

Johns Hopkins University

Department of Biology Seminar Series



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Dept of Cell Biology

NYU School of Medicine

Thursday Sept 7th, 2023 | 12:30-1:30pm
Mudd 100

"How microsporidia pathogens use ballistic organelles to invade host cells"

Microsporidia, a category of emerging pathogens, are single-celled, eukaryotes that infect a wide range of animal species. In humans, microsporidia infections can be life-threatening in immunocompromised individuals. To initiate infection in a host, microsporidia employ a tantalizing, unique and very intricate harpoon-like invasion organelle, which pierces the target cell and facilitates translocation of pathogen DNA and other cellular contents into the host. The firing of this protein-based harpoon, called the Polar Tube, is violent and occurs rapidly, within roughly one second. We are using advanced imaging techniques such as cryo-electron microscopy, high-speed optical microscopy, and cryo electron-tomography to understand how this incredible biological machine works, how it is built, and how it helps the pathogen to gain entry into host cells. The imaging techniques we optimize for studying microsporidia, from the level of atoms to cells, will also be broadly applicable to studying other emerging pathogens.

Host: John Kim & Tatjana Trcek