



# + MOTSRTP

## **Multi Organ Transplant Student Research Training Program**

*Integrating education and research  
into clinical practice*



# Message from the directors:

The integration of research in the curriculum of post-secondary students is an important feature of today's academic programs at most universities and colleges. The Multi-Organ Transplant Student Research Training Program (MOTSRTP) fulfills this role in the areas of healthcare and clinical research.

This unique program provides exceptional students with the opportunity to gain exposure to the clinical and research components of organ transplantation. Trainees admitted to the program come from diverse educational levels (e.g. undergraduate, graduate, and professional healthcare schools) and backgrounds (e.g. biological sciences, allied health, bioethics, statistics, economics, and medicine). Similarly, the mentors who provide guidance and support to these trainees are specialists in their disciplines including medicine, nursing, allied health, bioethics, and clinical research.

MOTSRTP Trainees partake in educational and clinical research activities relevant to the care of transplant patients. These educational activities include educational seminars/workshops and clinical observations in outpatient and inpatient settings. Students are also assigned to research and quality projects applicable to transplant care and patient engagement.

We aim to provide an atmosphere conducive to learning, mentorship and collaboration. The exemplary dedication of the mentors and program administrative staff to achieving this is evident in the additional efforts often made by trainees in producing high quality deliverables during their work placements.

If you have any questions regarding our research training program and its activities, please do not hesitate to contact us at [motsrtp@uhn.ca](mailto:motsrtp@uhn.ca).

We look forward to hearing from you.

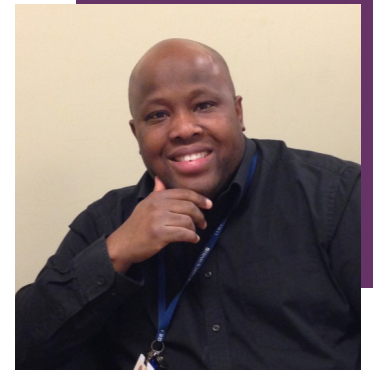
Sincerely,

Dr. S. Joseph Kim  
MD, PhD, MHS, FRCPC

Olusegun (Segun) Famure  
MPH, MEd, CHE

Co-Directors,  
Multi-Organ Transplant Student  
Research Training Program  
(MOTSRTP) & Advanced Student  
Placement in Research Education  
(ASPIRE)

Toronto General Hospital,  
Toronto Ontario Canada







# MOTS RTP

## Our mission:

The Multi-Organ Transplant Student Research Training Program (MOTS RTP) offers a comprehensive curriculum for both undergraduate and graduate students, as well as students in professional schools.

Through formal seminars, discussion forums, and hands-on health research experience, trainees gain a well-rounded understanding of the field of clinical research. Furthermore, the program provides trainees with the opportunity to apply the knowledge and skills gained through research-oriented tasks to projects that will contribute to the growing field of knowledge in transplantation.



# Education



### Renal Artery Stenosis in Kidney Transplant Recipients

Lucy Ching Chau, Myra Caballero, Olusegun Famure, MPH, MEd, CHE, S. Joseph Kim, MD, PhD, MHS, FRCPC  
The Multi-Organ Transplant Student Research Training Program  
Division of Nephrology and the Kidney Transplant Program, Toronto General Hospital, University Health Network and University of Toronto

UNIVERSITY OF TORONTO MEDICINE

#### RENAL ARTERY STENOSIS IN KIDNEY TRANSPLANT PATIENTS: Incidence, Risk Factors, Outcomes Treatment

Myra Caballero & Lucy Ching Chau  
Supervisors: Dr. Joseph Kim, MD, PhD, MHS, FRCPC

#### BACKGROUND: DIAGNOSIS OF TRAS

Unexplained Worsening Renal Function  
Refractory Hypertension  
Doppler Ultrasound with Peak Systolic Velocity > 150cm/s  
TRAS

#### STUDY POPULATION

**Inclusion Criteria:**  
All adults (18 years of age) who received a Kidney Transplant between Jan 01, 2000 to Dec 31, 2010  
Consent to CoReTRIS database with minimum 12 months of follow-up  
Specific to Objective 4: Patients who have been diagnosed and treated for TRAS

