BIOPHYSICS COLLOQUIUM

March 29, 2017 700 Clark Hall, 4pm

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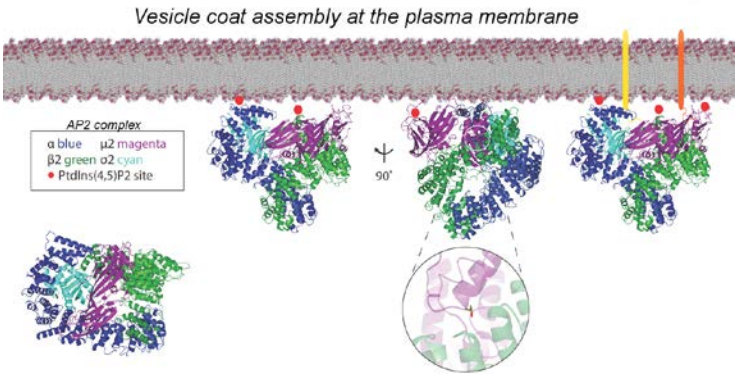

Molecular mechanisms of coat assembly in membrane trafficking pathways

Membrane trafficking pathways are vital to eukaryotic cell health and viability. The Jackson lab investigates molecular structures and functions of key protein complexes that initiate cellular trafficking pathways. We focus on the adaptor protein 4 (AP4), coat protein complex I (COPI), and retromer complexes and their roles in both fundamental cell biology and human brain disease. Coat complexes function as “hubs” by recognizing cargo and coordinating large protein networks that drive regulated formation of vesicles or tubules at donor membranes. We use biochemical, biophysical, and structural methods to address at the molecular level how coats interact with protein and lipid partners to initiate and regulate coat assembly and to sort important cargoes to different destinations. We have recently identified how the AP4 coat complex interacts with its only known accessory protein, tepsin (Frazier et al, Traffic 2016). We have determined high resolution crystal structures of both structured domains (ENTH, VHS-like) found in tepsin; both show key differences from published structures and offer interesting implications for domain function and evolution. The lab also focuses on how coats are regulated. We have recently obtained biochemical evidence for direct regulatory protein-protein interactions in the COPI coat at the Golgi, and we are pursuing EM structures of the endosomal retromer coat in complex with a potential regulator called VARP.

Host: Chris Fromme

Biophysics Colloquium chair: Michelle Wang

Biophysics Colloquia website: http://www.biophysics.cornell.edu/seminars