Posters at the Capitol, Presented by LaURA
(Louisiana Undergraduate Research Association)

Greetings:

The Louisiana Undergraduate Research Association (LaURA) is a nonprofit organization that promotes and supports undergraduate research participation in faculty-mentored research and creative projects. The membership comprises Louisiana public and private college and university faculty, administrators, and staff as well as industry leaders who support the high-impact practice of undergraduate research. LaURA's purpose is to unite faculty, staff, administrators, and industry professionals across campuses and disciplines to advocate for access and opportunity for all undergraduate students in Louisiana. Providing more students with the opportunity to participate in this high-impact educational practice. Today, we celebrate our student's products. We celebrate curiosity, dedication, and passion for discovery and data based discission making. Research is about more than seeking answers; it's about asking multiple questions and being open to the experiences the answers to those questions may lead. Through this process, students gain skills that will serve them far beyond their academic journey—critical thinking, innovation, resilience, and creativity, will serve them forever.

Program Contents:

Contact for LaURA at each participating institution:

- **Baton Rouge Community College**: Contact Mary Miller millerm2@mybrcc.edu
- **Loyola University**: Contact Allyn Schoeffler ajschoef@loyno.edu
- **Louisiana Biomedical Research Network (LBRN)**: Contact Konstantin Kousoulas vtgusk@lsu.edu
- **Louisiana Space Grant / LaSPACE**: Contact Colleen H. Fava colleenf@lsu.edu
- **Louisiana State University**: Contact Sarah Ferstel sferst1@lsu.edu
- **Louisiana Technical University**: Contact Sherry Peveto speveto@latech.edu
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- **The University of New Orleans**: Contact Elizabeth Sigler ESigler@uno.edu
- **Tulane University**: Contact Anderew Squitiro asquitiro@tulane.edu
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Poster Presentation Schedule:

Time	
8:00 - 8:30 am	**Set up**
8:30 - 9:00 am	**Registration**
9:00 - 11:00 am	**Poster session A**
11:00 am - 1:00 pm	**Lunch & Programming** (Louisiana Purchase Room / Claiborne Building)
1:00-3:00 pm	**Poster session B**
3:00 - 4:00 pm	**Closing, Group photos, visit top of Capitol**
4:00 - 4:30 pm	**clean-up**

Session A: 9:00 to 11:00 am

Table # / Poster #	Presenter's Name	Poster Title	University, College, or Institution
1 / 1	Marquis McQuirter	Can Sediment Analysis be used to Further Describe Species Richness of Freshwater Sponges?	Baton Rouge Community College
1 / 2	Geremiah Perkins, Sarah Darst	Understanding Preferred Substrates of Louisiana Freshwater Sponges	Baton Rouge Community College
1 / 3	Juliana Coletti, Chris Hill	The Louisiana Freshwater Sponge Project: Examining Changes in Species Richness through a Comparison of two Ecological Studies	Baton Rouge Community College
2 / 4	Abigail Peck	Louisiana Undergraduate Student Scientific Flight Projects funded by LaSPACE (LA NASA Space Grant Consortium)	Louisiana Space Grant / LaSPACE
2 /5	Virginia "Jena" Bordelon	Improving the Food Environment at Schools to Combat Childhood Obesity in Louisiana	Louisiana State University
2 / 6	Jennifer Cagnolatti	Production of Biodegradable Mardi Gras Beads and Asthma Medicine Using Louisiana-Grown Microalgae	Louisiana State University
2 / 7	Alcina Costa	Impacts of Vision-Based Autonomous Driving Technology on Transportation Systems	Louisiana State University
3 / 8	Ella Yerger	Mutagenesis of Erythromycin Resistance Methyltransferase E to Uncover Molecular Determinants of Resistance Specificity	Loyola University New Orleans
3 / 9	Luka Fabre	Phytoplankton primary production and community dynamics across nearshore habitats of Lake Pontchartrain	Loyola University New Orleans
3 / 10	Abigail Miserendino	Individual Differences in Mental Imagery and Sensory Processing	Loyola University New Orleans
4 / 12	Payge Roberts	Survey of Antimicrobial Resistance Genes in Calcasieu Parish	McNeese State University
4 / 13	Tanner Broussard	An Assessment of Coyote (Canis latrans) Ecology Along Coastal Louisiana and Texas	McNeese State University
4 / 14	Olivia Sexton	Characterizing the Mandibles of Mite-Biting McNeese Honeybees	McNeese State University

