

Technology Overview:

Researchers in the Department of Chemistry at Princeton University and the Department of Chemistry at San Jose State University have discovered compounds which increase the susceptibility of both CAP-resistant as well as non-resistant strains of *P. aeruginosa* to CAP antibiotic treatments. This technology functions by interfering with virulence factors that support both biofilm formation and the disruption of a host immune response.

Pseudomonas aeruginosa is a pathogenic bacteria that was responsible for 32,600 infections and 2,700 deaths among hospitalized patients in the United States in 2017 alone. Antibiotic resistant strains of *P. aeruginosa* are an increasingly prevalent cause of serious secondary infections. The World Health Organization and Centers for Disease Control have both classified resistant strains as public health threats. Cationic antimicrobial peptides (CAPs) are critical antibiotics that are currently used as a last resort antibiotic treatment for multidrug resistant infections. With global CAP resistance on the rise, novel *P. aeruginosa* treatments that counteract this mechanism are needed.

Potential Applications:

- Treating CAP-resistant strains of *P. aeruginosa*
- Treating *P. aeruginosa* infections in patients experiencing side effects from large CAP doses
- Potential for use in other gram negative pathogens

Key Features & Benefits:

This technology represents a significant step forward as a combination therapy with existing CAP treatments, and has an immediate application in the treatment of CAP-resistant *P. aeruginosa* infections. Additionally, it will enhance the treatment of non-resistant strains by reducing the required CAP dosage, thus reducing negative side effects associated with large CAP doses, such as impaired kidney function.

- Reduces required CAP doses in *P. aeruginosa* infections
- Widens the therapeutic index of CAP treatments
- Remains effective under resistance-inducing conditions

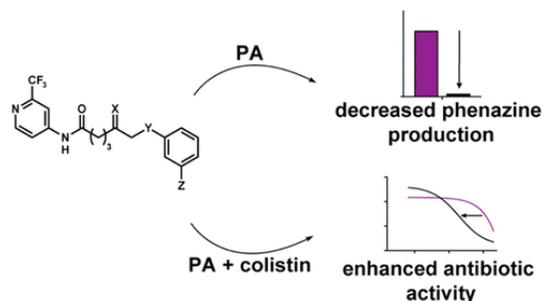


Fig 1. An adjuvant compound and Colistin treatment in *Pseudomonas aeruginosa* resulted in enhanced antibiotic activity.

Case ID: ID2019-010

IP Position: Patent pending

Antibacterial adjuvants and applications thereof

Development Status: TRL 3: Concept demonstrated on lab platform - analytical models to support lab design.

Opportunity: Partners sought for development and prototype testing.

Category(s): Antibacterial adjuvants against *P. aeruginosa*

Keywords: antibacterial adjuvants, colistin adjuvant, cationic antimicrobial peptide

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