

SPEAKERS

CELLULAR SCALE

Brian M. Baker
University of Notre Dame

Steven Kleinstein
Yale University

Nir Yosef
University of California
Berkeley

ORGANISMIC SCALE

Catherine Blish
Stanford University

Michael Birnbaum
Massachusetts Institute of
Technology

Sarah Cobey
University of Chicago

Herbert Levine
Northeastern University

Ramit Mehr
Bar-Ilan University

POPULATION SCALE

Peter Bradley
University of California
Los Angeles

Purvesh Khatri
Stanford University

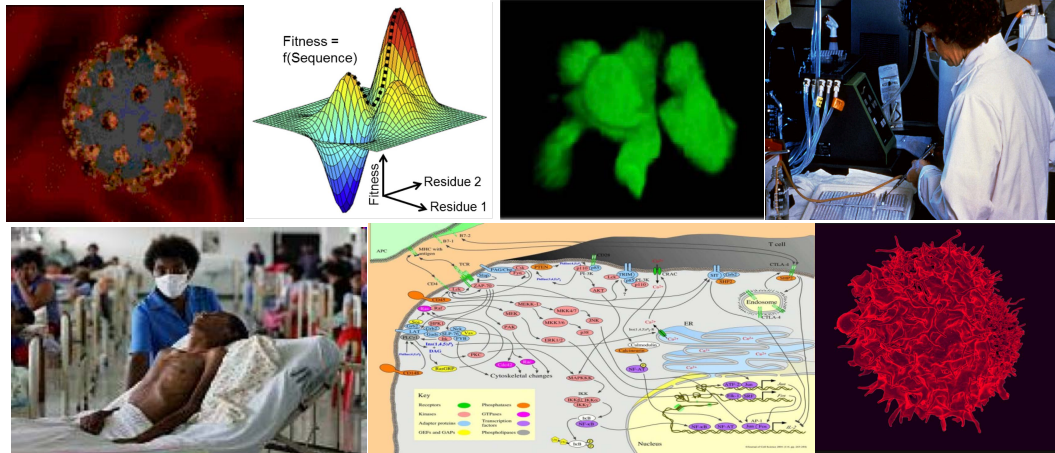
Matthew McKay
Hong Kong University of
Science and Technology

Mercedes Pascual
University of Chicago

Physical Concepts and Computational Models in Immunology:

A Discussion Forum for Studies Across Scales of Space and Time

SCALES: Cellular, Organismic, Population



WHEN: September 26-27, 2019

**WHERE: The Ragon Institute & MIT,
Cambridge, MA USA**



Organized by: Arup K. Chakraborty, Michael Lässig, and Aleksandra Walczak

This is an exciting time for immunology. Immunologists are attempting to answer increasingly complex questions concerning phenomena that range from the genetic, molecular, and cellular scales to that of organs, whole animal or humans, and populations of humans and pathogens. Some of the questions we seek to answer include:

How do the many different components involved interact with each other cooperatively, within and across these scales, for systemic immune responses to emerge?

How does aberrant regulation of these processes cause disease?

The non-linear, cooperative, and stochastic character of the interactions between components of the immune as well as the overwhelming amounts of data, that can now be collected can make it difficult to intuit patterns in the data or a mechanistic understanding of the phenomena being studied. Concepts rooted in physics and computational models are increasingly playing a key role in overcoming these challenges.

At this 3rd Annual symposium, the lectures will be followed by extended discussions on the technical challenges in the computational/theoretical realm, and how they might be addressed. We aim to cultivate a community for junior scientists in the field around the world. This an annual forum where junior and senior computational and theoretical scientists and experimentalists can come together to discuss the key advances and challenges thus junior scientists are especially welcome.

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