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Channing Microbiome Seminar

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Pathogen-microbiota interactions during *Clostridioides difficile* infection

Clostridioides difficile is the most commonly reported nosocomial pathogen in the United States and an urgent public health threat worldwide. The primary risk factor for *C. difficile* infection (CDI) is antibiotic use, which reduces colonization resistance to *C. difficile* by perturbing the gut microbiota. Despite the well-established link between the gut microbiota and susceptibility to *C. difficile*, the role of pathogen-microbiota interactions during CDI is largely unexplored. In this talk, I will discuss the effect of polymicrobial interactions on the outcome of CDI and investigate the molecular mechanisms of cross talk between *C. difficile* and members of the microbiota.

Bio: Joe Zackular is an Assistant Professor in the Department of Pathology and Laboratory Medicine at the University of Pennsylvania and the Children's Hospital of Philadelphia. He received his PhD from the University of Michigan where he studied the role of the gut microbiota in colorectal cancer in the laboratory of Dr. Patrick Schloss. He then did his postdoctoral research fellowship in the laboratory of Dr. Eric Skaar at Vanderbilt University Medical Center where he studied the role of dietary metals and nutritional immunity in *Clostridioides difficile* infection. He started his laboratory in the Children's Hospital of Philadelphia in the summer of 2018. The Zackular laboratory is broadly focused on understanding how interactions between the host, gut microbiota, and pathogenic microbes impact human health and disease. The lab's efforts primarily center on how the important nosocomial pathogen, *C. difficile*, interacts with resident gut microbiota during infection and how polymicrobial interactions impact growth, behavior, and virulence. His lab is also developing novel vaccine strategies for the prevention of *C. difficile* infection and using microbiome-based therapies for the treatment of pediatric disease. Research in the Zackular lab draws from a number of diverse fields including microbial ecology, bacterial pathogenesis, biochemistry, host-pathogen interactions, and microbiome research.

