



Department of Anatomy and Cell Biology
Hosted by Dr. Susanne Bechstedt

Luke Rice, PhD
University of Texas Southwestern
Department of Biophysics and Biochemistry
Associate Professor

“Mechanism and regulation in microtubule dynamics”



Microtubules are dynamic polymers of $\alpha\beta$ -tubulin that have essential roles in intracellular organization and chromosome segregation. The dynamic properties of MTs are central to their function, and they derive from the properties of individual tubulin subunits and their interactions within the MT lattice. Microtubule dynamics is a fascinating problem that tests our ability to integrate ‘one molecule at a time’ views of biochemistry and structure with lower-resolution measurements of collective behavior. My laboratory is focused on bridging this gap by discovering and quantifying the structural and molecular mechanisms that underlie microtubule dynamics and the action of regulatory factors. To provide a new way to study and perturb microtubule dynamics, my laboratory introduced methods for purifying recombinant $\alpha\beta$ -tubulin on a scale that permits structural and biochemical studies. Our work draws on structural, biochemical, and reconstitution studies as well as computational simulations. I will present recent work from my group that is uncovering the mechanisms of XMAP215-family polymerases and CLASP-family rescue factors. These are two cellular factors that regulate microtubule dynamics in different ways despite sharing a common domain organization. At the end of my talk I will presenting ongoing collaborative work in which we are applying interferometric scattering microscopy to observe the microtubule growth at the level of individual $\alpha\beta$ -tubulins.

Wednesday, November 21st, 2018
11:30 am

Strathcona Anatomy Building
3640 University Street
Room 2/36

www.mcgill.ca/anatomy/seminars
anatomysec.med@mcgill.ca