Novel UGM Inhibitors for the Treatment of Tuberculosis and Other Microbial Infections

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a set of novel small molecule inhibitors of UGM that may be useful in the treatment of tuberculosis and other diseases.

OVERVIEW

*Mycobacterium tuberculosis*, the causative agent of tuberculosis, is responsible for eight million human infections and two million deaths worldwide each year. *M. tuberculosis* infections can be treated by antibiotics, but strains that are resistant to most or all known antibiotics are becoming widespread. To combat this resistance, novel targets for antimicrobial drugs are needed.

An enzyme known as uridine 5'-diphosphate (UDP) galactopyranose mutase, or UGM, is one such target. UGM plays a key role in the formation of UDP-galactofuranose (Galf), which is present in many pathogens and is an essential cell wall component in mycobacteria like *M. tuberculosis*. UGM is a particularly attractive drug target because the gene encoding it is required for mycobacterial viability and no comparable enzyme in humans exists. Additionally, current tuberculosis drugs do not target UGM, so compounds that block UGM should be effective against drug resistant strains.

THE INVENTION

UW-Madison researchers have identified a set of novel small molecule inhibitors of UGM that may be useful in the treatment of tuberculosis and other diseases caused by microbial infections. They synthesized a library of 2-aminothiazole derivatives and used a high throughput, fluorescence polarization screen to identify these inhibitors.

The molecules inhibit the growth of microorganisms that depend on UGM to incorporate Galf residues. They also attenuate the virulence of pathogenic microorganisms, such as *M. tuberculosis*, *M. smegmatis* and *Klebsiella pneumoniae*, that rely on UGM.
APPLICATIONS

• Development of novel therapeutics for diseases, such as tuberculosis, that are caused by microbial infections

KEY BENEFITS

• Provides novel lead compounds that may result in therapeutics for tuberculosis and other diseases caused by microbial infections
• Effective against prokaryotic and eukaryotic microorganisms
• May be useful in combination therapy with other antibiotics
• Should be effective against drug resistant strains

ADDITIONAL INFORMATION

Tech Fields
Drug Discovery - Targets

CONTACT INFORMATION

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or (608) 265-9861.