Bar-Ilan University
Faculty of Medicine

אוניברסיטת בר-אילן
הפקולטה לרפואה

Faculty Seminar

Identifying the different scales of selection that influence immunity, from the competition of cells to the evolution of the immune system

By

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at 13:00 in the Auditorium

Abstract

My work focuses on B cell receptor repertoires, and the selection processes that govern their composition. In my talk I will present a set of related studies from my lab on the analysis of high-throughput B cell receptor gene sequence experiments. We have developed and validated a new set of computational tools to analyze, characterize and compare large datasets of immune repertoires. One of the strengths of our research is its collaborative element. Through collaboration with several experimental and computational immunology labs we have developed a novel pipeline to aggregate high throughput sequencing experiments of immune cell repertoires into their component clonaotypes. We used this pipeline to create a novel database, together with several experimental collaborators from UPenn, Columbia University, King's College in London and Lubek University. These collaborations have resulted in several interesting and related findings on the evolution and selection of the immune repertoire, which I will discuss - (I) B cell receptor sequence structure influences the mutation an substitution patterns of B cell clones impacting the potential patterns of diversification in immune repertoires. (II) Characterizing the different types of somatic selection pressures and their influence on the development of immune repertoires. (III) The effects of selection pressure on nucleotide composition beyond the B Cell repertoire.