



## A Novel Class of Anti-Tuberculosis Agents

### The Technology

*Mycobacterium tuberculosis* currently infects about one-third of the world's population and is responsible for approximately 2 million deaths worldwide per year. The rate of tuberculosis infection in the U.S. is about 4.4 cases per 100,000 people. A report by Global Alliance for TB Drugs Development indicates that the anti-tuberculosis drug market could reach \$700 million by 2010 because of the growing prevalence of the disease and increasingly multidrug resistant strains. Current treatment for tuberculosis infection involves a four drug regimen for a period of 6-9 months. This long treatment duration often results in noncompliance and therefore leads to drug resistant strains. Thus, there is a need for new therapeutics to treat tuberculosis.

Researchers at the University of Tennessee have developed a novel class of compounds that exhibit anti-tuberculosis activity. They developed this class of compounds by reengineering and modifying an existing narrow spectrum antibiotic, which is primarily used to treat a different bacterial infection. Testing of these compounds revealed a lead compound series that exhibited high potency against the mycobacterium tuberculosis as evidenced by minimum inhibitory concentrations of down to 0.4  $\mu\text{g}/\text{mL}$ . The lead compound from this series exhibits excellent anti-tuberculosis activity, a proven mode of action, no cross resistance to existing anti-tuberculosis drugs, activity against multi-drug resistant strains of *M. tuberculosis*; anti-tuberculosis specific activity, serum and microsomal stability, and demonstrated *in vivo* anti-tuberculosis efficacy. Preliminary results suggest that it is suitable for combination therapy when given with other currently used anti-tuberculosis drugs, and cytotoxicity assays show that it is highly selective for killing tuberculosis. In addition, preliminary evidence indicates that it is effective against latent tuberculosis infection.

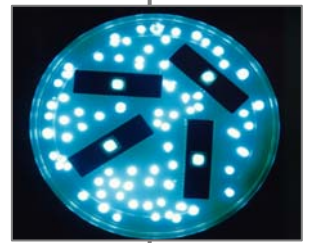
### Benefits

- Potential new treatment for tuberculosis that is active against multi-drug resistant strains through a novel site of action
- More effective treatment regimen because of high potency, high safety and a lack of drug interactions with existing therapeutics
- Potentially faster time to market because of established safety of the known parent compound

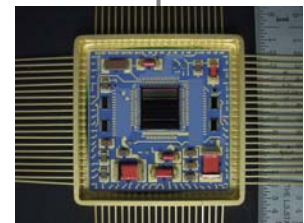
#### AGRICULTURE



#### BIOTECHNOLOGY



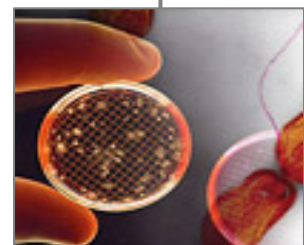
#### ENGINEERING



#### MATERIALS



#### MEDICINE





## The Inventor

**Dr. Richard Lee** is a Professor in the Department of Pharmaceutical Sciences. The major research focus of his laboratory is the design and synthesis of novel antimicrobial agents using an interdisciplinary approach and the latest technologies to tackle serious human infections. He has over 10 years experience in the design and development of anti-tuberculosis therapeutics.

## Patents

U.S. provisional application in process.

## Contact

The University of Tennessee Research Foundation (UTRF) is a non-profit corporation responsible for commercializing University of Tennessee technologies and for supporting University research. UTRF is seeking parties interested in learning more about this technology and in exploring possible research and/or commercialization arrangements.

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