

BIOCHEMISTRY SEMINAR SERIES

Midstream Presentation - Fall 2020



Zachary Hemminger

Wollman Group

“Scaling up Spatial Transcriptomics using dredFISH”

Spatial transcriptomics is key for cartographic mapping of organs and tissues. Microscopy based approaches for RNA detection are especially promising due to their high detection sensitivity and their ability to be paired with other measurements. Yet, the spatial resolution required to “call” diffraction-limited RNA spots fundamentally limits their throughput. This inefficiency is particularly glaring given that typically the first analysis step using such detailed measurement is dimensionality reduction. Here we show that a supervised design of an oligo probe set leveraging scRNAseq reference data can be used to directly measure a compact representation of gene expression using dimensionality reduced Fluorescent In Situ Hybridization (dredFISH). We aim to compare dredFISH and MERFISH performed on the same mouse hippocampus sections to demonstrate the high accuracy of dredFISH based cell type and gene expression reconstruction. By circumventing the need for individual gene calls, dredFISH eliminates the stringent requirements of single-molecule detection providing much-needed N-fold increase in throughput that will enable the timely creation of 3D whole organ cellular atlases essential to fully understand tissue biology.

Tuesday, October 20, 2020

via Zoom

4:00 pm