**Exclusion Criteria:**  
Patients who are < 18

#### BACKGROUND: WHAT IS TRAS

**Transplant Renal Artery Stenosis (TRAS)**

- A narrowing of the arterial lumen supplying the grafted kidney
- Often associated with a decline in graft function as well as persistent hypertension

#### BACKGROUND: TREATMENTS FOR TRAS

**Medical:**

- Anti-hypertensives to manage blood pressure
- Anti-platelets to inhibit blood clotting in arteries
- Anti-hyperlipidemics to manage the cholesterol profile

**Radiological:**

- Percutaneous Transluminal Angioplasty (PTA) generally accompanied with stenting

#### STUDY DESIGNS

**Objective 1:** Observational, non-interventional, retrospective incident cohort study (incidence, TRAS development)

**Objective 2:** Observational, non-interventional, retrospective, case-control study (factors on TRAS development to estimate potential risk factors)

**Objective 3:** Observational, non-interventional, retrospective incident, cohort study (comparing incidence between TRAS and no TRAS)

**Objective 4:** Observational, non-interventional, retrospective case-control study (factors based on treatment, and comparing to assess effects)

#### BACKGROUND: WHAT IS TRAS

**Why is TRAS significant?**

- It makes up approximately 75% of vascular complications
- It decreases both graft and patient survival as well as graft function

#### STUDY OBJECTIVES & HYPOTHESES

**1. To measure the incidence of development of TRAS in the adult renal transplant recipients (approximately 1,000 of the cohort will develop TRAS)**

**2. To identify the risk factors predisposing renal transplant recipients to TRAS development (hypertension, hyperlipidemia, diabetes, graft rejection, late arrival to graft, transplant time, time to graft, etc.)**

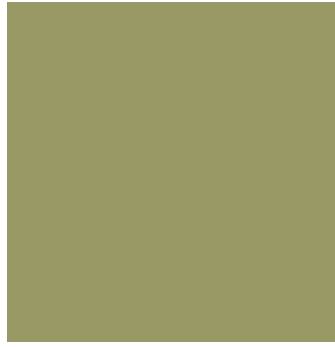
#### STATISTICAL ANALYSES

**Objective 1:** Descriptive statistics (incidence, prevalence)  
**Objective 2:** Descriptive statistics (incidence, prevalence)  
**Objective 3:** Descriptive statistics (incidence, prevalence)  
**Objective 4:** Descriptive statistics (incidence, prevalence)

#### REFERENCES

1. ...  
2. ...  
3. ...  
4. ...  
5. ...





# Education:

MOTSRTP students are required to participate in a minimum number of educational opportunities weekly. Some activities are organized specifically for MOTSRTP Trainees, while others are departmental or hospital based.

## MEDICAL ROUNDS

Medical Rounds are teaching conferences or meetings organized within and outside the MOT Program where clinical problems encountered in practice are discussed. Students can attend Medical Rounds including Cardiology Academic Rounds, General MOT and UHN Medical Rounds, City-Wide Nephrology Rounds, Heart Rounds, and UHN Renal Rounds, among others. Participating in Medical Rounds gives students a taste of what to expect should they choose to pursue a career in health care, and are superb opportunities to further one's understanding of clinical practice and research.

## CLINIC OBSERVATIONS

At clinic observations, students shadow physicians and allied health professionals to gain first hand experiences in a clinical setting related to transplant. The variety of clinic observation opportunities allows all MOTSRTP students to experience the scope of the field of transplantation at TGH.

Clinics available for observation include:

- Post-Transplant Nephrology Clinic
- Renal Management Clinic
- Renal Assessment Clinic
- In-Patient Nephrology Rounds
- Heart Function Clinic
- Heart Transplant Clinic
- Kidney/Pancreas Transplant Clinic
- Transplant Infectious Diseases Clinic

Pharmacy, Physiotherapy, Social Work and Occupational Therapy Observations are also available.

# + Education

“The MOTSRTP has provided me with opportunities to carry out a research project from start to finish, engage with healthcare professionals and patients, and work collaboratively with mentors in a teamwork environment.”

- Anna Li

## OPERATING ROOM OBSERVATIONS

Operating Room observations are clinical sessions open to senior trainees in the MOTSRTP. Students are able to observe a living kidney donor transplant and Left Ventricular Assistive Device (LVAD) surgery, for example. This is a unique opportunity to gain first hand exposure to the field of surgery in the context of organ failure and transplantation.

