Weekly Colloquium
Tuesday, 09/13/2016, 12:30pm, Billings Building – Rosedale Conference Room

“Sympathetic nervous system plasticity and gut dysbiosis impair recovery after spinal cord injury”

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General Research: My laboratory is an interdisciplinary research group dedicated to studying the complexities of CNS injury, inflammation and tissue repair. We are currently funded by the NIH to explore the consequences of resident (e.g., microglia) and recruited inflammatory cell (e.g., macrophages, T-lymphocytes) activation on axonal injury, demyelination and neurological function in models of rat and mouse SCI. Inflammation is an inevitable consequence of tissue damage and is necessary for efficient cell repair. However, acute inflammation also causes “collateral” damage to tissues before repair processes are initiated. In the spinal cord, where most cells are post-mitotic and exhibit poor regenerative/repair potential, inflammation can have devastating consequences. We are striving to develop novel therapies that will manipulate or over-ride normal immune function.

Research Interests: Neuroimmunology of spinal cord injury, immunological influences on neuronal degeneration and regeneration, neuroendocrine influences (e.g., stress/HPA axis activation) on inflammatory mediated injury/repair of the CNS.

Research Techniques: Spinal cord injury modeling, immunohistochemistry and state-of-the-art microscopy (light/fluorescence/dark-field/confocal) and image analysis (with stereology), laser-capture micro-dissection, behavioral analysis of locomotor and sensory function, neuroanatomical tract tracing, cell culture (neuronal/glial/macrophage/lymphocyte), FACS analysis, targeted leukocyte depletion, in situ hybridization, animal models of CNS autoimmune disease (e.g. EAE), lymphocyte phenotype and functional assays, basic molecular biology (e.g., PCR). We also have ongoing collaborations using customized DNA microarray technology.

backdrop: Immunofluorescent double-labeling of microglia/macrophages after spinal cord injury. Double-labeled cells (green cytoplasm/orange membrane) express a molecule (CD8) that may be involved in macrophage-mediated neurotoxicity.

Recent Publications:
