

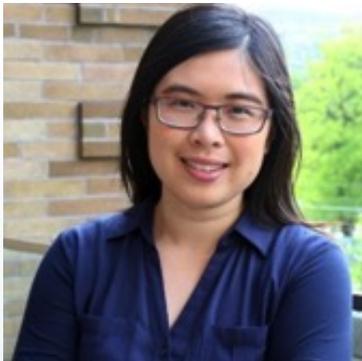
Physician Scientist Training

2015-2016 Annual Report



UNIVERSITY OF TORONTO
FACULTY OF MEDICINE

TRAINING FUTURE CLINICIAN SCIENTISTS



MCLAUGHLIN SCHOLAR & RUGGLES INNOVATION AWARD WINNER: LINDA VI

Linda Vi's primary research focuses on the pathophysiological changes that underlie delayed/impaired bone fracture healing in aging. Her project focuses on elucidating the cellular origin of this rejuvenation, with the long-term goal of identifying these 'youth factors' and developing therapeutics to restore this healing process. Linda's work has been published in *Nature Communications* and in the *Journal of Bone and Mineral Research*.



CIHR VANIER AWARD WINNER: SHREY SINDHWANI

Shrey Sindhwani and his supervisor, Professor Warren Chan, have modified and improved a technique to turn organs transparent, allowing them to track the locations of nanoparticles in the body. "It was kind of like taking off a blindfold," says Shrey, a PhD candidate in the Institute of Biomaterials & Biomedical Engineering. "When we know more about which type of cell is taking up which kind of nanoparticle, we can ensure we are using the right drug for the right application."*

*excerpted from UofT Engineering News, Tyler Irving, May 11, 2016.

ASSOCIATE DEAN'S MESSAGE

I am delighted to share the innovations of the past year in the Physician Scientist Training Portfolio. Our efforts to integrate all aspects of training and mentoring future clinical investigators have resulted in newly implemented educational innovations, detailed below. Our growing cadre of trainees across the expanse of undergraduate and postgraduate medicine continue to excel.

There is still more work to be done – we must continue to grow and strengthen the community of clinician scientists in Canada. As we look to the future, curricular and regulatory innovations in both undergraduate and postgraduate medicine have the potential to generate a physician scientist development pathway that is coherent and relevant to the educational needs of our students and which prepares our students for a strong transition to a career beyond training.

Sincerely,
Norman Rosenblum, MD, FRCPC
Associate Dean, Physician Scientist Training

INNOVATION IN EDUCATION – INTEGRATED PHYSICIAN SCIENTIST TRAINING PATHWAY (IPSTP)

Medical education is undergoing a transformational reform to better meet the needs of Canadians, both now and in the future. The IPSTP situates the University of Toronto as an international leader by offering an integrated and enriched training model for physician scientists. The pathway is guided by the innovation principles of integration, flexibility, customization and sustainability in the training of physician scientists. The past year has seen significant advances towards this goal with changes to the way our students are learning – both inside and outside the classroom. Educational innovations during the past year include:

- Entering MD/PhD students are integrating their graduate and undergraduate studies. As early as first year, full-time MD students are enrolling as part-time graduate students and taking graduate courses
- MD/PhD Summer CREMS Program provides a tailored, 6-week research experience that is initiated by the MD/PhD student with a supervisor of their choice. This new program is funded by a generous endowment from Miss Jessie Calder.
- CBL: The Case Based Learning (CBL) component of the Foundations Curriculum has an enriched curriculum focused on the integration of clinical medicine with research and innovation for MD/PhD students and other medical students entertaining a career as a clinical investigator.
- LInC: The Longitudinal Integrated Clerkship (LInC) now features an enriched curriculum for MD/PhD students and other MD students interested in health research. LInC promises customization of the clerkship experience to include patients in particular areas of interest and physician-scientist mentors who can enhance their understanding of the physician-scientist career.
- The MD/PhD Longitudinal Mentorship Program was created to connect our students with physician scientists, with the aim of supporting their successful physician scientist careers. 2015-2016 was the third year of this initiative and there were 34 participants (16 mentors and 18 students).

