UC San Diego
JACOBS SCHOOL OF ENGINEERING
NanoEngineering

UCSD NANOENGINEERING/CHEMICAL ENGINEERING

SEMINAR SERIES

Wednesday, April 19th, 2023
Seminar Presentation: 11:00am – 12:00pm
SME room 248

"Calibrating Immunometabolism to Treat Diseases"

Dr. Abhinav Acharya, PhD

Assistant Professor
Arizona State University

Abstract: Immunometabolism reprogramming is involved in the progression, induction and therapy of several diseases such as cancer, infections, and autoimmune disorders. Notably, modulation of immunometabolism can be performed by delivery of cell-permeable metabolites, enzymatic inhibitors, or through gene editing. For example, metabolites provided systemically may improve immune cell function. Importantly, these strategies can be targeted toward both innate and adaptive branches of the immune system to generate effector functions. In this presentation, I will introduce strategies for modifying immunometabolism of dendritic cells, macrophages, and T cells for supporting the induction of immune responses in rheumatoid arthritis, sepsis, multiple sclerosis, and melanoma (skin cancer), with special emphasis on melanoma and Rheumatoid Arthritis treatment. Specifically, these projects are geared toward developing immunotherapies by directly modulating the metabolism of immune cells to develop robust immune responses in mouse models. Overall, these projects will demonstrate the importance of metabolite modulation in reprogramming immune responses.

Biosketch: Dr. Abhinav Acharya is an Assistant Professor in the Chemical Engineering Program in the School of Matter, Transport and Energy at Arizona State University. He receiveda B.S..in Materials Science and Engineering from National Institute of Technology, Trichy, India in 2005 and M.S./Ph.D. in Materials Science and Engineering from University of Florida, Gainesville in 2010. Dr. Acharya's research focuses on uncovering new relationships between metabolism of biomaterials and immune cell function, as well as utilizing biomaterials to modulate disease outcomes. To achieve their research goals, his lab uses experimental techniques that involve experimental techniques that include chemical synthesis, material characterization, in vitro analyses, and in vivo validation. In recent years, Dr. Acharya has received an NSF CAREER award, NIH R01 awards, DOD Idea Awards, among others.