## CAREER DEVELOPMENT SEMINARS

Career Development is an important aspect of the MOTSRTP. Special Talks and Seminars occur throughout the year addressing a wide variety of careers related to health care. Speakers share their successes and challenges on the journey towards their chosen career paths. A question and answer period is followed by an opportunity to network with the speakers.

Past speakers have come from the fields of pediatric nephrology, dentistry, transplant dermatology, physiotherapy, occupational therapy, pharmacy and executive health care administration.



## MANUSCRIPT & PRESENTATION PREPARATION

Emphasis is placed on developing scientific papers for submission to peer-reviewed journals, as well as presentation skills. This is part of the innovative and comprehensive research education students receive at the MOTSRTP.

Workshops and seminars include preparing a comprehensive literature review, conducting clinical research using online databases, as well as scientific and grant writing workshops. Students are encouraged to take advantage of the resources in the UHN library. The services of the UHN librarian are available to all trainees.

A peer run manuscript and proposal editing team is available to help students fine tune their written reports. Furthermore, Research in Progress Meetings give students the opportunity to present their work to their peers and mentors. These are valuable opportunities to hone presentation skills and receive feedback on their work. Many students in the MOTSRTP go on to present their projects at national and international conferences, under the guidance of the MOTSRTP mentors.



# + Education

“By combining theory with real world examples, these seminars truly enhance the MOTSRTP experience and expose students to a broad spectrum of transplant and health related concepts.”  
- Annie Fu

## JOURNAL CLUBS

Journal Club seminars facilitate in depth group discussion grounded in specific research articles on a wide range of topics related to transplantation. Topics for Journal Clubs include transplant pharmacy, transplant bioethics, health economics and information technology, among many others. Articles are distributed to students prior to the seminar for independent study, and field leaders facilitate group discussion. Journal Clubs offer students the opportunity to explore facets of transplantation that complement their exposure to the clinical and research setting by encouraging the consideration of new and challenging perspectives, as well as improving oral communication skills.

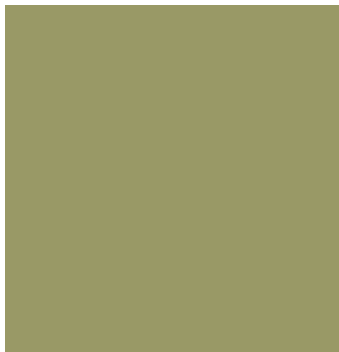
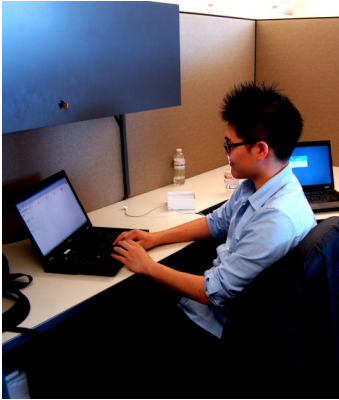
## DATA MANAGEMENT WORKSHOPS

All MOTSRTP students are encouraged to participate in data management workshops facilitated by an in-house biostatistician. These comprehensive workshops allow students to gain skills in data management, manipulation and analysis that can be applied to independent research projects. They are especially useful for those students who aspire to pursue epidemiology postgraduate studies.

## SUMMER PROGRAM IN CLINICAL EPIDEMIOLOGY & BIOSTATISTICS

All students registered in the summer session of the MOTSRTP are required to attend the Summer Program in Clinical Epidemiology and Biostatistics (SPICE + B). This educational seminar series runs over a 10-week period and focuses on clinical research methodology and design.

