

Title: Bacteriophages as antimicrobials for the control of *Staphylococcus aureus* –
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Investigator: Jason J. Gill

Institution: Texas A&M University

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SCIENTIFIC ABSTRACT

Staphylococcus aureus is a pathogen of significant concern in both humans and livestock. Asymptomatic carriage of *S. aureus* by swine, particularly multidrug-resistant (MDR) strains, poses a potential risk to workers involved with livestock production and to the larger community. Bacteriophages are the most abundant form of life in the biosphere and are major predators of bacteria in natural environments. Recent interest in phages as novel antimicrobials has raised the possibility that phages infecting *S. aureus* may provide an alternative means for modulating this pathogen in the livestock environment and reducing the risk of transmission to humans. A collection of 51 phages were isolated from swine barn environmental samples. 13 of these isolated phage were chosen as representatives and assessed for their ability to infect 17 different *S. aureus* strains from both human and swine sources at two different concentrations. These phage were tested alongside previously isolated phage as well as well-known *S. aureus* phage such as phage K. Select phage were also tested for their ability to overcome *S. aureus* phage-resistant isolates, which allowed for the formulation of phage cocktails to be assessed for the treatment of *S. aureus* isolates. Lastly, a panel of 16 different *S. aureus* isolates were tested for their ability to form a biofilm as a model to assess for phage treatment for biofilm reduction.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org
