RESEARCH SCHOLAR PROGRAM 2017
SUPERVISOR/PROJECT INFORMATION FORM

Due on or before October 21 2016. Forms received after this date will not be posted on the website.

SUPERVISOR INFORMATION

Supervisor Name: Phedias Diamandis

Mailing Address:

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Telephone Number: (416) 340-4459

Email Address: p.diamandis@mail.utoronto.ca

Degree (MD, PhD, MD/PhD): MD/PhD

Academic Rank: Assistant Professor

Field of Research: Neuropathology, Neuro-oncology, Neuro-development, proteomics

Graduate School Appointment (IMS, IHPME etc..): Laboratory Medicine and Pathobiology
Please note that you must be appointed to the SGS in order to be a supervisor in the Scholar Program

Research Institute Affiliation (if applicable): Ontario Cancer Institute

Allocation of student contact time (# of hours per week you are available to the student for any concerns or to review progress): 20 hours

Do you have a student that you have already agreed to work with? No
Please note, you may go ahead with a self-initiated project with a student of your choosing. If you choose this option, your project will not be posted online, meaning it will not be open to student applicants.

PROJECT INFORMATION

Project Title: Global Proteomic Interrogation of Neurodevelopment and Neuropathological Conditions

Project Description (max 500 words):

Our current research program focuses on strategic application of contemporary and comprehensive molecular tools to improve our understanding of neurobiology, neuroanatomy and microscopic characterization of disease. Our most recent large scale efforts have focused on mass spectrometry-based proteomic methods to globally profile human neural tissue and expand our understanding of cancer and neurodevelopment. We use the generated datasets as a springboard for more focused mechanistic studies and novel biomarker discovery of neuropathological diseases.

As a neuropathologist, all projects are centered on human tissue samples. We thus begin all our projects with selection of a biologically and statistically appropriate cohort of cases to address specific question of interest. These are taken from decades-worth of archival clinical samples allowing investigation into even extremely rare neurological conditions. To provide a complementary and more comprehensive molecular analysis to traditional histological examination, cases are prepared into tissue lysates and protein mixtures are run through a mass spectrometer to reveal their global proteomic composition. Bioinformatic analysis is used to identify specific proteins and protein signatures of interest from these novel protein-based datasets. Candidate biomarkers are then confirmed in additional cohorts by mass spectrometry and immunohistochemical analysis. For appropriate projects where analogous *in vitro* surrogate are available (e.g. cancer stem cells, neural stem cell cultures), more precise molecular probing into the biology of interest is performed. We currently have projects at these different analytical stages including those for both neoplastic and non-neoplastic conditions. The specific project will be discussed and agreed upon between the supervisor and interested applicant. This allows applicants to work on specific diseases of interest, previous experiences and master specific skills relevant to their future career plans. All project will include participation in grant, ethics approval and manuscript writing to foster a well-rounded skill set needed for basic and translational academic research. In addition to their acquired skills and experiences, the ultimate goal for all students is to co-author at least one scientific paper.

If human subjects are involved, has Ethics been obtained?

☒YES ☐NO ☐Application Submitted ☐N/A

Do you expect this work will be published within 20 months?

☒YES ☐NO ☐Uncertain

Student's Roles / Responsibilities (Please be as specific as possible) Please indicate who will serve as the student's direct report. (PI, PDF, PhD student, technician etc…):

We are a new and growing group. Our current research team consists of a post-doctoral fellow, a undergraduate student and diverse group of local research collaborators. We are looking to expand to include highly motivated undergraduate, medical and graduate students along with skilled technologists with an interest in neurosciences. Our collaborative partnerships provided access to a complete array of state-of-the art machines and experienced personnel. The learning objectives for all our trainees during their tenure includes acquisition of foundational knowledge of neuroanatomy, neurosciences, neuro-oncology and neuro-development as well as familiarization and novel application of contemporary molecular techniques in these fields.

Because of our small size, we aim to provide significant supervisory support from all our team members. As such, we also expect tangible contributions from everyone. We will guide students through the various stages of the workflow described above. During this orientation, the student may wish to focus on one area (e.g. bioinformatics, assay development and refinement or microscopic analysis). As such, roles will depend partly on the student's goals and interests. We will supervise student through each step on a one-on-one until a sufficient level of competence is attained which will allow the student to independently work on their project over the term of the studentship. Weekly progress meeting and regular presentation at lab meeting will serve to help the student discuss progress, barriers and offer solutions. During this time, we will help guide the project forward. There is an expectation that further into the project, the student will attain a level of proficiency and mastery that they will be able to improve on the current standard originally introduced to them.