Aquatic Germplasm and Genetic Resources Center Internship
Cryogenic Testing and Teaching Laboratory

This program will provide interns with a general overview and hands-on experience in conducting independent research. There will be visits to laboratories in the School of Renewable Natural Resources and our cooperators in several LSU Engineering departments. At the end of the program, interns will have basic knowledge of ethics and safety in research, microalgal culture, cryopreservation, 3-D printing, microcontrollers, and scientific writing. Interns will be involved in developing a process or device using the concepts and techniques learned and prepare a report on their work.

Qualifications

1. Minimum qualifications: Rising juniors and seniors from LSU and partner institutions with at least a 3.0 GPA in science and engineering fields are most competitive. Second year students and those with a minimum 2.5 GPA are also eligible and encouraged to apply. Must be in good academic standing; Basic knowledge of computer operation; Able to work in a multidisciplinary environment

2. Preferred qualifications: Basic knowledge of algal or aquatic biology; Experience working in a laboratory setting; Basic knowledge of computer-assisted design (CAD) software; Interest in or knowledge of 3-D printing; Curiosity and independence; Enjoy working as part of a team

3. Physical qualifications: Capable of long computer sessions; Not allergic to 3-D printing materials (PLA, ABS, and other polymers); Capable of using a microscope for sample analysis

Primary Contact: Dr. Terrence Tiersch, Director
Location: Aquatic Germplasm and Genetic Resources Center, LSU Campus, Baton Rouge, LA
Maximum number of interns: 2

Weeks 1-4
Daily Contacts: Dr. Terrence Tiersch, Dr. Maria Teresa Gutierrez-Wing
Primary Tasks:
- Meet with all members of the research group
- Complete ethics, laboratory techniques, and safety training
- Training on basic cryopreservation
- Training on basic aspects of 3D printing
- Training on basic microalgal culture
- Training on basic aspects of microcontrollers (Arduino/Raspberry Pi)
Weeks 5-6  
**Daily Contacts:** Dr. Terrence Tiersch, Dr. Maria Teresa Gutierrez-Wing  
**Primary Tasks:**  
- Literature review in industrial algal cultures and needs  
- Visit to commercial collaborators (Cajun biologicals, Aquaculture System technologies, etc)  
- Develop a list of the top priorities for algal production and preservation  
- Practice and advance the basic skills learned in weeks 1-4  
- Propose a device or process that combines the skills learned with the industry needs  
- Start development of proposed process or device  
- Participate in at least one K-12 activity (e.g. STEM camps, science fair teams’ preparation)

Weeks 7-8  
**Daily Contacts:** Dr. Terrence Tiersch, Dr. Maria Teresa Gutierrez-Wing  
**Primary Tasks:**  
- Visit the School of Renewable Natural Resources and the Engineering laboratories and shops (Biological, Electrical, Chemical and Mechanical Engineering).  
- Complete development of the device or process proposed (prototyping, processing, documentation)

Weeks 9-10  
**Daily Contacts:** Dr. Terrence Tiersch, Dr. Maria Teresa Gutierrez-Wing  
**Primary Tasks:**  
- Testing of the device or process developed  
- Prepare final report and if the development merits it, manuscript draft.