Table # / Poster #	Presenter's Name	Poster Title	University, College, or Institution
5 / 15	Megan Bousegard	Development of a Novel Technique to Break Down Cholesterol Using Iron Nanoparticles	Nicholls State University
5 / 16	Samuel Landry	Utilizing GeoAI for Rapid and Accurate Damage Assessment	Nicholls State University
6 / 17	Lily Sahihi	Cross-Disciplinary Insights from Arabic Linguistics to the Biology of Genetic Codes	Tulane University
6 / 18	Joshua Nguyen	Self-Healing Modular Panels for Space Missions	Tulane University
6 / 19	Kristen Webster	The Role of Bald Cypress in Structuring Their Root Endophyte Communities Across Salinity Gradients	Tulane University
7 / 20	Ethan Adams	The Presence of Microplastics in *Tillandsia usneoides*	University of Louisiana at Lafayette
7 / 21	Debra Crawford, Hannah Sonnier	"No Tax on Tips" - The Implications of Newly Proposed Tax Legislation	University of Louisiana at Lafayette
7 / 22	Ian Robicheaux	Remote Sensing Applications in Identifying High Probability Archaeological Locales on the South-Central Louisiana Coastline	University of Louisiana at Lafayette
8 / 24	Jason Arena	Land Use Effects on Soil Health on a North Louisiana Soil	Louisiana Tech University
8 / 25	Haylee Shoemaker	Dollars & Sen$e	Louisiana Tech University
8 / 26	Camille Coco	Optimization of Production Process for Specialty Components	Louisiana Tech University
9 / 27	Sara Cavalier	Dialect and Décimas: Unique Features of St. Bernard's Isleño Community	Southeastern Louisiana University
9 / 28	Erick Diaz	Microchip Pipeline for Reading Brain Signals	Southeastern Louisiana University
10 / 29	Brandon David	Elucidation of Giardia Lamblia Transcription Initiation Factors: GleIF3i, GleIF3g, and GleIF4A"	University of Louisiana, Monroe - LBRN
10 / 30	Billiot, Jody	Echoes of Pointe-au-Chien: Unraveling an Effigy Pipe's Roots	The University of New Orleans

Session B: 1:00 to 3:00 pm

Table # / Poster #	Presenter's Name	Poster Title	University, College, or Institution
1 / 1	Nicholas Teegarden, Lisa DiMaggio	Revisiting Freshwater Sponge History: A review of the Michael Poirrier Collection	Baton Rouge Community College
1 / 2	Hayley Howard, Mallory Rhymer	Heavy Metal induced spicule malformations in Ephydatia fluviatilis	Baton Rouge Community College
2 / 4	Hannah Hauck	Don't Tap and Drive: Dual-Tasking Effects on Driving Performance	Louisiana State University
2 / 5	Taylor Horton	Documenting the Extent of Nurdle Pollution Around Capitol Lake	Louisiana State University
2 / 6	Olivia Perry	Heightened Neural Oscillatory Power During Movement Preparation in Anxiety Disorders	Louisiana State University
2 / 7	Haleigh Shelton	The Application of Event Based Architecture Principles on Louisiana State Universities Campus	Louisiana State University
3 / 8	Aimee Martin	Development of a Smart Dual Acting Drug Delivery System (SDADDS)	Loyola University - LBRN
3 / 9	Lucille McCain	Designing a species-specific eDNA protocol for detecting the Asian swamp eel Amphipnous cuchia (Family Synbranchidae) in Louisiana waterways and beyond.	Loyola University New Orleans
3 / 10	Olivia Zachary	The Relationship Between Mental Imagery and Trauma Symptoms	Loyola University New Orleans
3 / 11	Lily Manzi	Creating an Open-Source Python Nonlinear Fitting Program to Analyze Complex Protein Denaturation Data	Loyola University New Orleans
4 / 12	Erik Roy	Holarctic Distribution of Three Tardigrade Species	McNeese State University
4 / 13	Mustafa Velioglu	Cultivating Nannochloropsis oculata Microalgae Species to Extract Total Algal Lipids and Isolate Phospholipids via Solid-Phase Extraction	McNeese State University

