Graduate positions:
Positions available in the areas of Programmed cell death, Axon guidance, CRISPR-Mediated Modification of Stem Cells, Small Molecule Therapeutics for CNS injury.

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Overview: We are currently interviewing strong enthusiastic candidates for graduate studies in the areas indicated (See additional description of research topics below).
The laboratory's research is organized along three main themes:
Post-mitochondrial regulation of regulated cell death in the mammalian CNS.
EphB-mediated control of neural connectivity.
Development and analysis of small molecule therapeutics to neurodegenerative injury.

Regulated cell death:
During development and following many forms of injury, damaged cells are eliminated through a cell autonomous process known as apoptosis or regulated cell death (RCD). Abnormal regulation of PCD is known to occur in a wide variety of cancers and neurodegenerative disorders including Amyotrophic lateral sclerosis, Alzheimer's disease, Parkinson's disease and Huntington's chorea. PCD also plays an important role in acute injury states such as spinal cord injury and stroke. Understanding the molecular mechanisms regulating PCD is therefore a critical feature of enhancing functional recovery following injury. The laboratory is investigating molecular interactions which are common to many forms of PCD/apoptosis. This research is aimed at characterizing key protein-protein interactions which control neuronal injury and survival following CNS insult.

Axon guidance:
Meaningful functional recovery within the injured adult central nervous system requires both neuronal survival and appropriate re-innervation of injured neurons to neural targets. In order better understand the process of local axon guidance during mammalian development and following CNS injury we are investigating a family of axon guidance molecules known as the EphB family. We have previously demonstrated that these receptor tyrosine kinases play important roles in regulating the organization of several regions of the CNS, as well as being critical regulators of dynamic neural remodelling. We are currently attempting to understand the role which Eph receptors play in regulating several novel features of motor and sensory control in the CNS.

Molecular Therapeutics:
Through the use homologous gene targeting, the role which a specific gene plays in a given signalling process can determined in vivo. Over the past decade, our investigations have allowed us to identify key molecular interactions which govern specific forms of neural cell death. Modified variants these proteins can be introduced in a stable manner into cell lines where the dynamic nature of their interaction can be investigated in real time. Using such methodologies we have developed high throughput screening assays to assess the ability of small molecular interactors to influence specific elements of protein function with respect to cell injury.

Interested candidates should email their CV, transcript and letters of recommendation to:
jeff.henderson@utoronto.ca **Post Date: February 15, 2018**