The inaugural 2018-2019 Student Research, Creative Activity & Scholarship (RCAS) program is an internal grant opportunity offered by the Office of Research & Sponsored Programs (ORSP). Funding is made possible through a grant from the Arthur Vining Davis Foundations that provides support for student and faculty initiated research. The Student RCAS are competitive grants to assist graduate and undergraduate students in developing new lines of inquiry, which may include collecting and analyzing pilot data and exploring innovative forms of creative expression. All awardees are expected to present at the annual Student Research Symposium in April; awardees are as follows:

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| **Name** | **Title** | **Award** | **Faculty Advisor** |
| Sergio Aponte and Diego Diaz Sanchez (UG), mechanical engineering | Design and Test of a Drone Subsystem for Firefighting | $1,000 | Emre Selvi, Engineering |
| Abstract: The goal of this research study is to design, manufacture, and test a mechanism that will be attached to a drone and will help carry and drop fire-extinguishing balls to help prevent fires from spreading. The designed system is part of a bigger system in which three other professors and their students from Texas A&M University have been developing. A prototype will be built and tested with the actual drones used in the project. Then, the design will be improved and finalized according to the test results and feedbacks of the customer. The intention is to make the jobs of firefighters easier and to try to help them do their job faster and in a safer way. |
| Gibson Arias (UG), biochemistry | Isolation of Acinetobacter baumannii phages from Jacksonville area water | $484 | William F. Penwell, Biology and Marine Science |
| Abstract: Modern medicine has afforded us many advantages, but also a rather large quandary: the increasing resistance of pathogens to current antibiotics. The list of multi-drug resistant (MDR) pathogens is currently growing where the number of effective antibiotics is declining. As pathogens become less susceptible to current antibiotics, treatment options become more limited, consequently healthcare professionals may have to turn to alternative treatments to rid to host of infections cause by these pathogens. Phage therapy is one such alternative treatment. This method consists of isolation and identification of a bacteriophage that targets and lyses a MDR-pathogen, ridding the host of infection. Using collected sediment samples and filtration, bacteria and phages will be grown together in hopes of the formation of plaques, or clearings, which indicate phage growth and bacterial decimation. From these plaques, viruses can be isolated and later amplified as well as sequenced after subsequent plaque assays. Such findings could have a major impact on modern medicine and offer a successful treatment for such pathogens as Acinetobacter baumannii, which is resistant to multiple classes of antibiotics and is currently a burden on our healthcare system. |
| Tabitha Hootman (G), marine science | Movement Patterns of the Florida Peninsula Cooter (Pseudemys peninsularis) | $1,000 | John Enz, Biology and Marine Science |
| Abstract: The Florida Peninsula Cooter and Red-bellied Turtles, although considered quite common and an integral part of the Florida freshwater ecosystems, has little information known concerning their habitat, home range or their migration movements. To date, only Kramer (1995) has briefly studied the home range of the Peninsula Cooter and none have studied the Red-bellied. This study will be the first to track migration movements to determine habitat requirements and habitat usage for determination of critical areas required to maintain these two species. In this study, 48 turtles (12 males and 12 females of each species) were outfitted with radio transmitters in July 2018. They were monitored and tracked by boat every weekend for the fall semester over a distance of approximately 29 miles (ca. 48 km). Abiotic as well as biotic factors are being documented to indicate possible factors influencing their migration movement patterns. This information is imperative for those in wildlife management and policy-making positions in order to make regulation policy and conservation decisions based upon sound scientific data. This study will serve as a Master's thesis and this Grant will fund spring semester data collection to ensure a scientifically sound full year's data set for analysis. |
| Andrew Lyons (G), marine science | An examination of shark species utilizing the coastal waters surrounding a Georgia Barrier Island with a spatio-temporal focus on sites of parturition and nursery use | $1,000 | Bryan Franks, Biology and Marine Science |
| Abstract: This research study will focus on the inshore waters surrounding Little St. Simons Island, a Georgia barrier island. The major objectives are to characterize the shark community utilizing these waters, examine the movements and migration of these populations, and to determine if the area is functioning as nursery habitat for sharks. We will be working with several species of shark, with a specific focus on lemon and finetooth sharks. Sharks will be caught by means of gillnet and rod and reel sampling. Sharks will be measured, sexed, and tagged with either external tags or an internal acoustic tag for automated tracking. Capture data will be used to determine species presence, abundance, and habitat use. Telemetry will be used to examine movements, habitat use/partitioning, and migration. As this region is poorly studied with regard to the shark community, results will be important in developing effective management strategies for these ecologically important species. |
