

Wednesday, March 27, 2024 | 103 Churchill Hall | 12:00 PM

Hosted by the Department of Chemical Engineering

Distinguished Seminar Speaker

***Role of microenvironment on mediating diseases,
DNA repair, and lipid alterations***

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Abstract: Our group incorporates metabolic engineering and systems biology approaches in combination with biochemical and molecular biology measurements to identify targets and disease biomarkers. To modulate these targets and pathway we are concomitantly developing polymeric-based drug delivery systems.

We apply a multifaceted approach in investigating the role of soluble cues (e.g., elevated fatty acid levels, PFAS) in the microenvironment on modulating the signaling and regulatory pathways that contribute to diseases. These extracellular signals are mainly in the form of soluble factors that activate intracellular signaling cascades that drive changes in the cell. Our group has identified that saturated fatty acids (i.e., palmitate), which are well studied for their roles in metabolism, can also activate signaling pathways that affect proteostasis. Through biochemical and biophysical studies, we found that palmitate binds directly to proteins involved in proteostasis to

modulate their activity and downstream signaling to alter DNA repair, which has implications on chemotolerance, lipid profile, and heart disease.

Biography: Christina Chan is University Distinguished Professor and Interim Chairperson of Chemical Engineering at Michigan State University (MSU). She has appointments also in the Departments of Biochemistry and Molecular Biology, Biomedical Engineering, and Computer Science and Engineering. Prior to joining MSU in 2002, she was a post-doctoral fellow at the Center for Engineering in Medicine at the Harvard Medical School. Chan earned her B.S. in Chemical Engineering from Columbia University and her M.S. and Ph.D. in Chemical and Biochemical Engineering from University of Pennsylvania. She spent 8 years in DuPont prior to returning to academia. Her laboratory applies a multifaceted approach in investigating the role of soluble cues in the microenvironment on modulating the signaling and regulatory pathways that contribute to diseases. To modulate these targets and pathways, her laboratory is developing polymeric-based drug delivery systems as well as tissue engineering platforms that capitalize on how scaffolds, cells, and biologically active molecules interact to form functional tissues. Her group has published more than 165 journal articles, reviews, book chapters and reviewed conference papers. She was elected Fellow of American Institute of Medical and Biological Engineering (AIMBE), AIChE and AAAS.