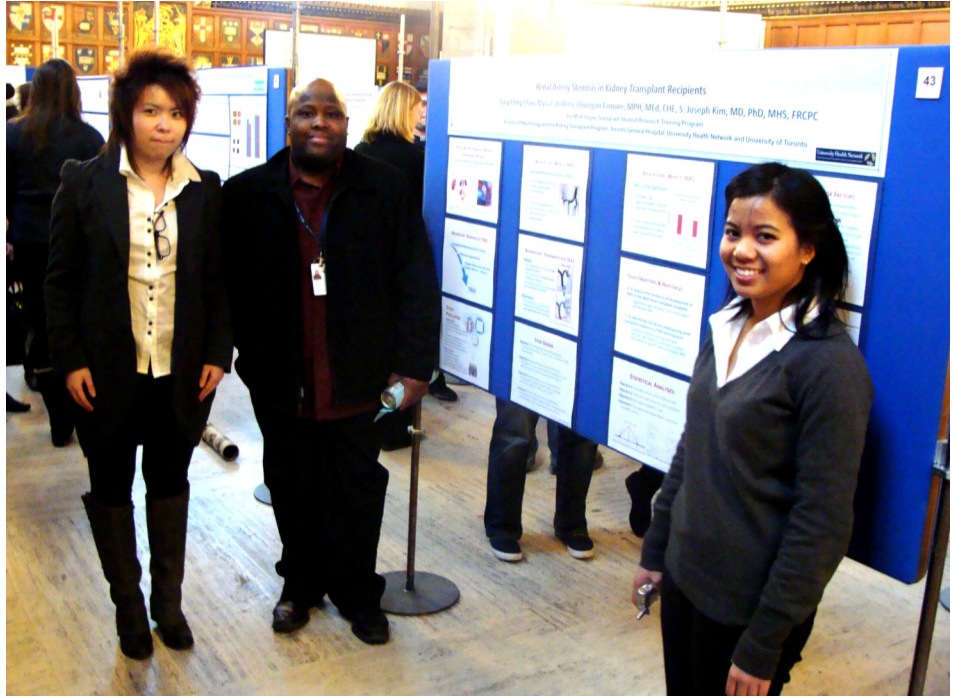
The seminar series, spearheaded by Course Director Dr. Joseph Kim and Program Manager Segun Famure, features expert lecturers in the field. The target audience is clinical trainees and hospital staff, including medical fellows, residents, nurses, nurse practitioners, research staff, pharmacists, and allied health professionals. MOTSRTP students are introduced to the study of clinical epidemiology and applied biostatistics, gain exposure to research design methods including their strengths and limitations, and hone their skills in interpreting and analyzing literature. Any student wishing to engage in research at the undergraduate and postgraduate level will undoubtedly benefit from the SPICE + B seminar series.







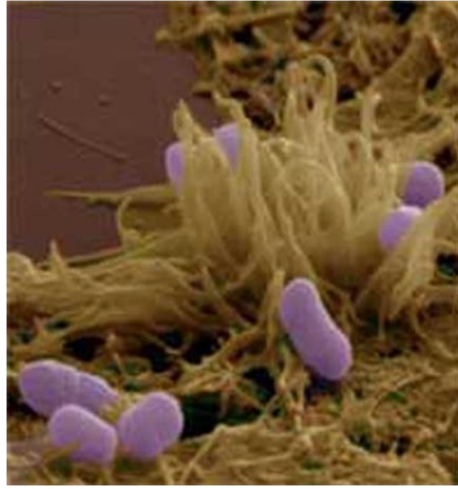
# Research







# Research



One of the major goals of the MOTSRTP is to provide students with the opportunity to develop skills in clinical research to enable them to partake in impactful studies in organ transplantation. Students may undertake independent projects with the aim of producing a final manuscript or they may work with a team of health-care professionals to assist in larger clinical trials being conducted at the hospital. **These are some of the research topics that are currently being investigated in the MOTSRTP:**

## **General Kidney Transplant:**

- Surgical-related complications post-kidney transplant
- Renal artery stenosis after kidney transplant
- Collaborative care models in the management of transplant patients
- New-onset diabetes

## **Immunology & Infectious Diseases:**

- Antibody-mediated rejection
- Cost effectiveness studies on immunosuppressive regimens
- Delayed graft function
- CMV in kidney transplant patients

## **Ethics, Quality of Life & Community:**

- Socioeconomic studies on post-transplant outcomes
- Development and implementation of psychosocial assessment tools among transplant patients

- Investigating ethical dilemmas in paired kidney exchange programs
- Assessment of transplant tourism outcomes

## **Cardiology:**

- Cardiac defibrillator usage and outcomes
- Cardiovascular disease in kidney transplant patients
- Prediction models of prognosis in heart failure patients
- Outcome analysis of LVADs
- Palliative care in heart failure patients

