



AMERICAN KENNEL CLUB  
**CANINE HEALTH  
FOUNDATION**  
PREVENT TREAT & CURE

## GRANT PROGRESS REPORT REVIEW

**Grant:** 01421: *Genomic Resources for the Control of Canine Pyoderma*  
**Principal Investigator:** Dr. Stephen A. Kania, PhD  
**Research Institution:** University of Tennessee  
**Grant Amount:** \$42,466.00  
**Start Date:** 1/1/2011 **End Date:** 12/31/2012

**Progress Report:** 18 month

**Report Due:** 6/30/2012

**Report Received:** 6/29/2012

### **Recommended for Approval:**

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*(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)*

### **Original Project Description:**

Staphylococcal bacteria are responsible for most canine skin infections as well as other important diseases. Until recently antibiotic therapy was very effective for the treatment of these conditions. However, antibiotic resistance is increasing rapidly and we envision running out of useful antibiotic options. Alternatives to antibiotics may include vaccines or bacterial factors naturally produced by staphylococci that inhibit competing strains. The key to developing these strategies is discovering the genes responsible for antibiotic resistance, bacterial growth inhibitors, and targets for vaccines. The first step in our project is the collection of staphylococci causing skin infections from dogs in designated regions throughout the United States. Unique strains of antibiotic resistant bacteria will be identified and their genes of interest characterized for use in the development of the next generation of therapies for the treatment of canine infections

### **Grant Objectives:**

Objective 1: Identify prevailing clonal populations of methicillin-resistant *S.pseudintermedius* infecting dogs in North America.

Objective 2: Identify unique *S.pseudintermedius* antibiotic resistance, virulence, antigen and quorum sensing genes.

**Publications:****Report to Grant Sponsor from Investigator:**

The emergence of methicillin-resistant staphylococci has made the treatment of canine skin infections with *Staphylococcus pseudintermedius* a difficult challenge. There are many unanswered questions regarding antibiotic resistance among these bacteria and the underlying causes of skin infections. To better understand this problem hundreds of bacterial isolates were obtained from all regions of the United States. Each sample was studied with regard to antibiotic resistance and genetic background and we have begun to examine the genome of the bacterium. Genomes have been assembled from two isolates and we plan to complete the sequencing of a total of eight genomes. This project has provided important new information by identifying all of the thousands of genes contained within an isolate representing the most frequently occurring type of the bacterium. This information is being used to determine the role of the gene products in infection as well as the spread of antibiotic resistance between bacteria.