MD/PhD PROGRAM: ADMISSIONS

A 2013 External Advisory Committee, mandated by CIHR's SPOR (Strategy for Patient-Oriented Research), concluded that "Canada needs a major increase in the number of health clinician scientists." Prior to this announcement, the University of Toronto MD/PhD Program had set a goal to grow to 80 students – a number that can sustain the professional community of physician scientists and build the reputation of the Program.

MD/PhD PROGRAM



**INCREASE IN APPLICANTS
TO THE MD/PhD PROGRAM
2011–2015**

STUDENT FINANCIAL SUPPORT

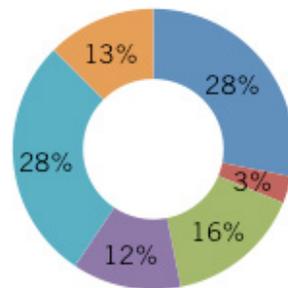
Lack of financial support is a significant barrier to students pursuing careers as a clinician scientist. Funding is essential to our mission of helping these trailblazers. In 2015, the Canadian Institutes of Health Research (CIHR) announced it was ceasing funding to MD/PhD programs in Canada after the 2015-2016 academic year. Despite this, the University of Toronto remains committed to this important program, which has trained generations of leaders in the field of medical research. We don't foresee the withdrawal of financial support by CIHR as an impediment to admitting qualified students into the program, and we continue to seek out the best qualified candidates to support in their physician scientist career path.

Our visionary partners, such as the McLaughlin Centre and other generous donors, and collaborating departments and institutes within the Faculty of Medicine, Faculty of Applied Science and Engineering and the Dalla Lana School of Public Health, continue to support our programming and students. Further gifts, such as the new Dean Catherine Whiteside Scholarship for Clinician-Scientists, will ensure the continued admissions and support of Canada's future health innovators.

RESEARCH

MD/PhD students have a passion for both research and clinical care. With these skills, they are uniquely positioned as leaders of transformational change for society. Our students' research includes education, philosophy of medicine, engineering, epidemiology, in addition to a cross-section of basic science research such as molecular genetics and biophysics.

MD/PhD STUDENT ENROLMENT BY GRADUATE UNIT



- Institute of Medical Science
- Molecular Genetics
- Lab Medicine & Pathobiology
- Medical Biophysics
- Institute of Biomaterials & Biomedical Engineering
- Institute of Health Policy, Management & Evaluation

MD/PhD ALUMNI

2015-16 brought new engagement with our alumni. With the elimination of the CIHR MD/PhD funding came the need to more fully understand their successes. Of the 36 MD/PhD alumni who have completed training, 20 are clinician scientists, approximately 28 are actively engaged in research, and 30 hold academic positions.

55% are Clinician Scientists

78% engage in research

83% hold an academic position

2016 DEAN CATHERINE WHITESIDE SCHOLARSHIP FOR CLINICIAN-SCIENTISTS RECIPIENT



Hannah Kozlowski was awarded the inaugural Dean Catharine Whiteside Scholarship for Clinician-Scientists, as our top, incoming student to the MD/PhD program in 2016. This endowment was established with the philanthropic leadership of Terry Donnelly, in order to celebrate the accomplishment of the former Dean in her administrative role, and her career as a clinician-scientist.

