



Fri., **19 April**, 11:00am



Jukhyun Bio Auditorium(RM.121)



English

## RNA Programs to Control Neuronal Reprogramming



Speaker | Yuanchao Xue, Ph.D.



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Host | Prof. Haihong Shen



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Gwangju Institute of Science and Technology School of Life Sciences

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## Education/Experience



**Speaker**  
Yuanchao Xue, Ph.D.

2000-2004

B.S., in biological science, Xinyang Normal University

2004-2010

Ph.D., in Biochemistry and Molecular Biology, Wuhan University

2010-2015.05

Postdoctoral fellows with Prof. Xiang-Dong Fu, University of California, San Diego

2015.05-present

Professor, Institute of Biophysics, Chinese Academy of Sciences

2016.09-present

Professor, University of Chinese Academy of Sciences

## Abstract

Direct conversion of somatic cells into neurons holds great promise for regenerative medicine. However, neuronal conversion is relatively inefficient in human cells compared to mouse cells. It has been unclear what might be the key barriers to reprogramming in human cells. We recently elucidated an RNA program mediated by PTB to convert mouse embryonic fibroblasts (MEFs) into functional neurons. In human adult fibroblasts (HAFs), however, we unexpectedly found that invoking the documented PTB–REST–miR-124 loop generates only immature neurons. We now report that the functionality requires sequential inactivation of PTB and the PTB paralog nPTB in HAFs. Inactivation of nPTB triggers another self-enforcing loop essential for neuronal maturation, which comprises nPTB, the transcription factor BRN2, and miR-9. I will show our recent progress about how nPTB represses BRN2 transcription to control neuronal maturation, and how to modulate this RNA program to enable deterministic reprogramming of HAFs into functional neurons.