treat disease in children and adults and to improve their overall health and well-being. This exciting initiative, the first of its kind in Ontario, is an example of national and international collaboration and innovation in human disease research.

The circulation round included touring the facilities at the Peter Gilgan Research Tower and learning about the techniques used in studying genetics of congenital heart disease and discussions amongst the members of the Heart Centre Biobank and CSCP students which could result in future collaborations.



Fig. 3: Dr. Manickaraj discussing the various technological advances used for identifying genes involved in congenital heart disease

AWARDS

MEDTRONIC TRAVEL AWARD

Two competitions were held (spring and fall) for the Medtronic Travel Award. This award, established in 1995, helps to defray costs of travel for Program students presenting their research work at recognized scientific meetings. Students supported by this award this academic year were:

Fall 2013:

Kaustabh Singh, PhD Candidate, Dept. of Laboratory Medicine and Pathobiology (Supervisor: Dr. Ren-Ke Li)

American Heart Association Annual Scientific Session, Dallas TX, November 2013

“Reduced β -catenin expression in mouse cardiomyocytes increases matrix metalloproteinase activation and apoptosis producing greater post-infarction ventricular dysfunction”

Jeff Kroetsch, PhD Candidate, Dept. of Physiology (Supervisor: Dr. S-S. Bolz)

North American Vascular Biology, Cape Cod, MA, October 2013

“Tumor necrosis factor α regulates myogenic responsiveness and blood pressure control”

Mark Blaser, PhD Candidate, Institute of Biomaterials & Biomedical Engineering (Supervisor: Dr. C. Simmons)

North American Vascular Biology, Cape Cod, MA, October 2013

“Versican is markedly elevated during the early pathogenesis of functionally-significant diet-induced aortic valve disease in mice”

Spring 2014:

Lee-Anne Khuu, PhD Candidate, Institute of Medical Science (Supervisor: Dr. Chris. Hudson)

Association for Research in Vision Science and Ophthalmology, Orlando FL, May 2014

“Retinal blood flow is reduced in patients with non-proliferative diabetic retinopathy”

BIGELOW BOOK PRIZE

This prize was established in 1995 by the Cardiovascular Sciences Collaborative Program to recognize and honor a pioneer clinician and scientist in the field of cardiovascular sciences. Awardees should exemplify the personal traits of Dr. Bigelow - curiosity, drive, and scientific integrity. The award is given in every year that a qualified student is identified. Qualifications include sustained academic scientific excellence, innovative experimental approaches, original discoveries and good scientific productivity. Some weight is given to work that has recognizable clinical relevance, especially that which promises to improve patient care. The Bigelow Book Prize consists of 2 books written by Dr. W.G. Bigelow entitled “Cold Hearts” and “Mysterious Heparin” and a keeper plaque created to honor Dr. Bigelow. Appropriate candidates are identified and the final decision is made by the Program Committee.

1995 – John S. Ikonmidis
1997 – Vivek Rao
1999 – Gideon Cohen
2001 – Saeid Babaei
2003 – Paul W.M. Fedak

1996 – Shona M. Torrance
1998 – Bryce Cowan
2000 – Michael Borger
2002 – Wm. Jack Wallen
2004 – Nathalie Lapointe

2005 – Karim Bandali
2007 – Patricia Rose
2009 – Jane MacIver
2011 – Emma O'Donnell
2013 – Katherine Allan

2006 – Danny Ramzy
2008 – Mitesh Badiwala
2010 – Carlo Cifelli
2012 – Laura Banks
2014 – Amish Jain



Amish Jain, PhD Candidate, Department of Physiology
Supervisor: Dr. R. Jankov, The Hospital for Sick Children

