BiophysTO Lunchtime Seminar Series

Date
Thursday, Dec. 7, 2023
12:00 – 1:00 pm

Location
60 St. George Street.
Room MP 606

Dr. Gregory Schwartz

Department of Medical Biophysics, University of Toronto
Princess Margaret Cancer Centre, University Health Network

Detecting spatially-resolved cell-cell communication using deep learning

Emerging evidence suggests tumor microenvironments promote cancer-cell growth through cooperation among cancer cells and stroma recruitment, suggesting involvement from cell-cell communication. Spatial transcriptomics measures spatially-resolved transcriptomic profiles in tissue, providing tumor microenvironment insight. We developed a new computational method to detect communication at spot and single-cell resolution in spatial transcriptomics data that uses graph attention networks to learn spatially-resolved signals. We applied our tool to pancreatic cancer and identified differential enrichment of signals within and between the tumor and stroma across tissue regions, demonstrating that our tool will help advance the field of communication detection.

Bio: Dr. Schwartz is a Scientist at the Princess Margaret Cancer Centre and Assistant Professor in the Department of Medical Biophysics at the University of Toronto. He develops new computational methods and approaches to understand cancer heterogeneity and diverse responses to anti-cancer therapies. His tools cover a broad range of utility, from mutation detection, cell-cell communication inference, visualization of cell states, and more. Strong collaborations with highly interdisciplinary teams enables his current research involving integrating multi-omic information and leveraging single-cell resolution to identify underlying mechanisms of drug resistance in cancer.

Host: Prof. Sid Goyal

Seminar Sponsors

UTSG
Biochemistry   Physics   Chemistry