## **Health Services:**

- Performance measures in the evaluation process of transplant candidates.
- E-Health solutions for improving clinical research practices



# Patient Education & Engagement:

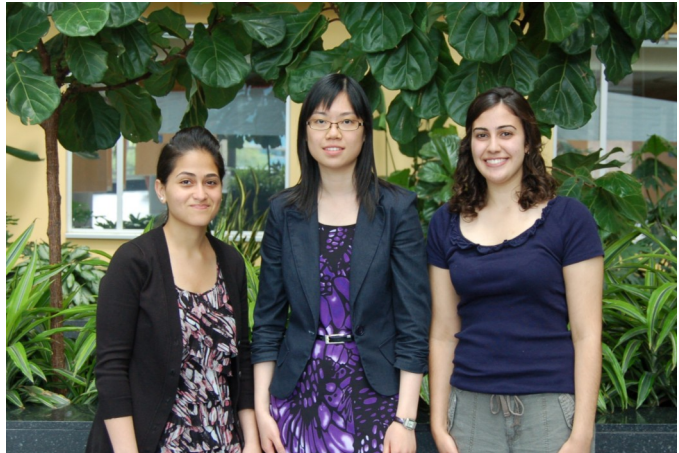
In addition to clinical research projects, students in the MOTSRTP are heavily involved in the development of patient education tools and community engagement programs. This includes the creation of healthcare manuals, community newsletters and student run initiatives to increase awareness of organ donation.

## Patient Manuals

Students in the MOTSRTP apply the knowledge they've learned in the program to develop or enhance patient education manuals. Previous projects have involved revising the Kidney Transplant Recipient Manual and the Donating a Kidney (Living Donor) Manual - both of which are used by potential kidney transplant donors and recipients at Toronto General Hospital, to name a few.

## Newsletters & Research Education

A number of patient-oriented newsletters have been developed by our students which aim to engage patients in a discussion about their health and inform them about the research being conducted in both the MOTSRTP and the general MOT department at TGH. These tools serve to better inform patients about the field of transplantation and also encourage them to participate in any one of the many ongoing clinical trials in the department. As new editions of these newsletters are distributed throughout the year, students in the MOTSRTP have the opportunity to help develop, write and produce these educational tools.







# Core Mentors





# Our Core Mentors:

*The MOTSRTP consists of a number of healthcare professionals who serve as important mentors for students in the program. Students may work with these mentors to carry out research projects, shadow in their clinics or obtain guidance and career advice.*



**Dr. S. Joseph Kim, MD, PhD, MHS, FRCPC** **NEPHROLOGY**

Dr. Kim is a transplant nephrologist in the Multi-Organ Transplant (MOT) Program at Toronto General Hospital and an Assistant Professor of Medicine at the University of Toronto. He is a recipient of the Clinician-Scientist Award from the Canadian Institutes of Health Research. His research interests lie in the areas of access and outcomes of kidney transplantation using data from both centre- and population-based cohorts.



**Segun Famure, MPH, MEd, CHE** **NEPHROLOGY**

Mr. Famure is a Research Associate and current Manager of Education, New Knowledge, and Innovation in the Kidney Transplant Program. He is a past recipient of the Health Services and Policy Research Training Award (Ontario Training Centre). His research areas lie in the areas of curriculum development, chronic care delivery modeling, health program evaluations, and quality of life assessments.



**Dr. Heather Ross, MD, MHSc, FRCPC** **CARDIOLOGY**

Dr. Ross is the Director of the Cardiac Transplant Program at Toronto General Hospital and a Professor of Medicine at the University of Toronto. Her research interests lie in the areas of immunosuppressive drug therapies, use of phenomenological methodology to address psychiatric distress experienced by transplant patients, organ preservation, and end of life care in heart failure patients.



**Linda Wright, MSW, RSW, MHSc** **BIOETHICS**

Ms. Wright is the Director of Bioethics and Palliative Care at the University Health Network (UHN) and an Assistant Professor in the Department of Surgery at the University of Toronto. She has over 20 years' experience as a social worker in hospitals in Montreal and Toronto. Ms. Wright provides clinical and organizational ethics consultation and teaching, and has research expertise in organ transplantation ethics.



