

# ACMS Statistics Seminar

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**Penn State University  
Tuesday, September 17  
154 Hurley Hall  
3:30– 4:30 PM**



## **Detecting rare cells in single-cell data for HIV vaccine development**

Current vaccine development for HIV has been targeted to induce protective T cells. Clinicians and immunologists rely on single-cell technologies to distinguish and identify functionally distinct T cell responses to vaccination. The ability to efficiently identify these cell subsets, especially the small ones is crucial to decipher system-level biological changes. During this talk, I will first present a new clustering framework names Hidden Markov Model on Variable Blocks (HMM-VB). HMM-VB leverages prior information about chain-like dependence among groups of variables to achieve dimension reduction as well as incisive modeling of the rare clusters. In the second part of the talk, I will briefly discuss a novel computational framework to assess the uncertainty inherent in clustering analysis, which is caused by randomness in data or limitations of algorithms.

The Department of Applied and Computational  
Mathematics and Statistics

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