Weekly Colloquium
Tuesday, 10/10/2017, 12:30pm, Billings Building – Rosedale Conference Room

“Insights in Cell-Based Approaches for Spinal Cord Repair”

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Research Abstract:
The research in my laboratory focuses on the bioengineering of cell transplants for spinal cord repair. Transplantation of repair-supporting cells has shown promise for restoration of damaged spinal cord nervous tissue resulting in improved recovery of motor and sensory function. The overall repair is limited by spinal cord-related (extrinsic), and cell specific, transplant-related (intrinsic), factors. We employ animal models to better our understanding of the neuroanatomical and functional consequences of spinal cord injury and to use this information to generate and guide cell transplant-based strategies to maximize function recovery. Bioengineering principles are tightly integrated in our studies; the versatility of natural and artificial biomaterials offers important possibilities to address questions related to the failed or limited repair by cell transplants. The Oudega Lab is also involved in developing approaches to effectively promote plasticity in the remaining circuits after a contusive spinal cord injury. We use and optimize spike timing-dependent plasticity and acute intermittent hypoxia protocols to endorse neuronal plasticity and synapse formation in the contused spinal cord segment to enhance the amount and quality of the motor output. These reverse translational studies employ clinical observations as a starting point and employ animal models of contusive spinal cord injury to optimize the overall outcome, which are then tested in patients with such injuries. The overall goal of my scientific efforts is to integrate bioengineering and plasticity principles guided by the specifics of spinal cord injury and the ensuing demands for repair and to develop repair approaches that lead to significant anatomical restoration resulting in functional recovery after spinal cord injury that can be translated into the clinic.

Recent Publications
