

THE GIS SPEAKER SERIES

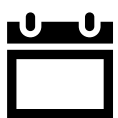


Chance, Necessity, or Free Will: Decision Making in Single Cells

Dr. Yogesh Goyal

Assistant Professor, Northwestern University and Chan Zuckerberg Biohub Chicago

Host: Tam Wai Leong



Tuesday 3 December 2024
10.00am – 11.00am



GIS L2 - Breakout Area
60 Biopolis Street, Genome, Singapore 138672

About The Speaker

Yogesh is an Assistant Professor at Northwestern University and an investigator at the Chan Zuckerberg Biohub Chicago. Yogesh grew up in Jammu & Kashmir in India and has a multidisciplinary background with his undergraduate in engineering at IIT Gandhinagar, graduate research in quantitative developmental biology at Princeton University, and postdoctoral training in single-cell biology at the University of Pennsylvania. Yogesh's group combines novel experimental, computational, and theoretical frameworks to monitor, model, and control single-cell variabilities in health and disease, particularly cancer. Yogesh's work has been recognized by The Pew Scholars Award, Burroughs Wellcome Fund Career Award, Jane Coffin Childs Fellowship, Cancer Research Foundation Young Investigator Award, STAT Wunderkinds, and Schmidt Science Fellowship.

About The Seminar

Single cell variations within a genetically homogeneous population of cells can lead to significant differences in cell fate in response to external stimuli. This is particularly relevant in cancer cells, where a small population of cells can evade therapies to develop resistance. In my talk, I will present ongoing work on tracing the origins, nature, and manifestations of single cell variations in response to a variety of cytotoxic chemotherapies and targeted therapies in various cancer models. By combining clonal barcoding-based and imaging-based lineage tracing frameworks with computational analysis, I will discuss the commonalities and differences in cell fate outcomes across cancers and therapies. Our experimental and computational designs provide a foundation for controlling single-cell variabilities in cancer and other biological contexts, such as stem cell reprogramming and host-viral interactions.