GUAM EPSCOR • GUAM ECOSYSTEMS COLLABORATORIUM (GEC)

GRADUATE RESEARCH ASSISTANTSHIPS

Guam EPSCOR is a 5-year, $6 million grant to the University of Guam from the National Science Foundation. The program aims to develop a Guam Ecosystems Collaboratorium to ensure the sustainability of coral reef ecosystems in the face of environmental change. Guam EPSCoR aims to situate Guam as a premier research and STEM (Science Technology, Engineering and Mathematics) education hub bolstering sustainability, economic development, and informed decision-making by engaging communities in 21st-century science.

In addition to its research goals, Guam EPSCoR seeks to increase the number and diversity of students who choose STEM careers by engaging students in its **Graduate Research Assistantship Program (GRA)**. The GRA program is a year-long program open to select graduate students seeking research opportunities with Guam EPSCoR faculty. Student research training and tasks may include field work to investigate coral reefs or to deploy and retrieve oceanographic instruments, as well as work in the University of Guam Marine Laboratory's Molecular Lab. Selected students will learn about DNA extraction and sequencing and/or how to readout and analyze data to characterize marine environments. Ideal candidates are self-motivated, well organized, and have research interests related to the objectives of the Guam Ecosystems Collaboratorium.

The University of Guam and Research Corporation of the University of Guam are Equal Opportunity Employers that have received NSF funding to broaden the participation of underrepresented students in STEM fields. As such, the GRA Program remains open to all qualified students, but women, minorities, and students with disabilities are particularly encouraged to apply.

ELIGIBILITY:

- Must be a U.S. citizen; or permanent resident of Guam; or non-immigrant alien admitted into Guam under the Compacts of Free Association
- Cumulative GPA of at least 3.0 in undergraduate studies or 3.25 in master's program

BENEFITS:

- Research experience and training
- Faculty/Researcher mentoring
- Annual stipend of up to $18,000.00
- Tuition Waiver of up to 21 credits per semester for up to three academic years for graduate students
- Possible travel opportunities

DIRECTIONS: *Complete this application for the Guam EPSCoR Graduate Research Assistantships. Please do not change the format. Please attach essay and transcript.*

APPLICATION SUBMISSION:

1. Drop off this application, (2) references, transcripts, and any additional attachments to:

   Guam EPSCoR Office, University of Guam, Dean Circle House #4
   Office Hours 8AM – 5PM, Monday - Friday

2. Or, you can email documents to Mellani Lubuag at lubuagm@triton.uog.edu. *PDF format only. Please put* ***"2018 Guam EPSCoR GRA Application"*** *in the subject line.*

SPACE IS LIMITED.

DEADLINE JULY 2, 2018

FOR MORE INFORMATION, CONTACT:

Mellani Lubuag, Program Manager
lubuagm@triton.uog.edu / (671) 735-0301/09

GUAM EPSCOR • GUAM ECOSYSTEMS COLLABORATORIUM (GEC)

GRADUATE RESEARCH ASSISTANTSHIP RESEARCH TRACKS

OCEANOGRAPHY:

The main tasks for an Oceanography Graduate Research Assistant (GRA) are collection and analysis of oceanographic data to describe physical and chemical characteristics of coastal environments around Guam. Collected data will be used to examine if any environmental parameters affect coral reef organisms and ecosystems. Scuba diving experience is preferred as we will deploy and maintain oceanographic instruments underwater. Additional tasks depend on the student's project which can be selected from a wide variety of topics including impacts of environmental variability on coral bleaching/health, host-symbiont interactions, hydrodynamics of coral reefs, modeling larval transport, and benthic habitat mapping.

CORAL ADAPTATION:

Tropical coral reefs are under many immediate threats due to a rapidly changing climate and the accumulation of local stressors, causing them to be in global decline (Pandolfi et al 2003; Hoegh-Guldberg et al. 2007; Bongaerts et al. 2017). Coral reef persistence depends on local areas that can offer refuge against such disturbances such as deeper more sheltered and stable parts of the reef. Increasing observations suggest that genetic variation associated with thermal and light tolerance could provide the raw material necessary for adaptation to climate change in various coral species (Bay et al. 2017; Hoffman & Sgrò 2011). This research project aims at exploring and identifying the molecular patterns responsible for temperature and light adaptation in coral species of the genera Acropora and Porites along a depth transect in Guam. In addition, using in situ experimental approaches such as transplantations we will also explore coral's capacity to acclimate to shallower or deeper depth than they are used to. This project will use multidisciplinary tools such as transcriptomic data, metabolic data, oceanographic data and bioinformatics analyses. The applicant must have scuba diving experience and at least hold an open water certification.

