


# M14: Hierarchical Models for Omics Data

 Wed. March 8, 8:00 a.m. – 10:24 a.m. PST

 Room 206

**Sponsoring Units:** DBIO

**Chair:** Mihaela Sardi, University of Kansas Medical Center

**Session Type:**

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## Optimal design of cocktail boosters to elicit a polyclonal response against related viral strains

Wed. March 8, 10:00 a.m. – 10:12 a.m. PST  
Room 206

Immune escape from previous antibody responses by variants of a pathogen is a common threat from frequently mutating viruses, like influenza or SARS-CoV2. A recently developed strategy for epidemic control of the latter is the administration of a cocktail vaccine booster made of ancestral strain and omicron strain (1:1), which has already undergone clinical trials and has been approved in some countries. By exploiting a mapping of models describing the evolutionary dynamics of B cells during affinity maturation to a simple quantum mechanical analog, we investigate the optimal antigen composition of the cocktail vaccine in order to best exploit immune memory generated by previous encounters of related pathogen strains.

### Presented By

- Federica Ferretti (MIT)

### Authors

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- 001 Growing a network via oscillations on nodes
- 002 Mechanisms of mammalian drug resistance acquired during long-term evolution
- 003 Specificity, cooperativity, synergy, and mechanisms of splice-modifying drugs
- 004 Experimental quantification of model identifiability and information loss due to distortions in fluorescence microscopy and image processing
- 005 Computational agent-based modelling reveals the role of tumour microenvironment on the success of combination chemotherapy/immunotherapy to treat glioblastoma
- 006 Using the Finite State Projection based Fisher Information Matrix to optimize single-cell experiment designs under different combinations of discrete stochastic models and measurement errors
- 007 Live imaging of gut-associated innate immune cell motion
- 008 Identifying the transition genes and state specific gene regulation from single-cell transcriptome data with spliceJAC
- 009 Analytical model for vaccination protocols that optimally produce broadly neutralizing antibodies
- 010 A model for how T cell-mediated autoimmunity can be triggered by persistent viral infections
- 011 Optimal design of cocktail boosters to elicit a polyclonal response against related viral strains
- 012 Stochastic modeling for studying the effects of BET inhibitors on the modulation of P-TEFb levels

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