

## Baylor College of Medicine

### *Detecting Antimicrobial Resistance using Mass Spectrometric Based Technology*

Antibiotic resistance among pathogenic bacteria is a major public health problem. The overuse of antibiotics, and adaptability of bacteria, has created a growing number of resistant bacterial strains and decreased the effectiveness of antibiotics. In addition, there is increasing concern over “super bugs” that are resistant to multiple antibiotics. Therefore, the detection of the antibiotics to which a bacterium is resistant is critical in designing an effective treatment plan and in minimizing the chances of increasing antibiotic resistance. Although many diagnostic tests have been developed recently to identify antibiotic resistant organisms, current methods typically involve isolating the organism from an individual specimen. Moreover, depending on the method employed, susceptibility testing is a slow process that sometimes requires 48-72 hours for results. Often a physician will treat with broad spectrum antibiotics during this period of time and thus potentially reduce the effectiveness of the drugs via selection of antimicrobial resistant organisms. Our mass spectrometric based technology is designed to reduce the time required to determine the susceptibility of an organism to an antimicrobial. We have also been able to determine the susceptibility of bacterial organisms to a number of antibiotics simultaneously without having to know the identity of the offending organism. This decrease in susceptibility testing time, along with an increase in the number of antibiotics that can be screened simultaneously, will prevent the increase in bacterial resistance and decrease morbidity and mortality.