Birth is a complex physiological process where several cardio-pulmonary adaptations occur for a fetus to change from a high pressure intra-uterine to a low pressure extra-uterine pulmonary 'circuit'. Although most babies undergo this process successfully, a significant proportion suffers from 'failure' or 'delay' in transition. This is a very common reason for newborn babies to need intensive care treatment and in its most severe form, which is said to occur in 4 to 10% of admissions in tertiary intensive care facilities, carries a high risk of death. Even though this disease and associated complications is a common occurrence during the neonatal period, currently no tools are available for clinicians to objectively diagnose or monitor disease progression. Further, the underlying determinants for adverse outcomes are poorly described. My research program is focused on improving the current 'state of affairs' for this population. This research primary involves studying human babies with the use of high resolution ultrasound (echocardiography), which is the only clinically feasible investigation in babies. Using longitudinal functional echocardiographic evaluations, I am looking to describe cardio-pulmonary hemodynamic changes associated with normal birth in well babies and generate clinically applicable normative data. Further, using the same methodology, I am studying the relevance of right heart function as a determinant of adverse outcomes in babies who suffer from pathological alternations in postnatal transition. This includes studying the use of new echocardiography methods to quantify right heart function as well as establish normative data for further comparison with disease population.

LORNE PHENIX GRADUATE AWARD

This award was made possible by a generous donation in the memory of Mr. Lorne Phenix by Mrs. Geraldine Phenix. It is her hope that this award will focus attention on the issue of heart disease – which is still the #1 killer of both men and women in Canada. In addition, women who have heart problems are at least equal if not at greater risk than men and Mrs. Phenix hopes that this award will serve to encourage trainees to pursue this area of research to address this particular problem. It is awarded to a graduate student in the Faculty of Medicine on the basis of research and academic excellence. The award consists of a cash prize and certificate and is presented to the recipient at the Annual Student Research Day. Appropriate candidates are identified and a winner is selected by the Awards Subcommittee. The award is given in every year that a qualified student is identified and presented at the Annual Student Research Day.

2001 – Wm. Jack Wallen
2003 – Shathiyah Kulandavelu
2005 – Nesime Askin

2002 – Wm. Jack Wallen
2004 – Rachel Mitchell
2006 – Danny Quaglietta

2007 – Emma O'Donnell
2009 – Amir Manbachi
2012 – Danielle Bentley

2008 – Luke Tan
2010 – Shazareen Khan
2013 – Mark Blaser



Mark Blaser, PhD Candidate, Institute of Biomaterials and Biomedical Engineering
Supervisor: Dr. C. Simmons

Aortic valve disease (AVD) is a common cardiac condition which afflicts ~25% of individuals over 65. It is associated with a 50% increased risk of mortality and incidence rates differ substantially between the two sexes.

There are no pharmacological treatments, and risky surgical replacement of the valve is required when it becomes fibrotic, calcified, and impedes proper pumping of the heart. Little is known about how AVD develops, and so the purpose of my research is to better understand this process. I have focused on a small peptide whose expression in the aortic valve is three times higher in males than females. Using mice genetically deficient in this protein, my work has determined that it plays a key role in protecting against AVD onset. I also found that its loss spurred congenital (existing prior to birth) malformations of the aortic valve which predispose individuals to AVD later in life. As with AVD, congenital malformations of the valve are strongly linked to patient sex in humans. This work has furthered our understanding of why AVD progresses differently in men and women, and will aid in the development of novel treatment strategies for this disease (more effective and targeted pharmaceutical intervention).

FINANCIAL SUPPORT

ONTARIO STUDENT OPPORTUNITY TRUST FUNDS (OSOTF) AWARD

The OSOTF award refers to a class of awards that have resulted from the Ontario government's "matching" program. Under the program every dollar of donation received for student assistance has been matched by the government as well as the university on a dollar-for-dollar basis. There are two major conditions for all OSOTF awards; recipients must be Ontario residents and demonstrate financial need. However, the CSCP has additional eligibility criteria that must be adhered to, including excellence in science and academic performance. One competition is held per academic year. The applications are handled centrally through the Office of the Associate Dean, Inter-Faculty and Graduate Affairs. Applications pertaining to the CSCP are sent to us and are then adjudicated by a subcommittee chaired by Dr. Margaret Rand. Committee recommendations are then forwarded to the OSOTF Awards Committee (Faculty of Medicine). The following students received funding for the 2013-2014 year:

