Researchers create test to identify super bacteria MRSA in record time

May 23 2013, by Janet Mccoy

A research team has created a test using a biosensor that will help medical professionals more quickly identify super bacteria like MRSA.

Antibiotic-resistant bacteria can be difficult to diagnose, and quick diagnosis and treatment can mean the difference between life and death, says lead researcher Vitaly Vodyanoy of Auburn University. The biosensor can identify specific bacteria in as little as 10 minutes compared to hours.

Vodyanoy, a professor in Auburn University's College of Veterinary Medicine, said he and his research team created the prototype biosensor as the first step in fighting superbugs like MRSA, methicillin-resistant Staphylococcus aureus, a potentially dangerous type of staph bacteria resistant to certain antibiotics, that can cause skin infections and even death.

The disease is of particular concern to hospitals, prisons and the military, where individuals are at risk for infection. Also, data from the Centers for Disease Control and Prevention show that 12 million doctor visits a year are for suspected staph and MRSA skin infections.

"Though only MRSA were used in this work, it can also be applied to other antibiotic resistant bacteria," said co-author Iryna Sorokulova, a professor of microbiology at Auburn University.

The research, published in the May 8 edition of *Journal of Visualized*

Experiments, JoVE, is a collaborative effort between Vodyanoy, a professor of physiology and director of the Biosensor Laboratory, and Keesler Air Force Base, with funding from the U.S. Air Force.

"What we have studied to date has been related to laboratory conditions," Vodyanoy said. "We are ready to take the next step in our research, which is clinical studies with people."

According to the published report, Vodyanoy's technology takes advantage of bacteriophages, simple viruses that can target and kill bacteria. A bacteriophage, when combined with specific antibodies, can be used to produce a physical property change in a sample that indicates antibiotic resistance. Bacteriophage literally means "to eat bacteria."

"This lab-produced virus targets staph," Vodyanoy said. "We envision a future where clinicians do tests with real blood or saliva samples. The virus is completely benign to humans, and we hope to use it to make antimicrobial surfaces and glassware that kill the bacteria."

Vodyanoy said the research is complex, and that publishing it in the *Journal of Visualized Experiments*, a peer reviewed, video format PubMed indexed journal, will help promote recognition and acceptance of the technique.

Provided by Auburn University