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Poster abstract submission

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Poster title

Systematic engineering of lysins yields serum resistant and in vivo active compounds towards drug-resistant Acinetobacter baumannii

Poster abstract

Phage lysins represent a promising alternative to traditional antibiotics, yet their efficacy against Gram-negative pathogens in human serum has remained a major limitation.
Leveraging the VersaTile DNA shuffling platform, a proprietary lysin domain library, and high-throughput functional screening, we systematically explored an expansive design space to engineer lysins with enhanced properties. This approach yielded multiple novel constructs exhibiting potent in vitro activity against Acinetobacter baumannii and exceptional serum resistance.
Broad-spectrum efficacy was demonstrated across clinical isolates. Safety profiling confirmed an absence of hemolytic activity and no detectable cytotoxicity in human cell lines, alongside good tolerability in animal models.
Top hits underwent further optimization for potency, stability, and manufacturability. Lead molecules showed robust in vivo bactericidal activity towards Acinetobacter baumannii as monotherapy and displayed compatibility or synergy with SoC antibiotics in combination therapy. Lead optimization is ongoing towards selection of clinical development candidates.
These engineered lysins constitute a significant advancement towards systemically active, next-generation antimicrobials for the treatment of multidrug-resistant infections.

Research topic Biological therapeutics

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Abstract 1 Figure.pdf