Brenda Anne Wilson, PhD – ASM Distinguished Lecturer

Brenda Anne Wilson, PhD, is currently Professor of Microbiology and Associate Director of Undergraduate Education in the School of Molecular & Cellular Biology, College of Liberal Arts and Sciences; Inaugural Professor of Biomedical and Translational Sciences in the Carle Illinois College of Medicine; Professor of Pathobiology in the College of Veterinary Medicine; and Senior Faculty Fellow for National Labs in the Office of the Vice Chancellor for Research and Innovation at the University of Illinois at Urbana-Champaign. She is a Fellow of the American Academy of Microbiology (AAM) and a member of the AAM Selection Committee, and an American Society for Microbiology (ASM) Distinguished Lecturer. She earned her BA degree in Biochemistry and German from Barnard College. She was a DAAD graduate exchange Fellow in Biochemistry at Ludwig-Maximilians Universität München, Germany. As an AAUW doctoral fellow studying antibiotic biosynthesis, she earned her MA-PhD degrees in Chemistry from Johns Hopkins University. She then undertook her NIH postdoctoral fellowship training in Microbiology at Harvard Medical School, where she began her studies on bacterial protein toxins. Her first tenured faculty appointment was in Biochemistry at Wright State University School of Medicine, Dayton, Ohio. Her current research work focuses on the host-microbe interface, bacterial pathogenesis and bacterial protein toxins, development of anti-toxin and toxin-based therapeutic biologics, comparative and functional genomic technologies and applications involving microbiomes and their roles in health and disease, climate change impacts on microbiomes and health, and development of technologies and applications for detection and risk assessment of Dual Use Research of Concern (DURC) objects, publications, and activities.

Talk Title: "Toxins, Toxins, Everywhere: Turning Foe into Friend"

Bacterial protein toxins have played a myriad of fundamental roles in basic and clinical microbiology, from their first discovery as causes of disease to their implementation as tools for understanding cell biology. Toxin-like modules are being identified in an ever-growing number of bacterial genomes. The toxin field is now poised to harness information from their evolutionary relationships and to exploit their modular natures to decipher the determinants that drive their stability, efficient delivery of their cargo, and define their substrate and reaction specificities. These powerful tools enable us to begin using them for beneficial therapeutic applications as immunomodulators, anti-cancer treatments, treatments for neuronal disorders, biologic cargo-delivery platforms, and many still untapped potential applications.