Ashok K. Chopra, PhD, CSc
Professor and John S. Dunn Distinguished Chair in Global Health
Dr. Leon Bromberg Distinguished Teaching Professor

Antibiotic Resistance in Emergent Pathogens

Dr. Chopra's research interests during the past two decades have been on identifying virulence factors/mechanisms from several Gram-negative bacteria and to demonstrate their role in causing human diseases. Specifically, his group has focused on type 2-, -3, and -6 secretion systems and quorum sensing, and they have used molecular/genomics/proteomics tools to better understand mechanisms of action of the selected virulence factors. Their emphasis is on gastrointestinal and respiratory diseases as well as necrotizing fasciitis with a focus on bacterial-host cell interactions. In addition, they are developing and testing new vaccines and therapeutics against Tier-1 select agents, such as Yersinia pestis, the causative agent of plague. They are testing new platforms to display antigens from biodefense-related pathogens that are protective. His laboratory has made a startling discovery by characterizing a novel host regulatory molecule which acts as a double-edged sword, being involved in modulating inflammation and playing a pivotal role in causing neurodegenerative disorders, in humans. In addition, they are examining new therapeutics other than antibiotics that could be used to combat diseases caused by antibiotic-resistant bacteria and their potential effects on microbiota. Finally, they have developed and currently testing second generation COVID-19 vaccines in various animal models and evaluating mucosal, humoral, and cellular immune responses. His research has been currently and previously funded through NIH, NSF. American Heart Association, Crohns and Colitis Foundation, Department of Defense, Dunn Foundation, and the private sector.He serves as the Program Director of NIH/NIAID T32 training grant for predocs titled "Biodefense Training Program."