

Summer Student Research Program  
Project Description

**FACULTY SPONSOR'S NAME AND DEGREE:** *Dane Parker, PhD*

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**PROJECT TITLE (200 Characters max):**

*Identification of novel virulence factors of Staphylococcus aureus*

**HYPOTHESIS:**

*We are performing global search strategies to identify factors of S. aureus that are important in its survival in vivo*

**PROJECT DESCRIPTION** (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

*We have conducted a global Tn-seq project that has identified genes of S. aureus important for survival during a murine model of acute pneumonia. We are conducting secondary screens using: survival to mouse macrophages, production of bacterial toxins, growth under different temperatures and surface protein expression. Select mutants are assessed in a mouse model of acute pneumonia, assessing bacterial clearance. We also aim to perform global transcriptional studies to determine the role of genes that have currently no known function.*

**SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:**

*Physiol Rev (2016) 96(1): 19-53*

*Cytokine (2018) 107: 130-136.*

*Eur J Immunol (2018) 48(10):1707-1716*

**THIS PROJECT IS:**     Clinical     Laboratory     Behavioral     Other

**THIS PROJECT IS CANCER-RELATED**

Please explain Cancer relevance

**THIS PROJECT IS HEART, LUNG & BLOOD- RELATED**

Please explain Heart, Lung, Blood relevance

We are looking at *Staphylococcus aureus* infection in the airway and genes important for its survival in mice

**THIS PROJECT INVOLVE RADIOISOTOPES?**

**THIS PROJECT INVOLVES THE USE OF ANIMALS**

PENDING

APPROVED

IACUC PROTOCOL #201800040

**THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS?**

PENDING

APPROVED

IRB PROTOCOL # M

**THIS PROJECT IS SUITABLE FOR:**

UNDERGRADUATE STUDENTS

ENTERING FRESHMAN

SOPHOMORES

ALL STUDENTS

**THIS PROJECT IS WORK-STUDY:**    Yes     or    No

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**THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR**  
**FOR INTERESTED VOLUNTEERS:    Yes             or            No X**

**WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?**

*Skills in: general laboratory experience, microbiology, bacterial handling, tissue culture, animal processing, global analyses, bacterial genetics*