

Seminar 2017

Single Cell Time-Lapse Imaging on Micro-Arrays - gene expression kinetics and signaling pathways



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Automated time-lapse microscopy in combination with micro-patterned surfaces allows for efficient high-throughput monitoring of fluorescent reporter signals at the single-cell level. We show that measurement of individual gene expression traces yields access to mRNA translation efficiency, mRNA lifetime and delivery delay times. Analysis of the expression statistics contributes to the development of improved RNA-based therapies.

Secondly I will demonstrate how single cell time courses of fluorescent markers allow for temporal analysis of apoptotic signaling events. By pairwise marker combinations, we assess the chronological order of lysosomal membrane permeabilization (LMP), mitochondrial outer membrane permeabilization (MOMP) and reactive oxygen species (ROS) after exposure to amino-functionalized polystyrene nanoparticles (PS-NH₂). We believe that the assessment of event time correlations provides a broadly applicable systems view on cellular pathways and signal transfer kinetics.

Full abstract, please visit <http://laufercenter.stonybrook.edu/seminar>

Friday October 20, 2017

2:30 PM Laufer Center 101

Host: Helmut Strey

Refreshments: Hub 110 after seminar

