

Wired for Touch: The Neurons and Circuits of the Somatosensory System

October 15

Tuesday, 12:30 pm

Weekly Colloquium

Billings Building
Rosedale Conference Room



Speaker: Victoria Abraira, Ph.D.
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Host: Vibhu Sahni, Ph.D.

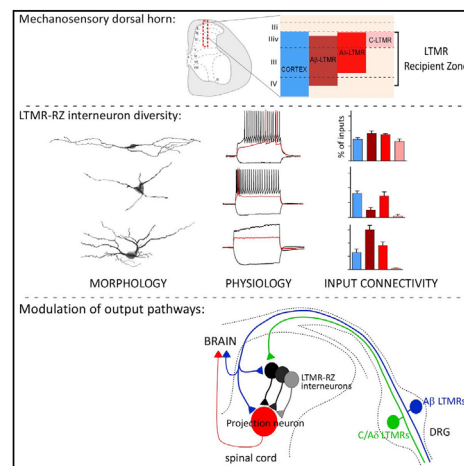
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Abstract

Every time we step out into this noisy, bustling world, a multitude of perceptions are stamped onto circuits of our brain by way of our sensory systems. Among the five senses, touch stands out as one of the most complex and perhaps least well understood, affecting almost every aspect of our everyday lives, from the way we move, feel pain, and even how we socialize with one another. The goal of our research program is to systematically unravel its complexity by uncover the organizational logic of sensory neurons and associated spinal cord circuits responsible for translating stimuli acting upon skin into the neural codes that underlie touch perception and tactile reflexes. To do so we employ an array of mouse genetic tools to visualize and functionally manipulate both sensory subtypes as well as their post-synaptic targets in the spinal cord dorsal horn. Ongoing work aims to understand how spinal cord touch circuits modulate motor function and how rehabilitation after spinal cord injury increases plasticity of spinal cord touch circuits to facilitate recovery. Other projects in the lab are also exploring the overlapping spinal cord circuits of pain and affective touch.

Graphical Abstract



1. Abraira VE*, Kuehn ED*, Chirila AM, Springel MW, Toliver AA, Zimmerman AL, Orefice LL, Bai L, Song BJ, Bashista KA, O'Neill TG, Zhuo J, Tsan C, Hoynoski J, Rutlin M, Kus L, Dymecki SM, Nelson SB, Heintz N, Hughes DI, and Ginty DD. The Cellular and Synaptic Architecture of the Mechanosensory Dorsal Horn. *Cell*. 2017 Jan 12;168(1-2):295-310 (*equal contribution)
2. Rutlin M*, Ho CY*, Abraira VE*, Cassidy C, Woodbury CJ, Ginty DD. The cellular and molecular basis of direction selectivity of Aδ-LTMRs. *Cell*. 2014 Dec 18;159(7):1640-51 (*equal contribution)
3. Li L*, Rutlin M*, Abraira VE, Cassidy C, Kus L, Gong S, Jankowski MP, Luo W, Heintz N, Koerber HR, Woodbury CJ, Ginty DD. The functional organization of cutaneous low-threshold mechanosensory neurons. *Cell*. 2011. 147 (7): 1615-27 (*equal contribution)