Program in Polymers and Soft Matter

SEMINAR

"Engineering the Bio/Nano Interface of Soft Nanobiomaterials for Immunotherapy"

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Abstract: Self-assembled nanobiomaterials that are engineered to achieve specific biodistributions and mechanisms of degradation hold great promise for controlled stimulation of the immune system. Taking advantage of the morphological and chemical flexibility of self-assembled polymeric systems, we aim to mimic various structures and biochemical mechanisms of pathogens to enhance cell-selective intracellular delivery and treatment efficacy during immunotherapy. Interfacial phenomena are an essential and often overlooked component of immunology, and we aim to better understand and engineer the bio/nano interface between soft nanobiomaterials and cells of the immune system during the controlled delivery of immunomodulatory therapeutics. Here, I will present some of our ongoing work towards developing novel nanobiomaterials and bio/nano interfaces, as well as recent applications of these soft materials for immunotherapy, vaccination and controlled drug delivery in general.

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Biography: Evan Scott, Ph.D. is an Associate Professor of Biomedical Engineering & Microbiology-Immunology within the Northwestern University's McCormick School of Engineering and Feinberg School of Medicine. He respectively received a B.S. and Ph.D. in Biomedical Engineering from Brown University in 2002 and Washington University in St. Louis in 2009. As a Whitaker International Scholar, he spent four years in Switzerland at the EPFL performing postdoctoral research in the laboratories of Prof. Jeffrey Hubbell and Prof. Melody Swartz. Dr. Scott is a recipient of the 2015 NIH Director's New Innovator Award, the 2015 National Science Foundation CAREER Award and the 2014 American Heart Association Scientist Development Grant. He was selected as a 2017 BMES Young Innovator of Cellular and Molecular Bioengineering, 2018 Nano Research Young Innovator in Nanobiotechnology, 2018 American Society for Engineering Education PRISM 20 under 40, National Academy of Engineering Frontiers of Engineering 2018 speaker, 2019 Biomaterials Science Emerging Investigator, and 2019 Halo 40 under 40 Chicago Scientist.

Three relevant recent publications:

https://www.nature.com/articles/s41467-020-20886-7
https://www.nature.com/articles/s41467-020-18657-5
https://www.nature.com/articles/s41467-018-03001-9