# + Core Mentors



**Dr. Shahid Husain, MD, MS**

**INFECTIOUS DISEASES**

Dr. Husain is the Director of Transplant Infectious Diseases in the MOT Program at Toronto General Hospital and Associate Professor of Medicine at the University of Toronto. He has served as Chairman of the Infectious Diseases Council of the International Society of Heart and Lung Transplantation. His research focuses on risk factors and outcomes of infections in solid organ transplant recipients.



**Dr. Anand Ghanekar, MD, PhD, FRCSC**

**SURGERY**

Dr. Ghanekar is appointed to the Division of General Surgery at the University Health Network and the Hospital for Sick Children. His clinical practice is focused on living and deceased donor abdominal organ transplantation in adults and children. Dr. Ghanekar is an Affiliate Scientist at the Toronto General Research Institute and has a research interest in the role of stem cells in diseases of the liver (including hepatocellular carcinoma).



**Jennifer Harrison, BScPharm, MSc**

**PHARMACY**

Ms. Harrison is a clinical pharmacist in the MOT Program at Toronto General Hospital and the Pharmacy Clinical Site Leader, where she oversees clinical pharmacist services in the MOT and Surgical Services programs. She has a wide range of research interests which include both Pharmacy practice-based research and pharmacotherapy research in solid organ transplantation (e.g., immunosuppressive regimens and outcomes).



**Margot Mitchell, MSW, RSW**

**SOCIAL WORK**

Ms. Mitchell worked at Princess Margaret Hospital for over 20 years. She left Oncology for Multi-Organ Transplant in 2001, and has worked with the liver and kidney teams. She has an interest in the challenges young adults with transplant face, and is part of the University Health Network/Hospital for Sick Children research consortium to help young people learn self-management skills.



# Our Students' Career Paths:



Students of the MOTSRTP have gone on to work or pursue advanced degrees in a number of different health-care related areas including:

## **Medicine**

- University of Toronto, Toronto ON
- University of Western Ontario, London ON
- Queens University, Kingston ON
- McMaster University, Hamilton ON
- Vanderbilt University, Nashville TN
- Columbia University, New York NY
- University of Rochester Medical School, Rochester NY
- University of Cork, Ireland

## **Health Services Management**

- Columbia University, New York NY

## **Physiotherapy**

- University of Toronto, Toronto ON

## **Occupational Therapy**

- University of Toronto, Toronto ON

## **Pharmacy**

- University of Toronto, Toronto ON

## **Health Research Methodology**

- McMaster University, Hamilton ON

## **Graduate School (Science)**

- Stem Cell Institute, Belgium

## **Clinical Research Graduate Program**

- Humber College, Toronto ON





# How to apply:

*Students may enter the MOTSRTP through undergraduate research courses, summer research programs, medical school programs, and volunteering. All students will have the opportunity to take part in the many educational, clinical and research opportunities of the MOTSRTP .*

## **LTE299Y**

The Research Opportunity Program provides second year U of T students with the opportunity to work on a research project with a professor. Students receive one full course credit.

**Eligibility** To be eligible, students must be registered Arts & Science degree student and have completed the equivalent of at least four full courses, but no more than eight and a half, by September of the proposed start year. An application form must be submitted by the deadline for your respective project.  
Contact [deb.shaw@utoronto.ca](mailto:deb.shaw@utoronto.ca) for more information.

## **HMB399Y/499Y**

HMB399Y/499Y is a research project course supervised by a faculty member of the Faculty of Arts & Science or the Faculty of Medicine. Students work on an instructional-supervised group project in an off-campus setting.

**Eligibility** HMB399: 10 full course equivalents, permission of the Human Biology Programs Office, and enrolment in a Human Biology program are required. HMB499: 4th year status, an approved 300+ series science laboratory course, and permission of the Human Biology Programs office are required. Applications for HMB399 and HMB499 can be obtained from the Human Biology Programs office.

## **DOCH2**

A requirement of the Pre-clerkship program in the Undergraduate Medical Education program, the second year of the Determinants of Community Health (DOCH) course is comprised of two components: learning/demonstrating research methods and completion of a research project. This course an opportunity to demonstrate independent skills, reflection, and collaboration.

