**Nicole Putnam, Ph.D., of Vanderbilt University**   
[**“The impact of innate immune recognition of Staphylococcus aureus on bone homeostasis and skeletal immunity”**](https://www.niaid.nih.gov/sites/default/files/nicoleputnamapplicationF31.pdf)

**Selection of Sponsor and Institution:**

###### SELECTION OF SPONSOR AND INSTITUTION

**Selection of Institution**

When applying for Ph.D. programs, I was in search of an institution with a history in exceptional in graduate education and extramural funding, with access to core facilities led by experts, and a highly collaborative environment. Vanderbilt University Medical Center (VUMC) has an incredible atmosphere for training in biomedical science and establishing lasting collaborations, due to its large incoming class in the Interdisciplinary Graduate Program (IGP) in Biomedical Sciences with comprehensive coursework covering topics from all eleven degree-granting departments. Additionally, between Vanderbilt University (VU) and VUMC, there are over 60 core facilities, providing expertise in biostatistics, histology, animal care, immunology, molecular biology, and advanced genetics techniques, as well as resources for access to DNA repository data, poster printing, and advanced imaging techniques, among many others. Furthermore, the Office of Biomedical Research, Education, and Training (BRET) provides several training programs and career development opportunities through the NIH BEST Grant-funded ASPIRE Program. The selection of Vanderbilt University as my Ph.D. institution was primarily driven by its record of excellence in graduate education, the highly collaborative environment between departments and physicians, the ease of access to sophisticated methods and experts, the comprehensive structure of the graduate program, and the unique training and career development resources available to students through the BRET office.

###### Selection of Sponsor

After receiving my Master’s degree in Molecular Microbiology and Immunology, I hoped to continue my Ph.D. studying host-pathogen interactions. I was first excited about Dr. Jim Cassat’s research during a series of presentations for student recruitment in the initial few weeks of IGP. His research was particularly intriguing because of the convergence of disciplines between microbial pathogenesis, host immune responses, and skeletal biology, and the use of the cutting-edge imaging resources at Vanderbilt University. My interest in studying infectious diseases of public health importance was matched with Dr. Cassat’s first hand experience as a physician-scientist, who sees patients at the Monroe Carell Jr. Children’s Hospital at Vanderbilt in Pediatric Infectious Diseases. I was enthusiastic about using my background in microbiology and immunology to ask and answer important questions on how staphylococci influence on bone remodeling. I chose to rotate in Dr. Cassat’s laboratory first, and was thrilled that Dr. Cassat personalized a project to my incoming skillset. As a new faculty member, Dr. Cassat was able to invest the time and effort to train me directly. I was impressed by his investment to individually train rotation students and this was a very productive rotation. My decision to join Dr. Cassat’s laboratory was ultimately guided by his training style, mutual interests to ask complex questions about the intersection between scientific disciplines to study *Staphylococcus aureus*-induced bone disease, and my enthusiasm to understand the interactions between bacteriology, immunology and bone biology in the context of this project.

###### Selection of Co-sponsor

Dr. Cassat’s affiliation with the Vanderbilt Center for Bone Biology introduced me to several bone biology specialists, an area where I desired to expand my training outside the Department of PMI to fully develop my project. I met Dr. Julie Sterling during the weekly Bone Biology Seminars, and frequently found myself reviewing her published articles and meeting with Dr. Sterling and members of her laboratory to glean information, compare protocols, and develop experiments. Dr. Sterling primarily studies bone metastasis and tumor invasion of bone, among which several research parallels can be drawn between the impact of cancer and infection on bone remodeling. Shortly after joining Dr. Cassat’s research team in 2015, I was granted funding through the Vanderbilt Center for Molecular Pathogenesis in the form of a Mini-Sabbatical Award to periodically train with Dr. Sterling’s laboratory throughout 2015-2016 to be oriented on the proper equipment and facilities necessary to perform bone histology techniques. This was an extremely beneficial experience, and the Sterling laboratory has been a great resource to guide the development of my research proposal. Furthermore, Dr. Sterling serves as a member of my thesis committee, which meets biannually to offer research support and career guidance. Interactions with the Sterling laboratory have already contributed to the success of preliminary experiments. There is no doubt that the expertise Dr. Sterling offers will be a strong supplement to the success and completion of the proposed research.

**Nico Contreras, University of Arizona**

[**“The Immunological Consequences of Mouse Cytomegalovirus on Adipose Tissue”**](https://www.niaid.nih.gov/sites/default/files/F31-sample-application_nico_contreras.pdf)

**Selection of Sponsor and Institution:**

## SELECTION OF SPONSOR AND INSTITUTION

### **Sponsor:** Dr. Nikolich-Zugich is a Professor and Department head of the University of Arizona Department of Immunobiology and Co-direction of the Arizona Center on Aging. He sits as editor of several journals, members of various committees, and organizer of a variety of conferences. His laboratory is focused on the age related decline of the immune system and specifically that of the T cells. The long-term focuses of the lab are the basic mechanisms of T cell function, immunity to infection in older adults, immune rejuvenation, chronic infection, and the impact of inflammation and nutritional intervention in aging, among others. I selected Dr. Nikolich-Zugich’s laboratory because of my interest in age related changes to biology and his work in calorie restriction and immune function. Dr. Nikolich-Zugich’s expertise in the effect of lifelong infection with cytomegalovirus and immunological parameters provides crucial support to the aims of this proposal. Furthermore, the size and facilities available to his laboratory are a tremendous boost to experimental work and design.

