Ackert Hall, Room 120
Wednesday, October 30, 2024
4:00 P.M.

Coffee and Cookies
Chalmers Hall, Room 168
3:45 P.M.

Biochemistry & Molecular Biophysics Seminar

Using plant viruses to understand how biomolecular condensates shape virus-host interactions

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Biomolecular condensates are dynamic, membraneless cellular compartments formed by the reversible assembly of proteins, nucleic acids, and other biomolecules. These structures are involved in a wide range of functions, including flowering, stress responses, RNA processing, and DNA damage repair. Most viruses reorganize intracellular membranes, such as the endoplasmic reticulum or peroxisomes, to create subcellular viral replication organelles that facilitate virus replication. Emerging evidence suggests that viral proteins often undergo phase separation to form viral condensates during infection. However, the role of membraneless compartments in plant virus replication remains poorly understood. Work from the May Laboratory demonstrates that the movement protein from Pea enation mosaic virus 2 (PEMV2) forms condensates that i) aid virus movement through infected plants, and ii) repress cellular translation during the late stages of infection. Using Turnip crinkle virus (TCV), we have discovered that endogenous condensates formed by a splicing and RNA decay factor compete with the viral replication machinery for host factors. Conversely, the inherently disordered and insoluble capsid protein from TCV regulates autophagy. Collectively, our work sheds light on how cellular and viral condensates influence virus-host interactions and decide the outcome of infections.