DEPARTMENT OF BIOLOGY | UNIVERSITY of WASHINGTON

Biology Seminar

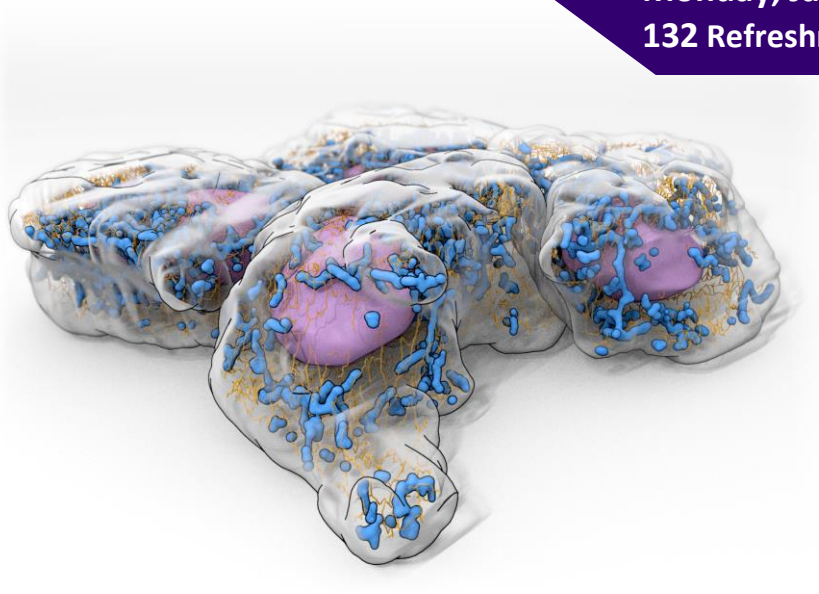
By: Dr. Susanne Rafelski

Allen Institute for Cell Science | Director, Assay Development

https://www.alleninstitute.org/what-we-do/cell-science/about/team/staff-profiles/susanne-rafelski/

The Allen Institute of Cell Science – Integrated, multi-scale and spatial-temporal cell biology

Monday, January 23, 2016 | 12:00pm HCK 132 Refreshments at 11:45am



The mission of the Allen Institute for Cell Science is to understand and predict cellular behaviors. Our initial project takes an integrative approach, developing high replicates of dynamic, visual data on cell organization and activities using endogenous fluorescently tagged human induced pluripotent stem cells. We are quantifying the relative locations and dynamics of the major cellular structures and activities as the stem cells go through the cell cycle and differentiate into cardiomyocytes and respond to environmental perturbations and drugs. We have generated a collection of gene-edited hiPS cell lines (WTC line) with key GFP-tagged structures, including major organelles such as the nucleus, mitochondria and ER and key organizational structures such as microtubules, actin bundles and cell-cell junctions. We implement and validate 3D image processing standards and methods to extract key features of each cellular structure for data analysis and modeling. We are using these cell lines and methods to collect large consistent 3D image data sets for modeling, beginning with statistical integrative modeling of cell organization. The quantitative image and modeling data will be integrated into a visual database, the Allen Cell Explorer.

Hosted by: Alex Paredez, Assistant Professor