CORAL PHYLOGENY:

Evolutionary relationships and species boundaries in marine invertebrates have been inferred using a variety of genetic markers. The majority of these genetic markers have not yielded conclusive results for delimiting coral species and inferring their relationships. This project will examine the suitability of RAD sequencing to address these issues in the coral genus Acropora, a diverse group of prolific reef-builders. RAD sequencing generates large numbers of genetic markers in the form of single nucleotide polymorphisms (SNPs) across the genome, data that have been successfully used in delimiting species that failed to be recognized using other approaches (see, for example, Pante et al. 2015, Heredity 114: 450-459 or Combosch et al. 2017, Molecular Ecology 26: 5923-5938). The ideal candidate for this position has experience in the genetics lab (DNA extraction, PCR, gel electrophoresis) and a willingness and desire to learn the basics of computer scripting in Python and the Linux command line; training will be provided through appropriate coursework and 1-on-1 instruction. Some of the work may require field collection of study material snorkeling or using SCUBA and subsequent identification of material under the microscope.

BIOREPOSITORY:

Graduate Research Assistants assigned to the Biorepository under Guam EPSCoR's Guam Ecosystems Collaboratorium Project function essentially as curatorial assistants. In this role they provide support to research team members in need of curatorial services. They are not expected to do thesis research in this area of work but may do so if sufficient data resources allow. Duties include the following: collection and curation of research specimens, tissue sampling and preservation, digitization of collection data, imaging (photography and underwater photography, video, photomicroscopy, scanning, 3-D scanning, slide scanning, etc.) of specimens, database management, geo-referencing, literature surveys, collections maintenance, and assisting the Collections Manager and curators as necessary. The goal of this work is to assist in the creation and operation of a state-of-the-art research collection and database platform that is accessible online to a global community of users. Primary supervision of Biorepository GRA research duties is provided by the Collections Manager and the curators.

GUAM EPSCOR • GRADUATE RESEARCH ASSISTANTSHIP PROGRAM (GRA)

NAME: _____ **DATE OF BIRTH:** _____

CITIZENSHIP: O USA Citizen/ Permanent Resident O Other: _____

BEST WAY TO CONTACT YOU: _____ **PHONE NUMBER(S):** _____

EMAIL ADDRESS: _____

MAILING ADDRESS: _____

UNDERGRADUATE UNIVERSITY: _____

UNDERGRADUATE MAJOR(S)/MINOR(S): _____

UNDERGRADUATE CUM GPA: _____ **TRANSCRIPT ATTACHED:** O Official Copy O Unofficial Copy

CURRENT M.S. STUDENT AT UOG? O Yes O No O Applied, pending acceptance

UOG TERM START (E.G. FA16): _____ **PROSPECTIVE GRADUATION DATE:** _____

GRADUATE PROGRAM: _____

GRADUATE CUM GPA: ____ **TRANSCRIPT ATTACHED:** O Official Copy O Unofficial Copy O None/Pending

PREFERRED GUAM EPSCOR RESEARCH TRACK: Coral Phylogeny

HIGHEST EDUCATION LEVEL COMPLETED BY FATHER / MALE LEGAL GUARDIAN: M.A. / M.S.

HIGHEST EDUCATION LEVEL COMPLETED BY FATHER / MALE LEGAL GUARDIAN: M.A. / M.S.

DEMOGRAPHICS: *Please select one option for each demographic question. Participation is optional.*

GENDER: O Male O Female O Other O Prefer not to disclose

RACE: O Native Hawaiian/ Pacific Islander, specify: _____
O Black/African American O Native American/Alaska Native O Hispanic/Latino
O Asian O White O Prefer not to disclose

ETHNICITY: O Hispanic or Latino O Not Hispanic or Latino O Prefer not to disclose

PERSON WITH DISABILITIES: O Yes O No O Prefer not to disclose

REFERENCES: *Please attach two academic or professional references to this application. You may provide the names, email addresses, and phone numbers below.*

REFERENCE 1 – NAME: _____

TITLE: _____ **ORGANIZATION:** _____

EMAIL: _____ **PHONE NUMBER:** _____

REFERENCE 2 – NAME: _____

TITLE: _____ **ORGANIZATION:** _____

EMAIL: _____ **PHONE NUMBER:** _____

ESSAY: *Please provide a personal statement describing your research interest and experience and why you would be an ideal candidate for the Guam EPSCoR GRA Program. You may attach additional pages.*

PERSONAL STATEMENT

FUTURE TRACKING: *Please suggest the best way we can reach you in the future. (For example, you might list family telephone numbers, emails, social media and mailing addresses that are unlikely to change.)*

TIME COMMITMENT: *This program requires a commitment of approximately 20hrs/week throughout the year. Do you foresee any issues committing this time?*

☐ **Yes** ☐ **No** **Optional Note:** _____

SIGNATURE: *Signature below indicates your interest in the Guam EPSCoR GRA Program and that the information provided in this application is accurate to the best of your knowledge.*

Applicant Signature: _____ ***Date:*** _____