



Understanding life one molecule at a time: using single molecule methods to probe molecular and cellular machinery

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Date: 8 June 2015, Monday

Time: 4-5pm

Venue: Perseverance Room, Enterprise Level 5

Abstract: We focus on using single molecule techniques such as optical trapping and single molecule fluorescence spectroscopy to investigate cellular and molecular machinery such as kinesins, ClpXP, amyloid fibers, and peptide recognition through the TCR-pMHC interaction. The talk will specifically focus on our work with cellobiohydrolase 1 from *Trichoderma reesei*, which processively hydrolyzes cellulose into cellobiose units. We developed a single molecule optical trapping assay to track TrCel7a with nanometer resolution in which we discover steps of approximately 1nm, a single cellobiose unit. In addition to investigating the effect of force and temperature on this motor, we probed isolated TrCel7a domains to gain insight into a motility mechanism and determine that the catalytic domain alone is sufficient for processive motion.

Biography: Sonia is entering her 5th year as a graduate student in Prof. Matthew Lang's lab in the Chemical and Biomolecular Engineering department at Vanderbilt University. She is a graduate of Trinity University in San Antonio, TX, graduating summa cum laude with a B.S. in Engineering Science in 2007. Sonia is a recipient of Vanderbilt's University Graduate Fellowship, the GAANN fellowship, and has recently been accepted into Vanderbilt's Scientist in the Classroom Program as a Student Teaching Fellow.