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Hydrocarbon-omics of bacterial appendages for controlling their pathogenic activities

Yan-Yeung Luk

Syracuse University, USA

Bacterial appendages, pili protein, have been explored for developing vaccines against infectious diseases but without an eventual success. Here, we present a chemical approach of controlling the newly discovered signaling events that initiated by ligand binding to pili proteins on bacterial surfaces. We first demonstrate that a specific class of molecules that control a wide range of pathogenic activities of *Pseudomonas aeruginosa* and the characteristics of disrupting cell signaling of these activities, supporting the notion of a drug development. Second, we demonstrate the specific covalent coupling between a designed ligand molecule and the pili protein as a validation of the receptor protein identity. We will discuss the chemical structural space that validates a hydrocarbon-omic for controlling different species and different strains within a species of microbes.

Biography

Yan-Yeung Luk has completed his PhD at The University of Chicago and Postdoctoral studies from University of Wisconsin-Madison. He is the Founder of Life Unit LLC, a startup company focused on chemical control bacterial activities. He has published more than 30 papers in peer-reviewed journals and has been serving as a Reviewer for NSF and ACS journals. He is also a Member on the Scientific Advisory Board of Orthobond INC.

yluk@syr.edu

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