

Phox2a Unravels a Developmental and Functional Logic of the Anterolateral System

April 19

Tuesday, 12:30pm

Hybrid - Rosedale Room and Zoom

For Researchers



Speaker:

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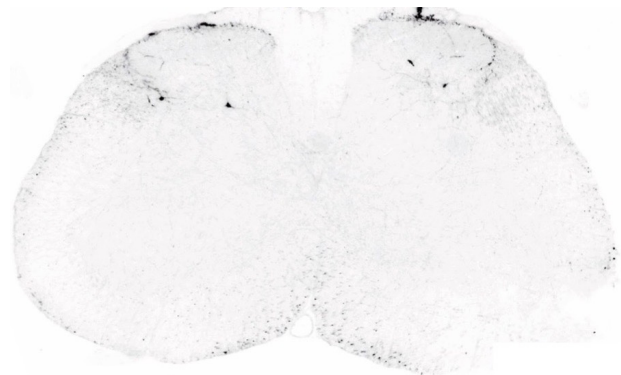
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Abstract

Anterolateral system neurons relay pain, itch, and temperature information from the spinal cord to pain related brain regions, but the differentiation of these neurons and their specific contribution to pain perception remain poorly defined. I will provide evidence that mouse spinal neurons that embryonically express the autonomic-system-associated Paired-like homeobox 2A (Phox2a) transcription factor innervate nociceptive brain targets, including the parabrachial nucleus and the thalamus. I will discuss the essential role for Phox2a in the development of relay of nociceptive signals from the spinal cord to the brain and how the molecular identity of Phox2a neurons is conserved in the human fetal spinal cord. I will also discuss the general logic of nociception in terms of homeostasis.



1. R. B. Roome, F. Bourojeni, S. Rastegar-Pouyani, C. Salessse, W. S. Thompson, M. Goulding, J. Johnson, J. Mogil, M. Kmita and A. Kania. **Phox2a defines a developmental origin of the anterolateral system in mice and humans.** (2020). Cell Reports. 33(8): 108425.
2. W. A. A. Alsulaiman, R. Quillet, A. M. Bell, A. C. Dickie, E. Polgár, K. A. Boyle, M. Watanabe, R. B. Roome, A. Kania, A. J. Todd and M. Gutierrez-Mecinas. **Characterisation of lamina I anterolateral tract neurons that express Cre in a Phox2a::Cre mouse line.** (2021). Scientific Reports. 11, 17912.
3. R. B. Roome, S. Rastegar-Pouyani, A. Ker, A. Dumouchel, M. Kmita and A. Kania. **Netrin1 and reelin signaling are required for the migration of anterolateral system neurons in the embryonic spinal cord.** (2022). Pain 163(4):e527-e539.