Jake Cosme, PhD Candidate, Dept. of Physiology (Supervisor: Dr. T. Gramolini)
Mehroz Ehsan, MSc Candidate, Institute of Medical Science (Supervisor: Dr. S. Verma)
Lee-Anne Khuu, PhD Candidate, Institute of Medical Science (Supervisor: Dr. C. Hudson)
Azza Ramadan, PhD Candidate, Institute of Medical Science (Supervisor: Dr. S. Verma)

QEII – GSST (GRADUATE SCHOOL SCIENCE & TECHNOLOGY)

The QEII program is designed to encourage excellence in graduate studies in science and technology. The program is supported through funds provided by the Ministry of Training, Colleges and Universities and by funds raised by the University of Toronto and the Heart & Stroke Foundation of Ontario. To be awarded to graduate students at the University of Toronto who are pursuing cardiovascular/stroke research. Students must have maintained an overall A-average over the last two years of study at the post-secondary level and exhibit research ability/potential, good communication skills and interpersonal/leadership abilities. The following students were ranked and offered an award:

<u>Name</u>	<u>Degree</u>	<u>Dept.</u>	<u>Supervisor</u>
Idan Roifman	MSc	HPME	J. Tu
Mehroz Ehsan	MSc	IMS	S. Verma
Brian Vadasz	MSc	LMP	H. Ni
Jake Cosme	PhD	PSL	A. Gramolini
Kelsey McLaughlin	PhD	PCL	J. Parker
Sam Esfandiari	PhD	IMS	S. Mak
Kaustabh Singh	PhD	LMP	R-K. Li
Farrokh Mansouri	MHSc	IBBME	K. Nanthakumar
Zhen Lu	MSc	PSL	A. Gramolini
Kangbin Zhou	PhD	PCL	J. Parker
Sahar Ghanavati	PhD	MBP	J. Sled

ADVERTISING MATERIAL

The CSCP maintains and updates its web site (www.cscp.utoronto.ca). Faculty information is updated whenever we are notified of relevant changes. Collaborating departments are encouraged to provide hypertext links to the CSCP on their web site.

ACKNOWLEDGEMENTS

The Cardiovascular Sciences Collaborative Program would like to thank the following sponsors for their generous support: Medtronic Canada, the Heart and Stroke/Richard Lewar Centre of Excellence, the Lorne Phenix Family, the Bigelow Family, and the contributions from our participating units (see page 4).

STUDENTS

Name	Supervisor	Degree	Department
Cynthia Abbasi	A. Gramolini	MSc	PSL
Rachel Adams	C. Simmons	MSc	BME
Alanna Adleman	C. Hudson	MSc	IMS
Katherine Allan	P. Dorian	PhD	IMS
Hajera Amatullah	H. Zhang	PhD	PSL
Nesime Askin	C. Wittnich	PhD	PSL
Mitesh Badiwala	V. Rao	PhD	IMS
Karen Bai	X-Y. Wen	MSc	IMS
Laura Banks	B. McCrindle	PhD	IMS
Stephanie Beadman	S. Heximer	MSc	PSL
Danielle Bentley	S. Thomas	PhD	EXS
Tina Binesh Marvasti	A. Moody	MSc	IMS
Mark Blaser	C. Simmons	PhD	BME
Antoinette Bugyei-Twum	K. Connelly	PhD	IMS
Hao Chen	H. Leong-Poi	PhD	IMS*
Henry Cheng	J. Fish	MSc	LMP
Richard Cheng	C. Hudson	MSc	PSL
Robert Civitarese	K. Connelly	MSc	IMS
Jake Cosme	A. Gramolini	PhD	PSL*
Danny Dinh	S-S. Bolz	MSc	PSL
Mehroz Ehsan	S. Verma	MSc	IMS
Suzan El-Rass	X-Y. Wen	PhD	IMS*
M. Sadegh Farahvash	C. Hudson	MSc	IMS
Carlos Fernando	G. Moe	MSc	IMS
Arash Ghashghai	V. Rao	PhD	IMS
Gabriela Ghisi	S. Thomas	PhD	EXS
Zachary Goodman	S. Thomas	MSc	EXS
Taylor Gray	J. Goodman	MSc	EXS
June (Hui Jun) Guo	A. Giacca	MSc	PSL
Amish Jain	R. Jankov	PhD	PSL
Hany Kashani	N. Paul	PhD	IMS
P. (David) Kosinski	A. Kassner	MSc	IMS
Lee-Anne Khuu	C. Hudson	PhD	IMS
Jeffrey Kroetsch	S-S. Bolz	PhD	PSL
Susith Kulasekara	C. Hudson/J. Flanagan	PhD	IMS*
Robert Lakin	J. Goodman	PhD	EXS
Zachary Laksman	P. Backx	MSc	IMS
Alan Lam	C. Simmons	PhD	BME
Julieta Lazarte	V. Rao	MSc	IMS
Elena Leontieva	C. Hudson	PhD	IMS
Kathryn Lipsett	A. Gramolini	MSc	PSL
Zhen Lu	A. Gramolini	MSc	PSL
Timothy Mak	G. Hare	MSc	PSL
Cedric Manlhiot	B. McCrindle	PhD	IMS
Farrokh Mansouri	N. Nanthakumar	MSc	BME
Antonio Mauro	X-Y. Wen	PhD	IMS*
Adam McKillop	B. McCrindle	PhD	IMS

