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BIOENGINEERING

PRESENTS

Engineering More Precise and Potent TAMR-Targeted Therapies

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12:00 – 1:00 PM
2101 ENGINEERING V

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ABSTRACT:

TAM (Tyro3, AXL, MerTK) receptor tyrosine kinases (TAMRs) are critical regulators of immune response and tissue homeostasis. Immunological dysregulation of the family contributes to a wide range of diseases including lupus, retinal dystrophy, infection, and cancer. TAMR activation in cancer cells serves as a mechanism of resistance to chemotherapies and targeted inhibitors. Further improving our understanding of the molecular events that lead to oncogenic TAMR function will enable rational design of more specific inhibitors with precise effects in vivo and help identify the patients who will benefit from these therapies.

In this talk, I will describe our efforts to identify the molecular events leading to TAMR activation, and how these events are tied to the receptors' physiological function. Using kinetic models of receptor activation, tied to inference techniques that rigorously consider model uncertainty, have helped us to identify new ways of rationally targeting the TAMR family. Using these tools, we are deconvolving the pleiotropic role these receptors play in tumor cell heterogeneity, metastasis, and immune suppression using combinations of these targeted treatments with data-driven modeling. Lastly, I will touch upon how these approaches can inform other areas of innate immune signaling, and opportunities for bioengineering technological development presented by what we have learned.

BIOGRAPHY:

Aaron S. Meyer is a Research Fellow at the Koch Institute for Integrative Cancer Research at the Massachusetts Institute of Technology. He received his B.S. in Bioengineering from the University of California, Los Angeles, and his Ph.D. in Biological Engineering from the Massachusetts Institute of Technology. His awards include the NIH Director's Early Independence Award, Siebel Scholars award, and a Terri Brodeur Breast Cancer Foundation Fellowship. The Meyer lab focuses on combining experimental and computational techniques to reverse engineer cancer and innate immune signaling, with the goal of designing immune- and cancer-targeted therapies.

Lab website: http://asmlab.org