Seminar/Talk

Programmed Nanomachines: From Viruses to Designed Proteins Visualized by Cryo-EM

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Host: Jack Bravo

Virus maturation is a fundamental biological process involving large-scale structural reorganizations that drive functional activation and ultimately confer infectivity. Understanding the transition from the initial procapsid to mature virions is crucial for elucidating viral replication cycles and developing antiviral therapies. However, capturing intermediate states in this process has been challenging due to their transient nature.We present high-resolution cryo-electron microscopy (cryo-EM) structures of five intermediates in the maturation pathway of Nudaurelia capensis omega virus (NωV), a non-enveloped, T=4, ssRNA virus regarded as a tractable model system for studying eukaryotic virus maturation. These structures enable us to describe the maturation pathway of a eukaryotic virus with unprecedented detail.Building on geometric insights from naturally occurring assemblies, we are also designing synthetic symmetric assemblies, such as protein cages, for biomedical and structural biology applications, including their use as imaging scaffolds to determine the structures of small proteins by cryo-EM.

Thursday, October 2, 2025 04:00pm - 05:30pm
Moonstone Bldg / Ground floor / Seminar Room F

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