Azadeh Mofid	H. Leong-Poi	PhD	IMS
Mark Moon	P. Liu	PhD	IMS
Omodele Olowoyeye	A. Moody	PhD	IMS
Aric Pahnke	M. Radisic	PhD	CHE
Nour Qa'aty	A. Hinek	MSc	IMS
Azza Ramadan	S. Verma	PhD	IMS
Ethan Ruderman	G. Wells	MSc	EXS
Rawan Rumman	R. Parekh	MSc	IMS
Patricia Rose	C. Hudson	PhD	IMS (<i>inactive status</i>)
Shira Sasson	J. Parker	MSc	PCL
Joobin Sattar	S. Heximer	MSc	PSL
Uswa Shahzad	T. Yau	MSc	IMS
Eric Shikatani	M. Husain	PhD	LMP
Kaustabh (Bunty) Singh	R-K. Li	PhD	LMP
Navneet Singh	A. Moody	PhD	IMS
Marianne Skrinjar	J. Goodman	MSc	EXS
Brian Vadasz	H. Ni	MSc	LMP
Travis Wilder	C. Caldarone	MSc	IMS
Steve Wright	J. Goodman	PhD	IMS*
Nima Zamiri	K. Nanthakumar	MSc	IMS
Aileen Zhong	C. Simmons	MaSc	BME
Kangbin Zhou	J. Parker	PhD	PCL
Lily Zou	P. Dorian	MSc	PCL

* Students registered during the year at MSc and PhD training levels.

CONVOCATED STUDENTS/FOLLOW-UP

Cynthia Abbasi, MSc, Department of Physiology (Supervisor: Dr. A. Gramolini): “ERp44 is Critical for Cardiac Development and Function”
(*Medical School*)

Nesime Askin, PhD, Department of Physiology (Supervisor: Dr. C. Wittnich): “Metabolic Regulation of Fast- and Slow-Twitch Skeletal Muscles by Estradiol and Progesterone in Females and Their Impact During Ischemia”
(*Education and Research in Marine Sciences*)

Mitesh Badiwala, PhD, Institute of Medical Science (Supervisor: Dr. V. Rao): “The Endothelial Response to Injury: Defining the Role of Epidermal Growth Factor-Like Domain 7 and Endothelial Protective Strategies”
(*Academic Cardiac Surgery*)

Laura Banks, PhD, Institute of Medical Science (Supervisor: Dr. B. McCrindle): “The Association Between Cardiac Energy Metabolism and Physical Activity During Adolescence and Early Adulthood”
(*Post-Doctoral Research Fellowship, Mount Sinai Hospital*)

Richard W. Cheng, MSc, Department of Physiology (Supervisor: Dr. C. Hudson): “Vascular Reactivity Response Characteristics to Hypoxia”
(*Medical School – Optometry*)

