ARMI SPECIAL SPEAKER 2019

ARMI AUSTRALIAN REGENERATIVE MEDICINE INSTITUTE

10 YEARS 2009–19

Nervous system regionalization involves axial allocation prior to neural differentiation

Dr Vicki Metzis

The Francis Crick Institute

Abstract

Neural induction in vertebrates generates a central nervous system that extends the rostral-caudal length of the body. The prevailing view is that neural cells are initially induced with anterior (forebrain) identity; caudalising signals then convert a proportion to posterior fates (spinal cord). To test this model, we used chromatin accessibility to define cell identity, and pinpoint when cells adopt region-specific neural fates. Together with genetic and biochemical perturbations, we identify a developmental time window in which genome-wide chromatin remodelling events configure epiblast cells with distinct competencies that will influence their subsequent fate choice following neural induction. This “primary regionalisation” event allocates cells to anterior or posterior regions of the nervous system and may act as a general principle guiding the establishment of multiple germ layers in embryos.

Bio

Vicki Metzis is a developmental biologist studying how the central nervous system is formed in embryos. She completed her PhD in mouse developmental genetics at the Institute for Molecular Bioscience and is currently working as a postdoctoral scientist at the Francis Crick Institute. Her work combines embryonic stem cells, computational biology and mouse genetics to define how cells commit to different neural fates along the anterior-posterior axis. By studying enhancer dynamics, she has shown that the competence to form spinal cord is established in cells before they commit to neural fates. Her work has led to our understanding of how the nervous system is regionalised into brain and spinal cord territories in embryos, insights that are informing the generation of distinct cell types *in vitro*.

EVENT DETAILS

DATE:

Monday, 25th March

TIME:

1:30pm

VENUE:

G19
Ground Floor
15 Innovation Walk
Monash University
Clayton Campus

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The Australian Regenerative Medicine Institute (ARMI) acknowledges the generous support of Monash University and the Victorian State Government.