

Rehab-Induced Modulation of the Nociceptor After Spinal Cord Injury

February 11

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building
Rosedale Conference Room



Speaker: Megan Detloff, Ph.D.

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Abstract

My research is focused on understanding the molecular underpinnings that contribute to the development of chronic, debilitating neuropathic pain after spinal cord injury. This pain can be described as the pain of everyday living. Normal activities like wearing a t-shirt or testing the temperature of bath water are perceived as painful. There are two active lines of research ongoing in the lab.

1. Neuroimmune interactions associated with pain development after injury. Traumatic injury to the spinal cord induces a robust immune and inflammatory response at the site of primary injury. Recent evidence from our lab and others suggests that these responses are not limited to the site of injury, but rather extend to remote regions of the spinal cord, brain and dorsal root ganglia. We are focused on understanding how a specific type of immune cells called macrophages interact with pain-sensing neurons after injury to result in their dysfunction.

2. Rehabilitative strategies to prevent or reduce chronic neuropathic pain after injury. Physical therapy and rehabilitation is the standard of care for individuals who have sustained a spinal cord injury. In the lab, we use animal models of both injury and rehabilitation to understand how aerobic, resistance or range-of-motion exercises can induce plasticity or alterations in the anatomical and functional properties of pain sensing neurons.

1. Detloff, MR, Smith EJ, Quiros Molina D, Ganzer PD, Houlé JD. Early exercise intervention after spinal cord injury modulates sprouting of non-peptidergic c-fibers and prevents the development of neuropathic pain. *Experimental Neurology* 2014; 255C:38-48.
2. Detloff MR, Quiros-Molina, D., Javia, AS, Daggubati, L, Nehlsen, AD, Naqvi, A, Ninan, V, Vannix, KN, McMullen, MK, Amin, S, Ganzer, PD, Houlé, JD. Delayed Exercise is Ineffective at Reversing Aberrant Nociceptive Afferent Plasticity or Neuropathic Pain after Spinal Cord Injury in Rats. *Neurorehabilitation and Neural Repair* 2015 Dec 14.epub ahead of print. PMID 26671215.
3. Chhaya, SJ, Quiros-Molina D, Tamashiro-Orrego, AD, Houlé, JD, Detloff, MR. Exercise-Induced Changes to the Macrophage Response in the Dorsal Root Ganglia Prevent Neuropathic Pain after Spinal Cord Injury. *Journal of Neurotrauma* 2018. doi: 10.1089/neu.2018.5819. Epub ahead of print.
4. Chhaya SJ, Schmidt KA, Gistzer SF, Detloff MR. Diverse immune response in the dorsal root ganglia acutely after spinal cord injury. *Scientific Reports Under Revision.*