Zachary Goodman, MSc, Department of Exercise Sciences (Supervisor: Dr. S. Thomas): “The Cardiovascular Effects of Recreation Hockey in Middle-Aged Men”
(*Practicing Kinesiologist*)

Taylor Gray, MSc, Department of Exercise Sciences (Supervisor: Dr. J. Goodman): “Pulmonary Vascular Mechanics in Long-Standing Male Endurance Athletes at Rest and During Exercise”
(*Academia*)

Jeffrey T.E. Kroetsch, PhD, Department of Physiology (Supervisor: Dr. S-S. Bolz): “The Regulation of the Microvascular Myogenic Response in Resistance Arteries: The Role of Tumor Necrosis Factor α /Sphingosine-1-Phosphate Signalling”
(*Postdoctoral Studies*)

Timothy H. Mak, MSc, Department of Physiology (Supervisor: Dr. G. Hare): “Mechanisms that Jeopardize Skeletal Muscle Perfusion During Surgery”
(*MD/PhD Program*)

Emma O’Donnell, PhD, Department of Exercise Sciences (Supervisor: Dr. J. Goodman):
Cardiovascular Consequences of Estrogen Deficiency: Studies in Premenopausal Women”
(*Post-Doc, Toronto General/Faculty position*)

Ethan Ruderman, MSc, Department of Exercise Sciences (Supervisor: Dr. G. Wells): “Effects of Acute Aerobic Exercise on the Pharmacokinetics of the Anti-anxiety/Anti-depressant Drug Sertraline”
(*Medical School*)

Uswa Shahzad, MSc, Institute of Medical Science (Supervisor: Dr. T. Yau): “Transmyocardial Revascularization Enhances Mesenchymal Stem Cell engraftment in Infarcted Hearts Through SCF-C-KIT and SDF-1 – CXCR4 Signaling Axes”
(*PhD/IMS, University of Toronto*)

Stephen Wright, MSc, Department of Exercise Sciences (Supervisor: Dr. J. Goodman): “Atrial Phasic Function During Exercise: The Role of Atrioventricular Coupling”
(*PhD/IMS, University of Toronto*)

Nima Zamiri, MSc, Institute of Medical Science (Supervisor: Dr. K. Nanthakumar): “Ryanodine Receptor Modulator, Dantrolene Sodium, Improves Survival Following Ventricular Fibrillation”
(*Internal Medicine/Cardiovascular Sciences Research*)

AWARDS AND HONORS

NAME	HONORS AND AWARDS
Rachel Adams	- Barbara & Frank Milligan Graduate Fellowship, IBBME, UofT, 2013
Katherine Allan	- SGS Conference Grant, 2013 - Have a Heart Bursery, Canadian Cardiovascular Society, 2013
Hajera Amatullah	- Dr. Albert & Doris Fields Gradual Scholarship, 2014 - CIHR Travel Award – Institute of Circulatory & Respiratory Health, 2014 - School of Graduate Studies Conference Grant, UofT, 2014
Karen Bai	- Banting and Best Diabetes Centre Novo Nordisk Graduate Studentship,

