



## Comprehensive Research Experience for Medical Students Summer Research Program 2019

### Supervisor/Project Information Form

*Due February 20 2019 by email to [crems.programs@utoronto.ca](mailto:crems.programs@utoronto.ca)*

**Supervisor Name:** David Shultz; Mark Bernstein, Geoffrey Liu

**Project Title:** Real World Observational Outcomes Study of Brain Metastases in Lung Cancer in the new era of Selective Neurosurgery, Stereotactic Radiation, and Targeted Agents

**Hospital/Research Institution:** University Health Network (Toronto General Hospital and Princess Margaret Cancer Centre)

**Email:** [Geoffrey.Liu@uhn.ca](mailto:Geoffrey.Liu@uhn.ca)

**Field of Research (2 keywords):** Clinical Research; Neuro-Oncology

**Department:** Surgery; Radiation Oncology; Palliative Care; Medicine

**School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? Yes/No:** Yes **If YES, please name:** IMS, Epidemiology (Dalla Lana School of Public Health), and Medical Biophysics

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#### **Brief Project Description (<300 words):**

In the past decade, the management of brain metastases had dramatically changed, with increased utilization of new treatments across different modalities. Solitary metastases resections, expansion of eligibility for using stereotactic radiation, and most dramatically, utilizing new novel targeted agents that have extensive central nervous system activity have revolutionized patient management. Lung cancer, more than any other cancer disease site, has benefited from these health innovations. Princess Margaret Cancer Centre has a unique multidisciplinary brain metastasis clinic, a multidisciplinary lung cancer program, and an associated Rapid Assessment and Management Program (Lung-RAMP). A rigorous real world evidence (RWE) approach will be utilized, following the 'Framework for FDA's Real-World Evidence Program' guidance document (December, 2018). Incidence, treatment, outcomes, and patient-reported outcomes will be assessed. A subanalysis will involve qualitative interviews and patient-reported surveys, following the Canadian Institutes for Health Research Knowledge to Action framework. The student's study aims are: (1) to describe the changing landscape of brain metastases treatments in lung cancer from 2007 through 2017 within the clinic; (2) to compare key treatment outcomes such as requirement for brain metastasis re-treatment, time from first brain metastases-to-whole brain radiation, and in a subset, patient reported outcomes (quality-of-life); (3) knowledge and preferences of patients with brain metastases. The student will participate in: study design; patient recruitment; data and sample collection; quality control of data; data analysis. Skills that will be developed include: observational trial design; regulatory-level data collection and abstraction methods; analytical and statistical skills. The student will also participate in a structured lecture/seminar series on research methodology (see [www.uhncombiel.com](http://www.uhncombiel.com)) with other medical undergraduate, undergraduate,

post-graduate, and graduate students from medicine, epidemiology, basic and translational science, statistics, and computational science from the Americas, Europe and Asia. All our past summer CREMS students have presented nationally/internationally with authorship on publications.