

Host cell receptor targeted bioengineered probiotics for prevention of infectious diseases

The gastrointestinal mucosa represents the first site for the dynamic interaction of the enteric pathogens with the host. Therefore, averting this critical pathogen interaction step especially binding to host cell receptors, should help prevent infection. Two major host cell receptors, E-cadherin and Hsp60 used by *Listeria monocytogenes* Internalin A (InlA) and *Listeria* adhesion protein (LAP), respectively were used as targets to generate our bioengineered *Lactobacillus* probiotics. Though InlA-expressing probiotic was effective in vitro, LAP-expressing probiotic significantly dampened NF- κ B signaling and myosin light-chain kinase (MLCK) activity and protected intestinal epithelial barrier integrity, reduced inflammatory response, and modulated immune response in mice. This probiotic also prevented fetoplacental transmission of *Listeria* in pregnant guinea pigs. The rational design of bioengineered probiotics targeting host cell receptors could be useful for preventing many infectious diseases.



Featuring Dr. Arun Bhunia, Professor of Food Microbiology

Research Spotlight Series:
Wednesday 5/5 @ 10:00 am [here](#) on
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