

HUNG V.-T. NGUYEN

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Thursday, October 30th

10:30 AM – 11:30AM

Steele 006

“Exploring Bottlebrush Polymer Nanoarchitecture in Drug Delivery”

Abstract: Advances in cancer biology have outpaced our ability to deliver them: increasingly sophisticated combination regimens demand carriers that choreograph dose, timing, and co-localization. However, leading clinical modalities (e.g., ADCs) typically deliver < 1% of the injected dose to solid tumors and thus underscoring the unmet need for novel delivery technologies. The hyperbranched bottlebrush polymer architecture represents a promising candidate, offering 1) a high number of orthogonal functional handles; 2) high exposed functional group identity/density; and 3) tunable mechanical properties that are in line with biological tissues. These features enable the facile and modular incorporation of biological and therapeutic cues, as well as mechanical features. In this seminar, we explore this nanoarchitecture in the context of drug delivery applications, spanning molecular imaging, combination therapy, and nanotheranostics.

Bio: Hung V.-T. Nguyen started his independent career as an Assistant Professor of Engineering at Dartmouth College in 2024. Research in the Nguyen Group focuses on the development of platform technologies for nanomedicine and drug delivery. This is achieved via leveraging advancements in synthetic chemistry, polymer engineering, biology, and medicine. From 2019 to 2024, Hung served as a Co-Founder and Director of Therapeutics Development at Window Therapeutics—a startup that focuses on a drug delivery platform technology from the Johnson lab (MIT) that was the topic of Hung’s thesis. He received his Associate’s from Northern Virginia Community College in 2011, followed by his bachelor’s from the University of North Carolina at Chapel Hill under the mentorship of Prof. Valerie Sheares Ashby in 2013. Hung then moved to Boston to complete his graduate study at MIT as an NSF Fellow under Prof. Jeremiah A. Johnson’s guidance from 2014 to 2019. Concurrently, he received additional training as a visiting scientist in Prof. Irene Ghobrial’s lab at the Dana-Farber Cancer Institute/Harvard Medical School from 2017 to 2019.