

COMPUTATIONAL IMMUNOLOGY SYMPOSIUM

RAGON INSTITUTE OF MGH, MIT & HARVARD

June 12, 2009 8am–6:30pm. **New Location:** MIT Wong Auditorium at The Tang Center
MIT Building E51, Room 115 (Corner of Amherst Street & Wadsworth Street Cambridge, MA)

The Ragon Institute of MGH, MIT, and Harvard was established in early 2009 to bring together approaches from diverse disciplines to confront the challenges of developing vaccines against infectious diseases such as HIV/AIDS. Theoretical, computational, and quantitative approaches, rooted in the physical and engineering sciences, are beginning to play an important role in developing the principles that govern many basic processes in immunology as well as host–pathogen interactions.

The purpose of this symposium is to bring together theoretical scientists from diverse disciplines with immunologists and virologists to discuss how theory/computation can advance our understanding of the immune response to pathogens, and harness that understanding to develop therapeutic protocols. Junior and senior scientists who have not previously worked on immunology or infectious disease are especially encouraged to attend. The goal of the Ragon Institute is to encourage fresh ideas and approaches to help confront global scourges such as HIV/AIDS.

PROGRAM

8:00 – 8:45 am Registration and refreshments
8:45 – 8:55 am Opening remarks, Arup K. Chakraborty (MIT)

SESSION I: BASIC IMMUNOLOGY

8:55 – 9:45 am **Stephen Quake (Stanford)**
Sequencing the Immunome: How Many Antibodies are There?
9:45 – 10:35 am **Aviv Regev (MIT & Broad Institute)**
Reconstructing the regulatory circuits of pathogen sensing in mammals
10:35 – 10:55 am **COFFEE BREAK**
10:55 – 11:45 am **Arup K. Chakraborty (MIT)**
How the T cell repertoire is designed and its implications for elite controllers of HIV
11:45 – 1:15 pm **LUNCH**

SESSION II: EVOLUTION OF PATHOGENS & ANTIBODIES

1:15 – 2:05 pm **David Nelson (Harvard)**
Life at the front of an expanding population
2:05 – 2:55 pm **Eugene Shakhnovich (Harvard)**
B cell reaction in Germinal Centers: a microscopic insight into evolutionary arms race
2:55 – 3:15 pm **COFFEE BREAK**

SESSION III: HIV DYNAMICS & VACCINE DESIGN

3:15 – 4:05 pm **Alan Perelson (Los Alamos National Lab)**
Modeling HIV Infection: Insights and Open Questions
4:05 – 4:55 pm **William Fisher (Los Alamos National Lab)**
Two short stories on sequence strings: 454 sequence clean-up, and mosaic vaccine design
4:55 – 5:15 pm **COFFEE BREAK**

SESSION IV: PERSPECTIVE

5:15 – 5:45 pm **Bruce Walker (MGH)**
Challenges and opportunities in HIV research
5:45 – 5:50 pm Closing remarks: Arup K. Chakraborty (MIT), Bruce Walker (MGH)

5:50 – 6:45 pm **WINE AND CHEESE RECEPTION**

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