**Eligibility:** Mandatory for 2nd year medical students attending the University of Toronto.

## **NEW390Y/490Y**

New College Independent Studies Courses provide an opportunity for students to pursue a research project with a faculty supervisor. Students receive a 390Y/490Y full course credit.

**Eligibility** To qualify, students must be an upper year New College student (having completed nine full courses) or enrolled in a New College Program. Students must have the appropriate background knowledge required to complete the project, and are expected to be in good academic standing. An application form must be submitted by the last Friday in August for the Fall/Winter session, and May 1st for the summer session courses.

## **NEW495Y**

The New College Community Engaged Learning Program encourages students to engage in work for a community organization while completing assignments that stimulate reflection on their learning and the overall university experience.

**Eligibility** Upper year students from New College, taking New College courses and/or those involved in New College initiatives may apply for independent placements with community partner organizations or on-campus social justice initiatives. A cover letter, resume, and unofficial academic transcript are required. For further information, contact [nc.servicelearning@utoronto.ca](mailto:nc.servicelearning@utoronto.ca).

## **Work Study**

The University of Toronto Work Study program offers an opportunity for registered students to gain meaningful work experience through part-time employment on campus.

**Eligibility** Jobs are open to all undergraduate students (e.g. domestic, international, and part-time) and graduate students, excluding students registered in Toronto School of Theology programs. Applications are specific to each job and are available on the Careers Centre website at the University of Toronto.



# How to apply:

*\*\* NB: All information presented here is accurate as of January 31, 2014.*

## **CREMS Summer Research Program**

The Comprehensive Research Experience for Medical Students allows students to participate in research without interfering with their studies. The program strives to prepare medical students for a career as a physician with a solid understanding of biomedical research, and to encourage students to consider a career as a clinician-scientist.

**Eligibility** CREMS is open to University of Toronto 1st and 2nd year medical students as well as students with a Masters or Ph.D. degree. MD/PhD students are eligible to apply for a one-time CREMS Summer Program, either between years 1 and 2 or years 2 and 3 of their medical training. Only students with passing grades in all courses are eligible.

## **EIT Summer Student Program Award**

OIME Education Information Technology Summer Student Program joins faculty experts with medical or undergraduate students who have the technical ability to develop innovative medical educational software. The program trains students who will lead future medical educational software development at the Faculty of Medicine.

**Eligibility** Students must be enrolled full time at University of Toronto in an EIT-related program (ie Computer Science, Engineering, Medicine, Biomedical Communications). Supervisors must hold an ] academic staff appointment in the Faculty of Medicine.

## **DLSPH Practicum**

The required practicum for the Dalla Lana School of Public Health offers students the opportunity to apply the theoretical knowledge gained in coursework to an academic project. Students are required to reflect on and record their experiences.

**Eligibility** Mandatory for students registered in the Masters of Public Health at the University of Toronto's Dalla Lana School of Public Health.

## **Summer Undergraduate Research Program, Institute of Medical Sciences**

This allows undergraduate B.Sc. and medical students to participate in biomedical research projects. Students work with distinguished faculty members, and develop a solid foundation in research methods.

**Eligibility** Students must be enrolled in medical school or an undergraduate science degree. Undergraduate applicants must have a minimum cGPA of B+ (3.3/4.0 or 77%). To apply for IMS funding, participants must hold a cGPA of A- (3.7 GPA, 80%) or higher. Medical student applicants must be in good standing as determined by their registrar.

## **Summer Experience Program (SEP)**

The SEP, operated in partnership with the Ministry of Government and Services and the Youth and New Professionals Secretariat, provides meaningful summer employment opportunities to students at not-for-profit organizations, municipalities and Aboriginal/ First Nations communities.

**Eligibility** Students must be currently enrolled in a secondary/post-secondary institution or within six months of graduation and be between the ages of 15 and 25. Proof of enrolment must be provided to the employer. Students must be residents of Ontario and eligible to work in Canada.

## **University Health Network Volunteer**

The University Health Network values exceptional medicine and superior patient care. Volunteers help individualize health care experiences for patients and families.

**Eligibility** Applicants must be 16+ years of age, have English fluency, commit a set minimum of hours weekly, and be professional, reliable, team-oriented, and customer-service oriented.





# MOTSRTP

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[www.uhn.ca/MOT](http://www.uhn.ca/MOT)