

SUMMER BRIDGE/REU 2014 - ORGANISMIC & EVOLUTIONARY BIOLOGY

Location: University of Miami (UM) - Rosenstiel School of Marine and Atmospheric Science (RSMAS) campus

4600 Rickenbacker Causeway

Miami, FL 33149

Faculty Mentor(s): Marjorie F. Oleksiak; Douglas L. Crawford

Contact: moleksiak@rsmas.miami.edu; dcrawford@rsmas.miami.edu

Peer Leader: Joaquin C. B. Nunez

Contact: jnunez@rsmas.miami.edu

This summer research experience for undergraduates (Summer REU) is project done in partnership with the **STEM FYE Summer Bridge Program**.

STEM FYE Website: <http://www.stemfye.org>

Project Website: <http://www.funhe-evol.org/#!mdc-summer-bridge-reu/c1and>

PROJECT DESCRIPTION

The summer bridge/REU in organismic and evolutionary biology is an intensive six-week program designed to provide first-time-in-college students a comprehensive research experience in the field of organismic and evolutionary biology. The project will encompass the four main components of modern biological research: theoretical discussion, fieldwork, bench (laboratory) work and bioinformatics.

EXPECTATIONS

This REU is designed for first-time-in-college students, i.e. no previous knowledge of the subject is required. However, all students are expected to participate to the best of their capacities. Students will be expected to read and understand the basic concepts of primary literature (e.g. research articles, review articles and protocols). Students won't be expected to understand the full extent of the literature or memorize data in any way. Students will be expected to attend and participate in all the sessions outlined in the activities calendar. Failure to comply will be reported to STEM FYE and may terminate the student's participation in the REU.

GOALS

As a result of their participation in the summer bridge/REU students will:

- Work as a team to complete the proposed project
- Learn basic laboratory methods to conduct scientific research
- Learn techniques to perform DNA extraction, quantification and processing
- Learn to use bioinformatics tools to analyze DNA data
- Produce a written research summary and a research poster
- Present their research in the annual Miami Dade College STEM FYE summer bridge research exposition

HOMEWORK

Homework will be assigned every session. It will cover basic concepts covered that laboratory and discussion session. Research experiences are complex; it is impossible to

understand all concepts related the project by just doing 3 hours a week of laboratory work. Students must be motivated and must expand on theory and conceptual knowledge at home by completing the homework assignments. Moreover, the research poster and the research manuscript will be crafted class by class through the homework and the results of the experimental work.

IN-SESSION PRESENTATIONS

It is vital for all students to participate in the REU. Each session, a selected student or group of students will present a brief summary of all the activities conducted up to that point in the research experience. Presentations must be 5 minutes long as well as cumulative. This is, material presented the week before will build up to the material of the following week. Students must prepare power point presentations using figures and tables. Students must do the best of their effort to produce good quality figures since these will be used on the research poster at the end of the project. **All students must present.**

Student representatives will be elected by the group to give a final presentation summarizing the entire project (5 to 7 minutes long). This presentation will be given the last day of the REU as well as during the STEM project exhibition. While only a small group of students will present during the exhibition, all students must be ready to answer questions regarding the project.

RESEARCH MANUSCRIPT

The research manuscript is a scientific paper containing theoretical and procedural details regarding the research. When finalized, it will be the “go to” document for anyone interested in the project. It will contain an abstract, introduction with a clear hypothesis as well as background information, methods, results and discussion.

The research manuscript will be crafted through homework activities through the project. The results section will display the experimental findings. The discussion section will require students to exercise critical thinking and apply theoretical concepts in order to analyze of their results.

RESEARCH POSTER

The research poster will be crafter according to the specification of the STEM project exhibition. The information used will be either taken directly or summarized from the research manuscript. The poster must present information in a clear and concise manner. It must contain figures, tables and data. These figures and tables can be collected from the in-session presentation given by the students.