

**From *Listeria monocytogenes* Invasion of Host Barriers to
Next-Generation Bioengineered Probiotics to Prevent
Infectious and Inflammatory Diseases**



Dr. Rishi Drolia

Eastern Kentucky University

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The cellular barriers such as the intestinal, blood-brain, and placental provide physical and immune defense against microbial infection, yet highly invasive bacterial pathogens such as *Listeria monocytogenes* have evolved sophisticated mechanisms to breach host barriers. In this talk, I will discuss how *L. monocytogenes* employs the *Listeria* adhesion protein (LAP) to manipulate innate epithelial defenses and induce intestinal barrier dysfunction to promote bacterial translocation. I will highlight how my understanding of host-pathogen interaction led to engineering a next-generation probiotic that excludes pathogens through competitive exclusion, maintaining intestinal epithelial barrier functions and contact-dependent immunomodulation. Additionally, I will focus on my ongoing and future projects on host-pathogen interaction at the blood-brain and blood-placental barriers, bioengineered probiotics in preventing inflammatory bowel diseases, and understanding of dual-species biofilms to improve sanitization strategies in food-processing industries. A deeper understanding of host-pathogen and pathogen-pathogen interactions will pave the path to developing novel preventive and therapeutic strategies for fatal infectious and inflammatory diseases.

If you wish to speak with Dr. Drolia during his visit, please contact Sherry Fleming at sdflemin@ksu.edu