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Unnatural Proline-rich Antimicrobial Peptides Targeting Intracellular Pathogenic Bacteria and Antibiotic Conjugates Thereof

New peptide-based antimicrobial agents demonstrate superior efficacy and safety in targeting drug-resistant bacteria localized within human cells.

Researchers at Purdue University developed antimicrobial agents against intracellular human pathogens with improved efficacy compared to the group's previous-generation compounds. Drug resistant bacteria are an increasing worldwide threat, especially in the healthcare environment. Compounding the threat, many bacterial species localize within human cells. Designing and formulating drugs to reach inside host cells without damaging those cells is a key challenge in treating bacterial infection. The Purdue team employs cell-penetrating peptides to meet this challenge. Their newest generation of peptide-based compounds compares well to vancomycin and gentamicin, in some cases outperforming the established antibiotics in cell culture. The Purdue peptides also demonstrate excellent cell penetrating ability and safety against human cells.

Advantages:

-Penetrates human cells to target intracellular pathogens

-Effective alone or as a covalent conjugate with other antibiotics

-Avoids use of delivery vehicles

Potential Applications:

-Antibiotic therapeutic

-Pharmaceuticals

Technology is validated: In vitro testing (patent)

TRL: 5

Technology ID
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Category
Pharmaceuticals/Small Molecule Therapeutics
Pharmaceuticals/Drug Delivery & Formulations

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