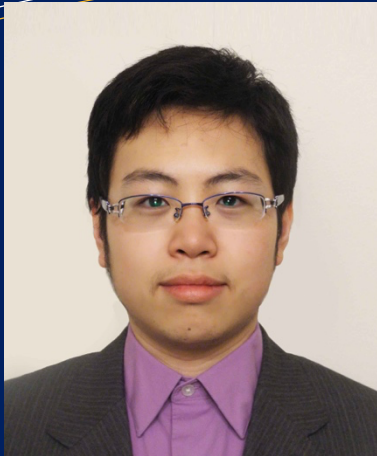




QUANTITATIVE AND SYSTEMS BIOLOGY COLLOQUIUM: Bacterial biofilms as self-shaping growing active matter



Date:

3/15/2024

Time:

12:30 – 1:45 PM

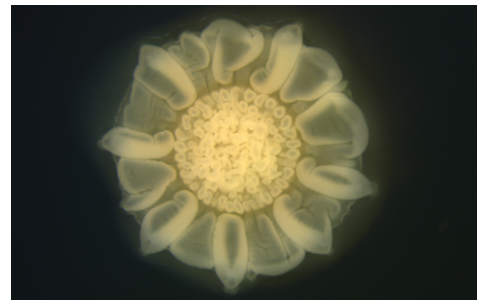
Location: GRAN

135

Jing Yan
Yale University

About The Speaker:

Jing Yan is currently an Assistant Professor of Molecular, Cellular and Developmental Biology and a member of the Quantitative Biology Institute (Qbio) at Yale. Originally from Shanghai, China, he obtained his B.S. degree from the College of Chemistry and Molecular Engineering at Peking University in China, with extensive undergraduate research experience in organic synthesis. In 2009, he switched to the field of soft matter physics and pursued Ph.D. degree in the Department of Materials Science and Engineering at the University of Illinois at Urbana-Champaign. Working with Steve Granick, he developed novel reconfigurable, active colloidal materials during his Ph.D. In 2014, he stumbled into microbiology at Princeton as a joint postdoctoral researcher in the department of Molecular Biology and Mechanical and Aerospace Engineering. Working with Bonnie Bassler, Howard Stone, and Ned Wingreen, he studied bacterial biofilms with an interdisciplinary approach. With new imaging techniques, he discovered the spontaneous cellular ordering inside *V. cholerae* biofilms that leads to the formation of tenacious biofilm clusters. His study on the biofilm material properties leads to innovative methods to remove harmful biofilms. Jing received the Career Award at the Scientific Interface from Burroughs Wellcome Fund (BWF) in 2016, NIH Director's New Innovator Award in 2021, Sloan Research Fellowship in 2023, and Investigator in Pathogenicity from BWF in 2023.



Abstract:

Biofilms, surface-attached communities of bacterial cells, are a concern in health and in industrial operations because of persistent infections, clogging of flows, and surface fouling. On the other hand, biofilms also display many interesting features as self-shaping and self-organizing materials. In this talk, I will discuss about our recent progress in using *Vibrio cholerae* as a model biofilm former to reveal the biophysical principles behind biofilm formation, in particular in confined environment, both at the single cell level and at the continuum level. More broadly, our findings provide new framework to understand how confined cell communities grow by means of a compromise between their inherent developmental program and the mechanical constraints imposed by the environment.

For more information, contact: Roberto Andresen Eguiluz
randreseneguiluz@ucmerced.edu