TECHNOLOGY

Targeted Treatment for Methicillin-Resistant Staphylococcus aureus (MRSA) and Other Staph Infections

OVERVIEW

Background

While the development of antibiotics is one factor that led to the increase in life expectancy in the United States, bacteria are beginning to develop resistance to antibiotics almost as quickly as new ones are developed. These bacteria seem to be developing resistance in health care facilities as most patients infected with antibiotic-resistant bacteria acquire the infection in hospitals or clinics. According to the CDC, Staphylococcus (Staph) bacteria are the most common cause of healthcare-associated infections. Methicillin-resistant Staphylococcus aureus (MRSA) is a strain of Staph infection that is resistant to many of the first-line treatments for Staph infections and is responsible for over 10,000 deaths a year in the United States. With the speed at which bacteria are developing resistance to current antibacterial strategies, development of new methods for combating bacterial infection is of critical importance.

Innovative Technology

A researcher at the University of Maryland has identified an enzyme produced by bacteriophages that selectively targets Staphylococcus bacteria. In nature, the bacteriophages use the enzyme to gain entrance into the bacteria to replicate. These bacteriophages have existed as long as bacteria have, suggesting an inability of bacteria to develop resistance to them. At the University of Maryland, the genetic code for this enzyme has been stably transfected into bacteria strain commonly used in cell culture. Codon optimization increased the expression of the enzyme, allowing for higher production yields of this recombinant protein.

Advantages

· Enzyme works quickly to kill bacteria
· Specific to Staphylococcus bacteria only; will not harm “good” bacteria in patient
· Bacteria may be slower to develop resistance to bacteriophage-based treatment

Applications

· Treatment of Bovine Mastitis infections
· Treatment of Staphylococcus infections

APPLICATIONS

· Treatment of Staphylococcus infections

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Additional Information

INSTITUTION

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PATENT STATUS

Pending

LICENSE STATUS

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CATEGORIES

- Biologics

EXTERNAL RESOURCES

- US Patent 9,872,893

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