

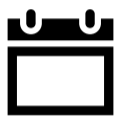
THE GIS SPEAKER SERIES



Decoding cell fates through single-cell genomics, imaging, and machine learning

Dr. Jian Shu

Harvard Medical School, USA



Friday 12 January 2024
4pm



GIS Seminar Room (Level 2)
60 Biopolis Street, Genome, Singapore 138672

About The Speaker

Dr. Jian Shu is an Assistant Professor at Harvard Medical School and Massachusetts General Hospital, as well as an Associate Member at the Broad Institute of MIT and Harvard. Dr. Shu was the valedictorian at Peking University, where he studied stem cell biology and cellular reprogramming. He was a Helen Hay Whitney Fellow, working at the intersection of single-cell genomics and stem cell biology in Dr. Eric Lander's lab at the Broad Institute of MIT and Harvard, as well as Dr. Rudolf Jaenisch's lab at the Whitehead Institute for Biomedical Research at MIT.

The research interests of the Shu lab at MGH/Harvard Medical School center around developing novel scalable experimental and computational methods for decoding, modeling, and engineering complex multicellular systems through single-cell omics, advanced imaging, cell/gene engineering, and machine learning. Dr. Shu has received awards and grants from the NIH New Innovator Award, the Pathway to Independence Award, the NIH Common Fund Cellular Senescence Network, MLSC, Burroughs Wellcome Foundation, Additional Ventures SVRF, Additional Ventures Expansion Award, MGB, Leo Foundation, Harvard Stem Cell Institute, and Helen Hay Whitney Foundation.

About The Seminar

Reconstructing the circuits that control how cells adopt specific fates and engineering these circuits to reprogram cellular functions are major challenges in biology. In this presentation, I will introduce a series of experimental and computational frameworks, such as "Waddington-OT (optimal transport)" and "Raman2RNA," for reconstructing molecular dynamics over time and in live cells through single-cell genomics and imaging. I will demonstrate how these approaches can be used to decode the cellular and molecular mechanisms governing reprogramming and development.