Spinal cord injury (SCI) can result in impaired lower urinary tract function (LUT), which ranks as a leading cause of morbidity and mortality. Surveyed SCI individuals target recovery of LUT function as a top priority for research. Clinically, LUT impairment demonstrates variable dysfunction with some showing partial recovery of spontaneous bladder emptying, albeit via adaptive, incomplete pathways. My research focuses on two related areas. The first is to investigate the mechanisms and patterns that correlate with long-term dysfunction versus recovery in an experimental model of SCI. Second is to utilize stem cell and neuroplasticity strategies to develop translational therapies for improving LUT function after SCI. We are currently studying Chondroitinase ABC (ChABC) as a neural repair strategy for enhancing recovery of urinary function. ChABC creates a growth permissive environment after injury by degrading inhibitory chemokines upregulated by the glial scar. Further investigation will be to explore fetal tissue grafts as a substrate for restoring short and long propriospinal connections. Medical students will participate in all aspects of the experimental process including design, small animal surgery, drug and/or tissue delivery, behavioral, physiologic and histologic assessment, and data analysis. This project is supported by departmental funding.