

Dean's Colloquium

Dr. Linda Hensel

Assistant Professor, Department of Biology



When: Wednesday, February 26th, 2025

Where: Turner 129

Time: 3:00-3:20 pm, Q&A: 5 min

Title: Novel mixtures of anti-microbials to combat Bacterial biofilm—combining Eastern & Western Medical Approaches

Abstract: Biofilms allow bacteria to stick to catheters, heart shunts, and teeth to name a few substrates. Biofilms protect the bacteria from the host's immune system allowing the bacteria to cause disease, for example, dental caries (cavities). Bacteria secrete small organic molecules that signal their neighbors to begin biofilm production once a certain density is reached. Novel lead compounds that resemble the signaling molecules can bind to the receptors for these molecules and block biofilm formation via competitive inhibition. We have synthesized over 300 compounds and found two-dozen that are promising inhibitors. In Russia, Republic of Georgia, and Poland bacterial viruses (bacteriophage) are routinely used to combat infections rather than antibiotics. Phage therapy is beginning to be adopted in the U.S. to address drug resistant pathogens. Hampton undergraduates have isolated 18 phage thus far to characterize and test their abilities to combat biofilm. This new approach to combating biofilms using novel phage in conjunction with competitive inhibitors can add to the repertoire of existing anti-microbials.

Biography: Dr. Linda Hensel, Professor Emerita of Biology at Mercer University, moved nearer family after 29 years of service. Her devotion to teaching led her to start anew as an Assistant Professor of Biology at Hampton University in August 2024. Her educational interest centers on fostering accessible and product-producing authentic research experiences for undergraduate students. She developed course-based undergraduate experiences (CUREs) for both Introductory Biology and upper division Genetics courses. The most successful CUREs integrated biology with chemistry courses so that students could design, synthesize, and test their novel lead compounds as antimicrobials, specifically biofilm inhibitors and eradicators. Her students designed and synthesized biofilm inhibiting novel-lead compounds, developed assays for quantifying biofilm, and tested compounds for biofilm eradication.