UC RIVERSIDE

Institute for Integrative Genome Biology Seminar Series

You are cordially invited to attend:

Dr. Steven Theg

Distinguished Professor of Biological Sciences
UC Davis

The unexpected role of membrane biophysics in protein transport on the Tat pathway

Date: Friday, April 21th
Time: 12:00 pm - 1:00 pm
Location: Genomics Auditorium 1102A + Zoom

Host: Dr. Jaimie Van Norman

Abstract:
The enigmatic twin-arginine translocation (Tat) pathway transports proteins across membranes in bacteria, thylakoids, plant mitochondria, and archaea. Most protein translocation pathways require the hydrolysis of ATP to power the transport reaction, and for their substrates to be unfolded during transport. Not so for the Tat pathway, which transports folded proteins without NTP hydrolysis, using instead the energy contained in the transmembrane proton motive force. For all other multi-substrate protein translocators known, protein transport is achieved by driving the substrate through a proteinaceous pore. Our experiments point to a different mechanism for the Tat pathway, in which proteins pass through transient toroidal pores made in response to membrane thinning and subsequent bilayer destabilization. Evidence for this mechanism will be presented. A new real-time assay for protein transport we'll also be described, and with this we clear up a long-standing uncomfortable conundrum in the field.