LSU AgCenter: Aquatic Germplasm and Genetic Resources Center (AGGRC)
Spring & Fall 2023
Supervisor/Mentor:
Dr. Terrence Tiersch, Phd. (Professor & Director) Profile: https://www.lsuagcenter.com/profiles/ttiersch
Job Description/Responsibilities:
The Aquatic Germplasm and Genetic Resources Center (AGGRC, www.aggrc.com) at the LSU AgCenter is a global leader in management and protection of aquatic genetic resources through repository development for germplasm (e.g., sperm, eggs, embryos), supported by funding from state and federal agencies such the National Institutes of Health (NIH), US Department of Agriculture (USDA), the National Science Foundation (NSF), and the US Agency for International Development (USAID). Researchers at the AGGRC conduct cutting-edge research with a variety (i.e., > 100) of aquatic organisms (e.g., fishes, salamanders, frogs, mollusks, algae) to support biomedical research, aquaculture, conservation of imperiled species, and fisheries management. The AGGRC has developed a one-of-its-kind interdisciplinary technology development program where researchers across diverse fields (e.g., biologists, engineers, mathematicians, computer scientists, and artists) collaborate closely to create innovative technologies such as open scientific hardware with on-site facilities including more than fifty 3-D printers and a 3-D printing farm, machine shop, an electrical-cryobiology laboratory, machine learning approaches, industrial manufacturing strategies, and commercial-scale cryopreservation capabilities. We support communities through a well-established outreach and education program with various activities such as interaction with K-12 students, production of digital media, inspirational tours, opportunities for internship, interdisciplinary courses, undergraduate research projects, technology workshops, and industry partnerships. In addition, AGGRC values a diverse and inclusive environment with team members from around the world. There are opportunities for strongly motivated, independent, and innovative students to combine biology and engineering technologies in a highly interdisciplinary environment. Examples of available research opportunities include process development for cryopreservation of biological materials, assisted reproduction, and collaboration with engineers and makers to produce practical devices for germplasm preservation. Experience with reproductive biology, CAD, 3-D printing, and open hardware would be beneficial, including a strong desire for interdisciplinary collaboration. **Specific Activities** ● Animal husbandry (e.g., marine invertebrates, amphibians, fish) and algal culture ● Reproductive biology and cryopreservation ● Ultrasound and computer-assisted sperm analysis (CASA) ● Cell biology and flow cytometry ● Image analysis and classification ● Engineering of devices for biomedical applications - machine learning. ● Open-source design and manufacturing using fabrication technologies (3-D modeling [CAD and CAM], 3-D printing [FFF and SLA], 5-axis milling, laser engraving, CNC routing) ● Process flow and simulation mapping analysis ● Digital media creation (Photoshop, Illustrator) ● Photography and videography ● Basic laboratory skills (e.g., pipetting, microscopy) ● Research methodology and design ● Statistical analysis ● Water quality analysis
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