

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: Michael Fehlings

Mailing Address: 399 Bathurst Street, Suite 4W-449, Toronto, ON, M5T 2S8.

Telephone Number: 416 603 5627

Email Address: Michael.Fehlings@uhn.ca

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

Academic Rank: Professor

Field of Research: Spinal Cord Injury

Graduate School Appointment (IMS, IHPME etc.): IMS

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): Krembil Research Institute at Toronto Western Hospital

Allocation of student contact time (# of hours per week you are available to the student for any concerns or to review progress): 2-3hrs

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: Stem cell mediated repair and regeneration of the injured spinal cord

Project Description (max 500 words): Spinal cord injury (SCI) is a devastating condition currently without a cure. Over half of all traumatic SCI occurs at the cervical level (C1 to C7-T1). Patients with cervical injuries suffer the most devastating neurological impairments, have the highest mortality rates, and are burdened with increased health care costs. One of the main hurdles in regenerative therapy for SCI is the very low intrinsic ability of the nervous system to repair itself. The promise of neural stem cell transplantation lies in its ability to replace neurons and glia lost due to traumatic injury. We have previously established that the transplantation of stem cells represents a promising therapeutic strategy for cSCI. Building on this finding we have established human derived induced pluripotent stem cell neural progenitor cells (hiPSC-NPCs) for the treatment of SCI. However, there remain critical shortfalls in this technology that limit the efficacious application to human cervical SCI. These limitations include: **a)** the lack of NPCs displaying a regional identity; **b)** the poor survival of NPCs post-transplantation, and **c)** the inhibitory micro-environment of the injured spinal cord. Building on our previous work we propose to generate stem cells expressing a regional identity and engineered to modify the injury micro-environment thus promoting survival, integration and regeneration

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...): The student will perform several techniques including, but not limited to, PCR, cloning, immunohistology, imaging and behavioral analysis. The student will report to a senior scientific associated within the lab and a PhD student who is also a 3rd year neurosurgery resident.