Small Molecule -Membrane Interactions Drive Bacterial Membrane Vesicle Formation

Bacteria possess many systems for the secretion and delivery of cargo to target cells. One important system, which is ubiquitous among Gram-negative organisms, involves transport in small vesicles that bud off from the outer membrane. Outer membrane vesicles (OMVs) have been shown to deliver toxins to host cells and competitors, avoid and interfere with the immune response, transfer antibiotic resistance genes, sequester and degrade antibiotics, and traffic both cell-to-cell communication signals and small RNAs. Despite their direct contribution to so many pathogenesis-related behaviors, our understanding of how OMVs are produced remains surprisingly incomplete. This presentation will discuss a bilayer-couple model of OMV biogenesis. This biochemical/biophysical model describes how intercalation of a self-produced small molecule preferentially into the outer leaflet of membrane causes it to expand relative nd r 0.tive nd r 0.tive nd r 0.tive ndf me

with outer membrane lipids and (2) how membrane responds to small molecule association.

Biography

Xin Yong is currently an assistant professor of mechanical engineering and associated faculty member of the Materials Science and Engineering program at Binghamton University. He received his BS in physics at Peking University in 2007 and PhD in mechanical engineering from Rensselaer Polytechnic Institute (RPI) in 2012. After graduation, he completed a postdoctoral training in the department of chemical and petroleum engineering at the University of Pittsburgh. His research focuses on computational simulations and mathematical modeling of transport processes and interfacial phenomena in soft matter, including colloids, polymer, and biomolecular systems, which are funded by NSF, NIH, and industries. He is a recipient of the Doctoral New Investigator award from the American Chemical Society Petroleum Research Fund.

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Room E430

Refreshments will be available at

3:30 PM.

In W217

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