Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Colloquium

How to make a hippocampus

Shubha Tole

TIFR, Mumbai

The brain is created from a simple sheet of tissue in the embryo. How this sheet produces distinct structures in the correct locations, and how the correct numbers of neurons and glia are generated in each structure, are exciting questions of current interest. We discovered that the cortical hem, a signalling centre, instructs the formation of the hippocampus, a structure critical for learning and memory. The position of the hem, therefore, determines the position of the hippocampus. The hem itself produces cell types that guide the migration of hippocampal cells. In a parallel exploration, we identified mechanisms that control the production of neurons versus glia from common progenitors. An intriguing finding is that the same two regulatory molecules, Foxg1 and Lhx2, control both, the position of the hem, and also the neuron-glia cell fate switch in progenitors, indicating a potential re-deployment of genetic "toolkits" for multiple roles in development.

My talk will include data from multiple approaches including in utero electroporation, human embryonic stem cell-derived organoids, and bioinformatic (RNAseq / ChIPseq / ATACseq) analysis.

Monday, Sep 11th 2023

4:00 PM (Tea / Coffee 03.45 PM)

Auditorium, TIFR-H