**Institution:** I chose to attend the University of Arizona for several reasons. I acknowledge that movement from institutions are the norm and generally supported to provide a wide array of view points teaching styles, however being in a military family I moved every three years and the opportunity to live for an extended period of time in one location was very appealing to me. Second, and most important, the facilities, collaboration, level of openness, and the energy of the principal investigators in the Department of Immunobiology are contagious. The facilities are some of the best I’ve seen and new facilities and buildings are being constantly built and upgraded. Furthermore, Dr. Nikolich-Zugich has created an environment that, I believe, has provided unparalleled opportunity for success. For these reasons and more the University of Arizona has provided me so much room for personal and academic success and growth.

Additionally, our laboratory has collaborations with several top immunologists and virologists that have contributed greatly to the development of these and other projects within our laboratory. As mentioned above, the collaboration, openness, and energy has allowed for the free movement of ideas. Several lab groups in the department study cytomegalovirus, the focus of this proposal, and the investigation of one pathogen from multiple different angles will provide extraordinary support in the development of this proposal and future work.

**Samantha Lynne Schwartz, Emory University**

[**“Regulation of 2'-5'-Oligoadenylate Synthetase 1 (OAS1) by dsRNA”**](http://www.niaid.nih.gov/sites/default/files/F31-Sample-Application_Samantha-Schwartz.pdf)

**Selection of Sponsor and Institution:**

### SELECTION OF SPONSOR AND INSTITUTE

After making my decision to pursue graduate school, I narrowed my difficult decision down to two excellent graduate programs: University of Texas Southwestern Medical Center’s Biological Sciences Umbrella Program and Emory University’s Biochemistry, Cell, and Developmental Biology (BCDB) Program. BCDB really stood apart from UTSW and the other programs I had considered because of the attractive training opportunities and the warm, close-knit feel the faculty and students share (and which I had had the opportunity to witness in detail through my role as a research specialist in a lab hosting BCDB students). These opportunities include a first year discussion-based course called “Foundations” that allows for extensive time one-on-one with the faculty and my peers, a first year seminar course that prepares students for public speaking and presentations, a second year scientific writing course where students write their own research proposals using an NRSA-style format, yearly student seminars, workshops to explore potential career opportunities, and a guaranteed stipend throughout training. BCDB also offers 1) a program retreat at the start of each academic year that is full of team-building activities, science, and the opportunity to catch up with BCDB alums to discuss their experiences and career paths, 2) a methods workshop (which I currently organize with two senior students in my program), and 3) a professionalization workshop (I currently organize this also!). As a result, BCDB students have many opportunities to hone their oral and written communication skills, as well as to access substantial education about career development. In addition, the pervasively collaborative and supportive environment of the BCDB program convinced me to attend. Professors and students routinely consult each other for advice or to develop new collaborations. In addition to my experience working at Emory, this strong graduate program environment was obvious to me at my interview because members of the program clearly knew each other and each other’s research, despite the breadth of research in the program. I see this type of environment being a particular asset to my career because I find it easy to approach a professor at an event or in their office to talk about an experimental method, my data, or my proposal. Although the BCDB program is relatively small (roughly 40 students and 45 faculty), as one of nine programs in the Emory School of Medicine’s Graduate Division of Biological and Biomedical Sciences I am part of an exceptionally broad, dynamic, and exciting research and intellectual environment. As a result, on an institutional level, Emory’s graduate support structure and core facilities are outstanding (I am even implementing two of them in this proposal!). Collectively, these many strengths from the individual program level and across the whole of Emory assured me that I would have everything I need to perform cutting-edge research and all of the training opportunities to make me exceptionally competitive for my post-doctoral training and career in research beyond.

As a first-generation college student, I was unsure about the next steps and not yet prepared to commit to graduate school following my graduation from Armstrong State University. At the time, I bounced back and forth between pursuing a Master’s or a Ph.D. but could not firmly commit to one field of study over another, having had limited research opportunities to that point. I knew, however, that Emory University was one of my top choices for graduate school, so I thought what better way to figure out my path than to work at a university I was interested in attending. This experience would allow me to work alongside the graduate students and principal investigators of programs I would potentially apply to. I worked for three years as a research technician in Dr. Conn’s lab. I had no prior experience working in a biochemistry lab, nor had I ever done bench science full-time, but Dr. Conn took a chance on me. I was able to witness first-hand how invested Dr. Conn was to training, mentoring, and challenging his students to improve. He carefully adapts his mentoring style to each of his students based on their individual needs. He will be hands-off when independence is needed or warranted, but always has an open door if you want to discuss a result or troubleshoot a problem. Dr. Conn is also always very involved in the graduate programs he is a member of, including BCDB of which he is currently the Director of Graduate Studies. He is one of the main instructors for the Hypothesis Design and Scientific Writing course and Foundations, and is a regular participant in student-lead seminars and workshops. Dr. Conn and I worked closely throughout my three years in his lab, from troubleshooting assays to writing a manuscript I coauthored with a postdoc in the lab, and this showed me the qualities I valued in a mentor and advisor. He was always very supportive of my decision to apply to graduate school, a career goal he knew of from the day I interviewed for the position. My experience as a technician was pivotal in my career, because without a “good” experience I am convinced I would have changed career paths. The time I spent in the Conn lab solidified for me that I was meant to pursue a career in research. Although I explored other options (at Dr. Conn’s insistence!) based on the qualities outlined above, I chose to stay at Emory to pursue my graduate school career. After three very different rotations (see *Research Experience*), I ultimately chose to return to Dr. Conn’s lab. Because of his unprecedented commitment to training and mentoring his students in all aspects of graduate student development, I was sold.