

Method for Modulating Microbial Quorum Sensing

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in methods and compounds for treating bacterial infections by stimulating or disrupting the quorum sensing pathway.

OVERVIEW

Bacteria that use quorum sensing are thought to be involved in two thirds of human bacterial infections. These bacteria produce acyl-homoserine lactones (AHL), which they use to gauge population density. When the population reaches a sufficient density, virulence genes are induced and certain pathogens produce protective biofilms. Therefore, quorum sensing controls genes that are essential to inducing infections caused by diverse bacteria.

THE INVENTION

UW-Madison researchers have developed methods and compounds that reduce virulence by stimulating or disrupting the quorum sensing pathway in bacteria such as *Pseudomonas aeruginosa*. The compounds have been tested in culture-grown bacteria, but still require animal testing. They probably modulate the quorum sensing pathway by binding to the regulatory protein that is responsive to the authentic quorum sensing inducers. When the pathway is blocked, the bacteria are less virulent and may remain more susceptible to antibiotics because they cannot produce biofilms. If the pathway is stimulated, the bacteria may become prematurely virulent, and the host immune response might be activated before the bacteria can reach high concentrations.

APPLICATIONS

- Treatment of bacterial infections in plants and animals, including respiratory, pulmonary, ear, eye, bone, joint, urinary tract, gastrointestinal tract, skin and wound infections
- Prevention of industrial biofouling



THE WARF ADVANTAGE

WARF: A Leader in Technology Transfer Since 1925

Since its founding as a private, nonprofit affiliate of the University of Wisconsin-Madison, WARF has provided patent and licensing services to UW-Madison and worked with commercial partners to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.

The University of Wisconsin and WARF – A Single Location to Accelerate Translational Development of New Drugs

UW-Madison has the integrative capabilities to complete many key components of the drug development cycle, from discovery through clinical trials. As one of the top research universities in the world, and one of the two best-funded universities for research in the country, UW-Madison offers state-of-the-art facilities unmatched by most public universities.

These include the Small Molecule Screening Facility at the UW Comprehensive Cancer Center; the Zeeh Pharmaceutical Experiment Station, which provides consulting and laboratory services for developing formulations and studying solubility, stability and more; the Waisman Clinical Biomanufacturing Facility; the Wisconsin Institute for Medical Research, which provides UW-Madison with a complete translational research facility; and the innovative, interdisciplinary Wisconsin Institutes for Discovery, home to the private, nonprofit Morgridge Institute for Research and its public twin, WID, part of the university's graduate school. The highly qualified experts at these facilities are ready to work with you to create a library of candidates for drug development.

KEY BENEFITS

- Should not lead to bacterial resistance because it does not kill the bacteria
- No compounds currently are available to decrease virulence.
- Can be used in combination with antibiotics
- Can be administered orally, intravenously, topically or with suppositories
- Can be used in personal hygiene or household cleaning products

ADDITIONAL INFORMATION

Related Technologies

[See WARF reference number P05282US for other compounds that decrease the virulence of quorum sensing bacteria.](#)

Tech Fields

Pharmaceuticals & Vitamin D - Antibacterials

CONTACT INFORMATION

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845.