	2013-2014
Danielle Bentley	<ul style="list-style-type: none"> - CIHR Banting & Best Canadian Graduate Scholarship & Doctoral Research Award - Lorne Phenix Graduate Award, CSCP, 2013
Mark Blaser	<ul style="list-style-type: none"> - CIHR CGS-D Michael Smith Foreign Study Supplement, University of California, Irvine, 2013-2014 - Lorne Phenix Graduate Award, CSCP, 2013 - Medtronic Travel Award, CSCP, 2013
Antoinette Bugyei-Twum	<ul style="list-style-type: none"> - CIHR Strategic Training Fellowship, UofT, 2013-2014 - St. Michael's Hosp/Li Ka Shing Knowledge Inst Scholarship, 2013-2014 - Bram Appel Graduate Student Award, Dept. Medicine, UofT 2013-2014 - School of Graduate Studies Conference Grant, UofT, 2013-2014
Henry Cheng	<ul style="list-style-type: none"> - CSATVB Trainee Travel Award, CSATVB, 2014 - ORT Travel Award, UHN, 2013 - Ontario Graduate Studentship, 2013-2014 - HSRLCE Studentship, 2013-2014 (Declined)
Robert Civitarese	<ul style="list-style-type: none"> - Department of Medicine Graduate Student Award, UofT, 2013-2014
Jake Cosme	<ul style="list-style-type: none"> - QEII/GSST HSFO, 2013-2014 - Cardiovascular Sciences Collaborative Program OSOTF 2013-2014
Danny Dinh	<ul style="list-style-type: none"> - NSERC MATCH Scholarship, 2013-2014 - Ontario Graduate Scholarship, 2014
Mehroz Ehsan	<ul style="list-style-type: none"> - Cardiovascular Sciences Collaborative Program OSOTF 2013-2014 - Honorable Mention – IMS Scientific Day, Poster Pres, 2014 - St. Michael's Hospital Research Travel Award, 2014 - Honorable Mention – SMH Research Training Ctr Research Day, 2013 - Heart & Stroke QEII-GSST, UofT, 2013-2014
Suzan El-Rass	<ul style="list-style-type: none"> - SGS Conference Grant, 2014 - Best poster presentation award, Society of Chinese Bioscientists in America, 2014 - QEII/GSST Dr. Arnie Aberman Scholarship, 2013-2014 - 2nd Place poster presentation award, St. Michael's Hospital Keenan Research Centre Research Day, 2013 - Travel Award, Keenan Research Centre, St. Michael's Hospital, 2013
Gabriela de Melo Ghisi	<ul style="list-style-type: none"> - UHN's Office of Research Trainees (ORT) Travel Award, 2014 - The Bertha Rosenstadt Fellowship Award / University of Toronto, 2014 - TRI Research Day - Team Excellence Award Winner 2013
Amish Jain	<ul style="list-style-type: none"> - POWER Teacher Award, Dept. of Pediatrics, UofT, 2013 - Bigelow Book Prize, Cardiovascular Sciences Collaborative Program, UofT, 2014 - Infection Prevention Safety and Performance Award, Mount Sinai Hospital, 2013 - Teacher of the Year Award, Neonatal-Perinatal Medicine Training Program, UoT, 2013
Hany Kashani	<ul style="list-style-type: none"> - School of Graduate Studies Conference Grant, 2013
Lee-Anne Khuu	<ul style="list-style-type: none"> - ARVO Travel Fellowship, American Academy of Optometry, 2014 - Medtronic Travel Award, CSCP, UoT, 2014 - Doctorate Fellowship, Vision Science Res Program Award, UoT, 2013 - Graduate Student Award, CSCP, UoT, 2013
Robert Lakin	<ul style="list-style-type: none"> - Gordon K. Moe Young Investigator Award, UNYCES, 2014 - Teaching Fundamentals Certificate, UofT, 2014 - Mary Gertrude l'Anson Scholarship, UofT, 2013-2015
Zachary Laksman	<ul style="list-style-type: none"> - Eliot Phillipson Clinical Scientist Training Award, UofT, 2014 - 1st Prize, Case Challenge, Winter Arrhythmia Update, Whistler, BC, 2014 - Co-App, Heart & Stroke Foundation Grant, 2014-2017 - HSRLCE Fellowship Award, 2013

