CHEMISTRY Departmental Seminar

Fall 2018
CHEM 285/191 Schedule
Tuesdays at 4:30-5:45PM
Room Duncan Hall 250

September 18th, 2018

Professor Lynette S. Cegelski
Stanford University

**New Views of Bacterial Cell Walls and Biofilms**

The bacterial cell wall is essential to cell survival and is a major target of antibiotics. Beyond the cell surface, bacteria assemble macromolecular architectures during biofilm formation. Biofilms are implicated in serious infectious diseases and have emerged as a target for anti-infectives. Our research program is inspired by the challenge and importance of elucidating chemical structure and function in these complex biological systems and we strive to transform our discoveries into new therapeutic strategies. We have introduced new approaches using whole-cell and cell-wall solid-state NMR, integrated with biochemical analysis to reveal how the biological functions of cell walls and biofilms depend on their chemical composition and architecture. We are probing the modes of action of newly discovered antimicrobials and anti-virulence compounds, including a number of promising compounds we have identified in our laboratory. I will report on our recent discoveries including: (i) the determination of cell-wall compositional changes due to antibiotics in the context of intact unperturbed cells; (ii) the composition and function of the amyloid-associated biofilm matrix for uropathogenic *E. coli*, including the biosynthetic production of a chemically modified cellulose; and (iii) small molecules that enhance our understanding of the composition and assembly of cell walls and biofilms.

For more information: Prof. Simocko at chester.simocko@sjsu.edu or Prof. Wang at ningkun.wang@sjsu.edu

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The Chemistry/Biology Interface (CBI) Training Program is a multi-departmental interdisciplinary program that provides cross training in concepts and techniques from chemistry and biology. Students who are accepted into a Stanford PhD program in chemistry, engineering, or the biosciences are eligible to apply.

Key program elements include:
- First year lab rotations
- Interdisciplinary and translational courses
- Annual retreat
- Career development activities

Prospective applicants may be eligible for graduate application fee waivers. Email kalfieri@stanford.edu for details.

“Our aim is to prepare chemists, biologists, and engineers to identify critical problems of human health importance and to tackle these challenges using an interdisciplinary approach grounded in our understanding of human health at the molecular level.”

CAROLYN BERTOZZI
Program Director