Immunology Seminar Series/ 免疫学セミナーシリーズ　ご案内

北海道大学大学院医学研究院
北海道大学ワクチン開発拠点

Vaccine-Mediated Protection in Genetically Diverse Collaborative Cross Mice:

A Model for Pre-Clinical Vaccine Discovery

平素よりお世話になっております。
今回、医学部免疫学教室および創成研究機構ワクチン研究拠点共同主催にて、米国 UMass (University of Massachusetts) Chan Medical School 所属の Sam Behar 教授による添付セミナーを開催いたします。

Behar 教授はハーバード大学医学部および Brigham & Women's 病院にて結核における免疫システムの研究に長年貢献されてきました。Behar 教授率いる研究チームは、結核免疫に対し、T 細胞プライミング、エフェクター機能の獲得、記憶形態などのメカニズムを深く追求してこられています。結核においての宿主抵抗メカニズムを探ることは、新たなワクチン設計やワクチン開発に深く関与しています。本公演では、共同交配マウスを使用することにより遺伝的に多様な個体を防御できるワクチン戦略の可能性について、非常に興味深い内容でご講演をしていただきます。
皆様のご参加をお待ちしております。

Greetings,

We would like to invite you to a seminar led by internationally renowned immunologist, Dr. Samuel Behar. Please find details about the seminar:

Title: Vaccine-Mediated Protection in Genetically Diverse Collaborative Cross Mice: A Model for Pre-Clinical Vaccine Discovery

Abstract

Heterogeneity in human immune responses is difficult to model in standard laboratory mice. To understand how host variation affects BCG-induced immunity against Mycobacterium tuberculosis, we studied 24 unique Collaborative Cross (CC) mouse strains, which differ primarily in the genes and alleles they inherit from founder strains. The CC strains were vaccinated with or without BCG, and then challenged with aerosolized M. tuberculosis. As BCG protects only half of the CC strains tested, we conclude that host genetics has a major influence on BCG-induced immunity against M. tuberculosis infection, making it an important barrier to vaccine-mediated protection. Importantly, BCG efficacy is dissociable from inherent susceptibility to TB. T cell immunity was extensively characterized to identify components associated with protection that were stimulated by BCG and recalled after Mtb infection. Although considerable diversity is observed, BCG has little impact on the composition of T cells in the lung after infection. Instead, variability is largely shaped by host genetics. BCG-elicited protection against TB correlated with changes in immune function. Thus, CC mice can be used to define correlates of protection and to identify vaccine strategies that protect a larger fraction of genetically diverse individuals instead of optimizing protection for a single genotype.

Dr Samuel Behar, M.D., Ph.D.

After graduating from UC Berkeley and Albert Einstein College of Medicine, Dr Behar was trained at the Brigham & Women's Hospital and the Harvard Medical School. He practiced Rheumatology and established his lab at the Brigham & Women's Hospital, which focuses on immunity to tuberculosis. After 23 years, he joined the University of Massachusetts Medical School and he is currently Professor of Microbiology and Physiological Systems at the University of Massachusetts Chan Medical School, where he studies immunity to *Mycobacterium tuberculosis*. Dr. Behar and the members of his lab have made important contributions to our understanding of immunity to tuberculosis including T cell priming, acquisition of effector function, and memory responses. By understanding mechanisms of host resistance to tuberculosis, including how T cell responses are coordinated and integrated *in vivo*, and how bacteria evade immunity, the lab's ultimate goal is to determine the immunological basis for protective immunity so it can be leveraged in vaccine design and the development of novel vaccine strategies.

免疫学教室　小林弘一　（内：5056）