Caroline Zellmer, PhD - 'Comprehensive Evaluation of Antimicrobial Peptides against Klebsiella species: A Multi-System Approach'

Klebsiella are a highly pathogenic virulent species of bacteria, with worrying and increasing resistance against available antimicrobials. Children and the immunocompromised have been the most affected to date. Antimicrobial peptides (AMPs) are a novel therapeutic class that have not been widely deployed or characterised against multidrug resistant (MDR) pathogens despite the paucity of viable therapeutics against MDR bacteria. Two AMPs were evaluated against a subset of the University of Cambridge's Klebsiella collection. AMP bactericidal activity against a subset of MDR Klebsiella was assessed using several established in vitro and novel screening systems.

Using the novel Galeria mellonella wax moth worm model, the lethal dose 50 and an efficacy screening were conducted. Klebsiella virulence factors are the same in Galeria mellonella and humans, making this system a robust preclinical surrogate. The AMPs under investigation were found to be highly effective against the evaluated Klebsiella strains in the in vitro and Galeria mellonella systems. This study demonstrates the successful establishment of a platform for drug screening against Klebsiella and reveals the bactericidal activity of AMPs against clinical, MDR Klebsiella isolates.