VANDERBILT UNIVERSITY

CTTC Center for Technology Transfer & Commercialization

Novel Antimicrobial Compounds

Summary

The increasing rise of bacterial resistance to current antibiotics and the lack of new products to combat such strains continue to be an increasing threat to global public health as well as a continued strain on health care costs. Common resistant pathogens causing severe nosocomial infections include Gram-positive pathogens such as the 'superbug' multi drug-resistant Staphylococcus aureus (MRSA), in addition there is an increasing rise of resistant Gram-negative pathogens, such as fluoroquinolone-resistant Pseudomonas aeruginosa (FQRP). The estimated cost for MRSA alone in US Hospitals is $4.2 billion annually.

Despite tremendous effort, new drugs to treat resistant strains have been difficult to discover. Bacterial pathogens are thought to have redundant pathways controlling their growth allowing them to quickly adapt to strenuous conditions and rely on an alternative pathway to ensure survival. Since many of today's commercially available drugs target many of the same bacterial metabolic or growth pathways, bacteria become resistant to entire classes of drugs.

Description

Vanderbilt researchers, led by Eric Skaar, Ph.D., have identified novel compounds that are antimicrobial. These compounds represent a first in class as they target a new bacterial pathway that has never been targeted as an antimicrobial strategy.

Highlights:

- Identified a novel pathway that regulates bacterial growth
- Screens resulted in at least 10 distinct small molecule scaffolds that inhibit bacterial growth
- Medicinal chemistry efforts have resulted in novel first and second generation compounds with minimal toxicity in mice

Vanderbilt researchers continue to perform target validation studies, medicinal chemistry, in vivo inhibition studies, and toxicity studies to optimize these novel antimicrobial compounds. Vanderbilt has filed provisional patent applications which contain claims drawn toward methods of using and identifying such compounds as well as novel compositions. Vanderbilt would like to seek a commercial partner to further develop these novel compounds into potential new antimicrobial therapeutics.

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