| Janel Palomo (UG), biology | Characterization of Vibrio vulnificus in Timucuan Preserve Oysters | $463 | Anthony “Andy” Ouellette, Biology and Marine Science |
| Abstract: Vibrio vulnificus is a potentially pathogenic species of bacteria that resides naturally in warm, temperate water with salinity ranges of 5-25 ppt. V. vulnificus may infect individuals who expose wounds when in water or consume raw shellfish. Inflection causes gastrointestinal distress and septicemia, and in many cases, amputations are necessary and death may occur. This project, which began in Fall 2017, seeks to find V. vulnificus in the oysters of Jacksonville’s Timucuan Preserve, differentiate between pathogenic and non-pathogenic strains, and determine if there is a correlation between V. vulnificus growth and water salinity. Oyster samples have been collected, and continue to be collected, from Timucuan Preserve Site #23. Bacteria grown from samples have been isolated on two types of selective and differential media, identified with mass spectrometry, and characterized for traits suggestive of virulence such as the ability to evade immune system defenses and rupture red blood cells. Thus far, a total of twenty-five V. vulnificus isolates have been identified, and in addition to prior procedures, future isolates will be analyzed with gene analysis. Toward the project’s end, all isolates will be grown in various salinities to gain a better understanding of the preferred environment of pathogenic V. vulnificus. |
| Jarvis Strickland (UG), biology | Determining Specific Parasite Presence in Maryland’s White-Tailed Deer | $465 | Matthew Tucker, Biology and Marine Science |
| Abstract: White-tailed deer (WTD) are numerous in the United States and they are known reservoirs for several infections, both bacterial and parasitic. These pathogens are generally transmitted by mosquitoes and ticks. WTD are found throughout Maryland where many tick species circulate. Preliminary studies focused on blood samples taken during Maryland’s managed hunt season from 2017-2018. Sample locations included Fair Hill State Park, Gunpowder Falls State Park-Sweet Air, Catoctin Mountain National Park, Seneca Creek State Park, and Cabin John-Rock Creek. Collected blood samples were prepared and analyzed using genetic testing. Analysis by genetic testing allowed for the identification of parasites and bacteria in the blood. This work demonstrated the spread of parasitic infections in WTD throughout Maryland. The aim of this study is to screen more deer blood samples for these microbes in Maryland’s WTD population. An additional component will be to examine other microbial species not previously tested. Determining the prevalence and types of infectious agents within WTD populations allow for improvements in disease surveillance.  |
| Stephan VerHulst (UG), geography | Geographic Variance in the Population Awareness of Red Tide | $500 | Ray Oldakowski, Geography |
| Abstract: There is a limited understanding by researchers of how red tide is viewed by the public. Important information of what the Florida population is aware of and concerned about regarding red tide is unclear. It is also unclear as to why they feel the way they do about the subject. This experiment will gather information from the entire state on what the population knows and consider a few hypotheses of why they do. |
| Katrin Villinger (G), marine science | Resident and migratory sharks using Jacksonville's coastal waters: Examining their role in NE Florida's ecosystems | $1,000 | Bryan Franks, Biology and Marine Science |
| Abstract: This project will focus on shark telemetry in northeast Florida. We will be deploying receivers on ATON buoys marking the Mayport inlet of the St. Johns River, as well as on nearby wreck sites. Additionally, we will be surgically tagging sandbar sharks in the area that will be caught using longlines, rod- and reel, gillnets, and block rigs. The receivers will be checked once a month to gather data and ensure they are well- maintained. The data gathered will be analyzed using ArcGIS software to look at the usage of Jacksonville’s coastal waters by sharks. The goal of this study is to gather new data on shark movement through northeastern Florida’s waters since there is such of paucity of data in this region. Additionally, it will provide information on residential sharks in the area and their habitat usage. |
| Carlos Adorno, Brian Champion, Candace Dickens, Michael Gonzalez, Nati Gonzalez, Austin Kelm, Kevin Lindsey-Weston, Kristen Oliver, Esther Olivo and Zoe Lin G. Rosas (UG) | String | $5,380 | Erik DeCicco, Theater |
| Abstract: “String” marks the first production of a full-length play that was written by a JU student. The show opened and closed in early October 2018. As part of the production we hosted adjudicators from The Kennedy Center American College Theater Festival (KCACTF) and have been highly recommended to attend the KCACTF regional festival. In the coming months, we plan to rehearse and perfect the show to be showcased and compete at the regional level. The process will begin with pickup rehearsals. As the actors and creative team have already produced the work, they will need the chance to rehearse a few times to relearn or adjust blocking to make the most effective choices for the remounting of the production. Then, the last rehearsal before our regional presentation will involve a “dry run” of the technical conditions and the performance that are prescribed by the leadership of the KCACTF Region 4 Festival. The production will then be presented in Spartanburg, S.C., to a host of college theater programs, students, faculty, and entertainment industry professionals. The production has the potential to launch the creative activity of our programming to the regional and national levels. |