Comprehensive Research Experience for Medical Students (CREMS)
2022 Supervisor and Project Information Form

Please complete and return via email ONLY to crems.programs@utoronto.ca by February 18, 2022.

Supervisor Information
NOTE: CREMS will not support pre-determined pairings of students and supervisors. Supervisors must agree to open their projects to all students and interview all that are interested.

Name: Urban Emmenegger
Department: Medicine (Medical Oncology)
SGS Department(s) (if applicable): Institute of Medical Science

Email: urban.emmenegger@sunnybrook.ca
Hospital/Research Institution: Odette Cancer Centre & Sunnybrook Research Institute, Sunnybrook Health Sciences Centre

ORCID ID (see https://orcid.org/ - If you do not have an ORCID ID we encourage you to sign up for one):
0000-0002-3178-1896

Location of Work:
Odette Cancer Centre, Sunnybrook Health Sciences Centre

Field of Research (up to 4 keywords):
Prostate cancer, real-world evidence, (prostate cancer) brain metastases

Student contact time (number of hours per week YOU are available to the student for any concerns or to review progress):
At project start 1-2 hour introductory meeting, then usually 1 hour one-on-one meeting per week to discuss progress of research project; the CREMS student may also attend research meetings of my research team (2 coop students of various UoWaterloo undergraduate programs, 1 hour per week); e-mail availability 7/7 days; as long as feasible with respect to pandemic guidelines, CREMS student would have the opportunity to shadow me in the advanced prostate cancer clinic, as a complementary way of interaction and to get real-world exposure to the research topic.

Version date: 2022 01 19
**Project Information**

NOTE: If this project is selected, this information will be posted on CREMS website for interested student applicants to view research opportunities.

**PROJECT TITLE:**
Prostate Cancer Brain Metastases: Identifying Prognostic Imaging Markers

**PROJECT DESCRIPTION:**
Including background, aim(s), method(s) and significance of the project. Maximum 300 words.

BACKGROUND: Brain metastases are a rare manifestation of prostate cancer (~2% of patients) typically associated with high symptom burden and poor outcome (survival <6 months), albeit with marked inter-patient variability. Our systematic literature analysis (Rajeswaran et al, *under review*) revealed numerous unmet clinical needs regarding the management of prostate cancer brain metastases (PCBM), including the identification of prognostic markers of survival. Furthermore, a sizeable number of patients do not undergo metastases surgery and/or radiation therapy owing amongst others to perceived futility.

AIMS: To characterize imaging markers of survival in men with PCBM using the Odette Cancer Centre PCBM Database.

METHODS: In a multidisciplinary effort we have established a database of 72 men with PCBM treated at Odette Cancer Centre between 09/2008 and 12/2020, to the best of our knowledge the largest contemporary database of its kind. Aside from already extracted information on demographic and prostate cancer-specific details, including the extra-cerebral metastatic pattern at the time of PCBM diagnosis, in this project we will focus on collecting information on the central nervous system imaging findings, such as the number, size and anatomical location (eg supratentorial vs infratentorial) of metastases. In collaboration with our statistical consultant we plan to use this information to identify prognostic imaging markers of survival.

SIGNIFICANCE: Patients with metastatic prostate cancer tend to be elderly and frail, and patients with PCBM are almost universally excluded from clinical studies. Hence, the prognostic tool we plan to develop could serve in two ways: to identify suitable candidates for brain metastases directed therapy in the short term, and to identify patients for future clinical studies focused on PCBM as the ultimate goal.

Is this project remote-capable (in case of new restrictions) or have an alternative remote option?
- Yes, remote capable
- No

- Yes, alternate remote option. Please specify (100 words max): Since the start of the COVID-19 pandemic my research program has been almost fully virtual, using mainly Zoom and e-mails as modes of interaction.

If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?
- Yes
- No
- Not Applicable

If yes, please list the application submission date:

*CRC REB Protocol # 2316 is approved until 30 Aug 2022 (Annual Renewal)*

Do you expect this work will be published?
- Yes
- No
- Uncertain / Other
Research Environment and Student Roles and Responsibilities

Please be specific as possible. Please describe the research environment, including availability of required facilities/equipment/expertise, supervisor’s experience and mentorship plans. Please clearly outline the student role(s) and responsibilities related to the project, potential educational value, and indicate who will serve as the student’s direct report for daily oversight (PI, PHD student, technician, etc.). Maximum 300 words.

The CREMS student will be provided with (remote) access to Sunnycare, the electronic health record system used at Sunnybrook Health Sciences Centre, and main tool for data extraction. Under my supervision the student will establish a data extraction template, extract the data if interest, and set up a statistical analysis plan. I will support the student in summarizing the findings for presentation(s) and publication.

While I will serve as supervisor, including for daily oversight, the Prostate Cancer Brain Metastases Research Group at Odette Cancer Centre comprises the following additional team members: radiation oncologists (Drs. J. Detsky, E. Tseng), a neuro-oncologist (Dr. M.J. Lim-Fat), a pathologist (Dr. M. Downes), and a medical oncologist (Dr. M. Smoragiewicz). For the current project I also plan to recruit a neuro-radiologist. As for statistical analyses I have a longstanding collaboration with Dr. L. Zhang (https://ca.linkedin.com/in/liyingzhang).

The CREMS student will be the primary person assigned to the project described herein. However, if necessary I can assign a coop student working in my research program for support; this would also provide an opportunity for obtaining supervisory experience.

As part of research activities since my appointment at Odette Cancer Centre in 2008 I have supervised more than 60 coop undergraduate students (University of Waterloo), 2 CREMS students, 6 clinical fellows, and 2 research fellows. I am sitting on several committees (MSc, PhD) as Associate Member of the Institute of Medical Science.