QUANTITATIVE & SYSTEMS BIOLOGY COLLOQUIUM:
Exploring myosin diversity, dynamics and function using super resolution microscopy

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Date:
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Time:
10:30 AM – 12:00 PM

Link:
Please email snsgradstaff@ucmerced.edu for the Zoom information.

Abstract:

The ability to watch biological processes as they are happening within living cells using light microscopy has proven to be a very powerful tool for deciphering the inner workings of cells. That said, conventional light microscopes are limited in their ability to resolve objects (i.e. to see them as separate objects) to about 250 nm (this is the so-called diffraction limit). Unfortunately, many objects that biologists wish to resolve inside cells are closer together than 250 nm. Over the last dozen years or so, a number of super-resolution light microscope modalities have been developed that break this diffraction limit, allowing investigators to resolve subcellular objects that are closer together than 250 nm. Today I will tell you how my lab has used one of these super-resolution modalities, structured illumination microscopy or SIM, to explore three aspects of the ubiquitous, actin-based molecular motor myosin 2. This myosin resembles the myosin present in the muscle sarcomere but operates as a much smaller assembly within all nonmuscle cells (e.g. neurons, immune cells, etc.) to power fundamental contractile events like cell migration and cell division. I will tell you how we used SIM to define the composition of myosin 2 filaments in cells, how these filaments form within cells, and how they drive the formation of the immunological synapse in T lymphocytes.

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