



West Virginia University®

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Resolving Molecular Interfaces in Biological Membranes

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The plasma membrane is the boundary between a cell and its surroundings. At the membrane, cells present an array of protein receptors that process environmental cues. The spatial and temporal arrangement of these receptors is critical to function, but the chemical forces driving this organization are not well understood. Membrane protein dimerization, for example, is a key regulator of many receptor pathways, but its role in others is still controversial or completely unknown. Assembly of receptor complexes upon ligand stimulation is central to many signaling pathways, but the kinetics and thermodynamics of the assembly process are still poorly understood. Lipids in the membrane have been hypothesized to play many structural and regulatory roles in receptor activation, but the details of the lipid-protein interface are still largely unexplored because of experimental difficulties. I will describe two ongoing projects in my group. In the first project we investigate membrane protein interactions in live cells using PIE-FCCS and related methods. These efforts have led to several key insights into the organization and activation mechanism of receptors like plexins, growth factor receptors, and visual photoreceptors. The second project is to resolve the details of lipid-protein coupling in model membranes to build a more complete picture of the chemical landscape that governs cell communication.

Date: Wed, Oct 11, 2017

Time: 4:30-5:30 pm

Location: 208 Clark Hall

Students, meet the speaker over coffee and cookies in the Bennett Conference room at 3:30 pm