MD/PhD IMPACT 2015-16

2 GRADUATES:

**PATRICK MCVEIGH
VASCULAR SURGERY,
UNIVERSITY OF TORONTO**

**SEAN NESTOR
PSYCHIATRY,
UNIVERSITY OF TORONTO**

13 PHD'S COMPLETED

68 PUBLICATIONS

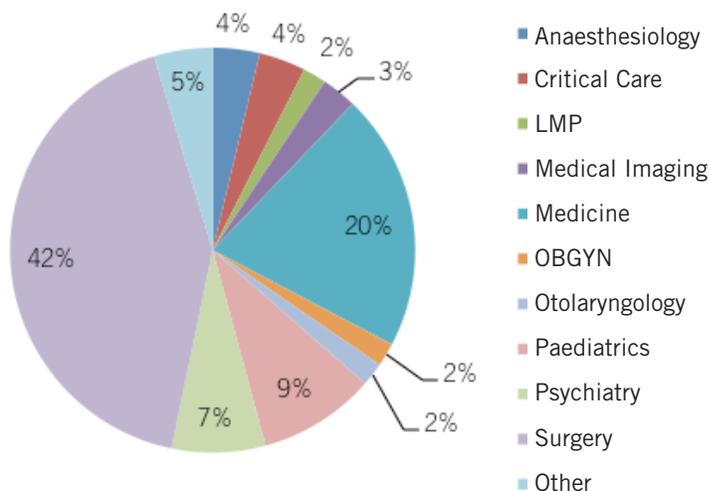
25 COMPETITIVE, EXTERNAL AWARDS AND SCHOLARSHIPS

COMPREHENSIVE RESEARCH EXPERIENCE FOR MEDICAL STUDENTS (CREMS)

The Associate Dean, Physician Scientist Training, provides academic and strategic oversight of the Comprehensive Research Experience for Medical Students (CREMS) Program, which is directed by Dr. Neil Sweezey. The CREMS Program provides medical students with a suite of research experiences, including the summer program, and a 20-month research experience called CREMS Scholar. While interest in the CREMS programs continues to rise, funded positions are decreasing. CIHR funding cuts have caused a decline in funded positions. 2016 saw 159 prospective projects submitted while just 53 were funded. Supervisors submitted a total of 30 proposals for CREMS Scholar projects, and 13 were funded.

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA CLINICAL INVESTIGATOR PROGRAM (CIP)

One of the major attractions to train at the University of Toronto is the diversity of outstanding research programs, and the capacity of these programs to train clinical investigators in the context of post-MD education. CIP provides a structure of guidance and community for post-graduate MD trainees to undertake research training, with our trainees representing approximately 5 per cent of University of Toronto residents. In 2015-16, there were a total of 108 trainees in the program. Fifty per cent of the trainees are in PhD Stream Programs, 10% are post-doctoral fellows, and the remaining are in masters programs across 3 faculties. 2016-17 is our largest cohort to date, with 118 trainees.



ANNUAL SYMPOSIA FOR PHYSICIAN-SCIENTIST TRAINEES 30TH ANNUAL MEDICAL STUDENT RESEARCH DAY

On February 2, 2016, students and faculty from across the MD and MD/PhD Programs gathered at the annual Medical Student Research Day (MSRD). A day-long conference for medical students to exhibit their research; this year's 30th anniversary of the event celebrates our longstanding tradition of discovery and innovation at the University of Toronto.

2015 YOUNG INVESTIGATORS FORUM

The 2015 Young Investigators Forum and CITAC-ACCFC Annual General Meeting (AGM) was hosted in Toronto with the theme "It Takes a Village." There were a record number of participants with 160 attendees, including 48 UofT CIP trainees. This year's program featured lecture-awards honoring clinician-scientists, opportunities for attendees to present their research through poster sessions and oral platforms, and workshops geared towards career development. A new workshop tailored to MD/PhD students called "Choosing the Right Specialty for You" was introduced.

CIHR VANIER AWARD WINNER: DR. DMITRY ROZENBERG



As a Respiriologist with training in Kinesiology, Dr. Rozenberg is looking to translate his clinical expertise and passion for exercise training to improve health outcomes in people with lung disease. A doctoral student at IMS, he is studying the contribution of skeletal muscle dysfunction before and after lung transplantation. His research aims to understand the impact of muscle dysfunction on daily physical function, quality of life, health care use, and survival before and after lung transplantation.

FOR MORE INFORMATION

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