

ABSTRACT

Burkholderia pseudomallei (Bp) is a Gram-negative bacterium that causes melioidosis. Bp has been found to persist in human serum, preventing complement protein deposition, complement-mediated killing mechanisms, and uptake by phagocytic cells. Due to its low LD₅₀, high infectivity, and robust antibiotic resistance, Bp has great potential for misuse for bioterrorism. Therefore, there is great interest in finding therapeutic targets to prevent and/or treat melioidosis. Recent work in our lab has found Bp can bind Factor H (FH), the host's master complement regulatory protein, as a way of evading complement deposition. Preventing this binding interaction may enhance serum susceptibility and/or bacterial clearance by host phagocytic cells. Our lab and others have investigated the efficacy of FH-fusion proteins containing common microbial-binding domains of FH to target pathogens that can bind FH. These constructs are composed of either FH domains 6-7 or 18-20 linked to constant regions (Fc) of immunoglobulin G isotypes 1 or 3. Our hypotheses on how these might act as a therapeutic include 1) competition with native FH for binding to the bacteria, 2) activation of the complement cascade, leading to enhanced complement deposition, and 3) enhancement of opsonophagocytic killing. In this study, we will begin to address the ability of the FH-Fc constructs to mediate these three protective events.



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THESIS
PRESENTATION

by

Kelly Morgan
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Assessing Factor H-Fc Fusion
Proteins for Controlling
Burkholderia pseudomallei
Infection

M.S. in Biomedical
Sciences

PRESENTATIONS AND AWARDS

Morgan, K. L., Wooten, R. M. “Assessing Factor H-Fc Fusion Proteins for Controlling *Burkholderia pseudomallei* Infection” Poster Presentation at the Graduate Research Forum, Toledo, OH, March 2022.

Morgan, K.L., Syed, I., Presloid J., Ferreira V. P., Wycoff K., Wooten, R. M. “Assessing Factor H-Fc Fusion Proteins for Controlling *Burkholderia pseudomallei* Infection” Poster Presentation at the 28th Midwest Microbial Pathogenesis Conference, Madison, WI, October 2022.

First place poster presentation at UT Graduate Research Forum, 2022.

PUBLICATIONS

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FUTURE PLANS

Kelly plans to stay in Toledo, OH to gain working clinical experience in healthcare as she prepares for physician assistant or medical school.