

## Texas Tech University

### *Development of an Innovative and Rapid Assay for Antimicrobial Resistance Testing on Blood*

The goal of this project is to deliver a diagnostic lab on a microchip that will provide medical professionals the information they need to make rapid, evidence-based decisions when bacteria invade the bloodstream (a condition called bacteremia). A variety of common germs are involved in bacteremia and can lead to sepsis, an acute, life-threatening infection of the blood, especially in individuals with immature or compromised immune systems. The successful treatment of sepsis requires quick diagnosis and determination of the most effective antimicrobial drugs to use, which can now take days and involve trial and error. Because many bacteria have become antibiotic resistant, the choice of drug treatment must be made on a case-by-case basis. The proposed research will create the means to rapidly assess if a patient has a blood infection, to characterize the bacteria involved, and identify any antibiotics to which they are resistant. After the prototype is validated under the auspices of this project, the microchip will undergo further development to make it usable in real-world clinical settings.