



Yale SCHOOL OF MEDICINE

GENETICS DEPARTMENT SEMINAR SERIES

Building a spinal cord: the embryonic development of the vertebrate neural tube

The generation of the correct cell types in the correct position, at the correct time is the first step in the assembly of functional tissues. One well-studied example of this is the development of the vertebrate spinal cord. In this tissue, distinct classes of neurons are generated in a precise spatial and temporal order from progenitor cells arrayed along the dorsal-ventral axis of the neural tube. Underpinning this organization is a complex network of extrinsic and intrinsic factors. Particularly well understood is the mechanism that determines the generation of different neuronal subtypes in ventral regions of the spinal cord. In this region of the nervous system, the secreted protein Sonic Hedgehog (Shh) acts in graded fashion to organize the pattern of neurogenesis. This is a dynamic process in which exposure to Shh generates progenitors with successively more ventral identities. At the same time tissue growth alters the arrangement of cells and the proportions of cell types and contributes to the elaboration of pattern. A gene regulatory network composed of transcription factors regulated by Shh signaling play an essential role in this process. Together, the mechanism determines pattern, pace, precision and proportions in the forming neural tube. Thus, accurate development of the neural tube and the specification of neuronal subtype identity relies on the interplay of cellular and molecular processes.



Dr. James Briscoe, PhD

Senior Group Leader

Francis Crick Institute

Host: Dr. Caroline Hendry, PhD

Scientific Director and Advisor to the Chair
YSM Department of Genetics

Tuesday, April 27, 2021

11:30am - 12:30pm

[Zoom Link](#)

pw: 7852649

The Genetics Calendar of Events can be viewed on-line at
<https://medicine.yale.edu/genetics/events/seminars.aspx>