

Principal Investigator: Keith Whitener

Location: NRL (Washington, DC)

Research Description:

The goal of our current research is to determine antibacterial and bacteriostatic properties of molecular mimics of mucins. Mucin glycoproteins have demonstrated significant promise as antimicrobials against multidrug resistant bacterial strains. However, mucins are difficult to isolate and quite fragile, and their mechanism of action is poorly understood. In order for the Navy to exploit the full potential of mucins as fleet-deployable treatments for bacterial infections, a greater understanding of mucin-microbe interaction is required. Our approach is to chemically synthesize robust and well-characterized mucin mimics and monitor their interaction with Navy-relevant microbes as well as a human skin model composed of dermal fibroblasts and keratinocytes under a variety of chemical and environmental conditions. Integral to this program will be the design and fabrication of novel microbial assays, and we are employing NRL-patented bioprinting technologies to facilitate these goals.

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