

Department of Biomedical Informatics
School of Medicine and College of Engineering and Applied Sciences
Special Seminar

Through the Mosaic-Glass: Understanding
the origins of variability in our responses to diseases



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Thursday, May 9, 2024
1:00pm – 2:00pm

Location: In Person MART 7M- 0602

Join Zoom Meeting

<https://stonybrook.zoom.us/j/94473764355?pwd=UGtMWXdFNTQ0YkV1RzJXRFpvenJ5QT09>

Meeting ID: 944 7376 4355

Passcode: 401852

Abstract: Our immune system's response to an infection is a stunningly rich, complex, and dynamic process in which T and B cells are recruited, proliferate, and differentiate into a wide array of cell types. The reproducibility of this process is paramount for sustained protection against infections and malignancies and for reliably building a repertoire of immunological memory against pathogens and tumor antigens. However, the intensity and breadth of T and B cell responses to infections, cancers, and vaccines vary between and within individuals, as well as across our lifespans, and the mechanisms governing this diversity remain unclear. We develop integrative approaches that combine novel computational methods with data derived from a diverse set of immunological experiments to quantify the complexity and dynamism in the processes regulating our immune competency. In this talk, I will focus on our efforts to synthesize population-structured probabilistic and dynamical models to understand how baseline immune variation determines and shapes the diversity of our responses to diseases.

Bio: Sanket Rane, PhD is a theoretical immunologist trained in deterministic and probabilistic mathematical modeling, inference-driven Bayesian statistical methods, and cell biology techniques. Sanket earned his PhD in immunology at the National Institute of Immunology, India, for investigating molecular and cellular factors that govern T cell numbers and function during healthy aging. He transitioned into using computational approaches to study lymphocyte ecology during his postdoctoral years at the University of Glasgow and Columbia University.