Elena Leontieva	- Graduate Student Scholarship OSOTF Award, Vision Science Research Program, University of Toronto, 2013-2014 - Institute of Medical Science Open Award, UofT, 2013
Zhen Lu	- QEII/GSST, HSFO, UofT, 2013-2014
Cedric Manlhiot	- CIHR Operating Grant. Cardiovascular health in young adults with a History of Kawasaki Disease. 2013-2018 - CIHR Team Grant. Novel approaches to the prediction, diagnosis and Treatment of cardiac late effects in survivors of childhood cancer. 2012-2017 - HSFO. Determinants of disease progression and recovery in paediatric Heart failure. 2012-2016 - NIH/Nat. Heart, Lung & Blood Inst. Pediatric Heart Network – The Hospital for Sick Children, Toronto, 2011-2016 - CIHR Operating Grant. Clinical Assessment of Thrombosis in Children And Heart surgery: The CATCH Study. 2010-2015 - <i>Most Innovative Research</i> for “Coagulation system activity and heparin sensitivity in children undergoing cardiac surgery” Cardiovascular Sciences Collaborative Program, 15 th Annual Student Research Day
Farrokh Mansouri	- Heart & Stroke QEII-GSST Scholarship, 2013-2014
Tina Binesh Marvasti	- Yow Kam-Yuen Scholarship in Diabetes Research, 2013-2014 - IMS Scholarship, UofT, 2013 - Top Presentation Award, HSC Research Day, 2013
Antonio Mauro	- Institute of Medical Science Open Fellowship Award, UofToronto, 2013 - Queen Elizabeth II Graduate Scholarship in Science and Technology, Ontario Government, University of Toronto, 2013
Azadeh Mofid	- Graduate Student Award, Dept. Medicine, UofT, 2013-2014
Mark Moon	- Coralie Lalonde Innovation Award, Finalist, 2014
Azza Ramadan	- OSOTF, CSCP, 2013
Rawan Rumman	- IMS Scholarship, UofT, 2013
Shira Sasson	- Fellowship Scholarship, UofT, 2012-2014
Jobin Sattar	- CIHR Graduate Scholarship, 2014 - Fellowship Award, UofT, 2013 - Colin Bayliss Award, Dept Physiology, UofT, 2013
Eric Shikatani	- Canadian Hypertension Congress Travel Award, 2014 - ATVB Travel Award for Young Investigators, Am Heart Assoc, 2013 - Canadian Hypertension Congress Travel Award, 2013 - Poster 1 st place, TGH Res Institute Research Day, 2013 - Council on Basic Cardiovascular Science Travel Award, European Soc for Cardiology, 2013
Kaustabh (Bunty) Singh	- Connaught International Student Scholarship, 2013-2014
Navneet Singh	- Mergelas Graduate Student Scholarship, FoM, UofT, 2014 - CIHR Fellowship, 2012-2016 - Dept of Medical Imaging Grant, UofT. MRI physicist salary support. 2011-2014
Marianne Skrinjar	- Glenn H. Carter Fellowship, Exercise Intervention & Disease Prevention, 2014
Stephen Wright	- Dept of Medicine Graduate Student Award, 2013-2014
Aileen Zhong	- Barbara & Frank Milligan Fellowship, UofT, 2013-2014
Kangbin Zhou	- QEII-GSST Scholarship, UofT, 2013-2014 - Connaught International Scholarship, 2012 - Present

PUBLICATIONS

Advani A, **Bugyei-Twum A**, Connelly KA: Cardiovascular effects of incretins in diabetes. *Can J Diabetes*, 2013;37(5):309-314.

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Burns JC, Herzog L, Fabri O, Tremoulet AH, Rodo X, Uehara R, Burgner D, Bainto E, Pierce D, Tyree M, Cayan D, Kawasaki Disease Global Climate Consortium (**Manlhiot C**): Seasonality of Kawasaki disease: a global perspective. *PLoS One*, 2013;8(9):e74529 [Epub 2013-09-18].

Cassagneau R, Hanninen M, Laksman Z, Manlucy J, Yee R: An "irritating" magnet test. *Pacing and Clin Electrophysiol*. Epub. 2014.

Chahal N, **Manlhiot C**, Wong H, McCrindle BW: Effectiveness of omega-3 polysaturated fatty acids (fish oil) supplementation for treating hypertriglyceridemia in children and adolescents. *Clin Pediatr*, 2014;53(7):645-651 [Epub 2014-03-18].

Chahal N, Wong H, **Manlhiot C**, McCrindle BW: Education for lifestyle-based management of hyperlipidemia in children enhanced by a collaborative approach. *J Clin Lipid*, 2014;8(2):187-193 [Epub 2013-12-11].

Cheng HS, Sivachandran N, Lau A, Boudreau E, et al: A MicroRNA-mediated feedback loop controls vascular inflammatory signaling. *Angiogenesis*, 2014;17(1):281.

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