New Synthetic Ligands Target RhlR Quorum Sensing Receptor

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Patent applied for.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing antibacterial compounds for controlling *P. aeruginosa* infections and other Gram-negative pathogens.

OVERVIEW

Throughout the course of infection, many bacterial species use an intercellular signaling process known as quorum sensing. Disrupting quorum sensing has emerged as a promising treatment strategy as bacteria become increasingly resistant to traditional antibiotics.

Research indicates that the RhlR quorum sensing receptor is a particularly good antivirulence target in Gram-negative bacteria such as *Pseudomonas aeruginosa* – a highly resistant bacterium that commonly affects immunocompromised patients (e.g., those suffering from HIV, burns or chronic wounds) and is the leading cause of hospital-acquired pneumonia.

THE INVENTION

UW–Madison researchers have identified novel synthetic molecules, including agonists and antagonists, capable of modulating quorum sensing in Gram-negative bacteria. Several exhibit higher potency than the native ligand.

APPLICATIONS

- New antibacterial compounds, coatings and packaging to control *P. aeruginosa* infections (e.g., in cystic fibrosis patients) and potentially other pathogens

KEY BENEFITS

- First report of synthetic ligands with agonistic activities stronger than the native ligand for RhlR
- Significant interest in light of RhlR's emerging role as a virulence target
STAGE OF DEVELOPMENT

The researchers have synthesized and screened a number of compounds, with more than a dozen showing high activation (80 – 106 percent) and several others showing moderate inhibition (39-55 percent). Moreover, the group recently demonstrated that chemical activation of RhlR can strongly repress production of the virulence factor pyocyanin.

ADDITIONAL INFORMATION

Related Technologies
For more information on the researcher’s quorum sensing technologies, see WARF reference numbers:
P05282US
P07404US
P09045US02
P110358US02
P130070US02

Publications

Tech Fields
Pharmaceuticals & Vitamin D - Antibacterials

CONTACT INFORMATION

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