Table # / Poster #	Presenter's Name	Poster Title	University, College, or Institution
4 / 14	Cristabell Simone-Alade	"Investigating Whether BEAF-32 Shows a Preference for Activating Certain Promoter Types in Drosophila melanogaster"	McNeese State University- Louisiana Biomedical Research Network
5 / 15	Breanna Gros	Blood and Bay: Essential Netting Practices in Cell-Mediated Immunity and Coastal Louisiana	Nicholls State University
5 / 16	Tristan Nilsson	Biodegradation of an antibiotic, sulfamethoxazole by a bacterial consortium isolated from the Hurricane Ida sediment.	Nicholls University
6 / 17	Britta Pellegrin	Testing for differences in sperm across an urbanization gradient	Tulane University
6 / 18	Arya Chandrasheker	Impact of DEK Protein Dysregulation on Liver Fibrosis	Tulane University
7 / 20	Abbey Poirier	Breaking Barriers: Dismantling the School-to-Prison Pipeline Through the Use of Positive Behavior Interventions	University of Louisiana at Lafayette
7 / 21	Maxwell Boutte	Modular and Resilient Cubesat Power System Design	University of Louisiana at Lafayette
7 / 22	Edie Bollich, Gracie Becker, Torey Smith, Anna White, Emily Wilcox	BURNOUT: The Silent Epidemic Supporting Nurses' Mental Health	University of Louisiana at Lafayette
7 / 23	Sydnei Henson	Clementine Hunter: Folk Art Inspiration from a Louisiana Plantation	University of Louisiana at Lafayette
8 / 24	Kennedy Stevens	Sky-High Impact! How Barksdale Air Force Base's Employment Drives the Local Economy	Louisiana Tech University
8 / 25	Taylor Bailes	Observing Cellular Nature	Louisiana Tech University
9 / 27	Trent Law, Brennan Kimbrell	Team Name: Dodogama	Southeastern Louisiana University
10 / 29	Heather Parker	Advancing Biomedical Research Through Collaborative Networks: The Role of the Louisiana Biomedical Research Network (LBRN)	Bossier Parish Community College – LBRN
10 / 30	Reisman, Walker	Frequency and Patterns of Plastic Nurdles in Spotted Seatrout (Cynoscion nebulosus) Stomach Contents across the Louisiana Coast	The University of New Orleans

Table # / Poster #	Presenter's Name	Poster Title	University, College, or Institution
11 / 31	Taeyeschanaye Villia	"The Efficacy of Kinase Inhibitors in Preventing Viral Entry through EGFR Utilization"	Southern University Baton Rouge – LBRN

Participating Organizations in alphabetical order

Baton Rouge Community College: Contact Mary Miller millerm2@mybrcc.edu

Poster Title: ***The Louisiana Freshwater Sponge Project: Examining Changes in Species Richness through a Comparison of two Ecological Studies?***
Student Presenters: Julian Coletti and Chris Hill
Hometown: Baton Rouge, LA
Authors: Julianna Colleti, Chris Hill, Rose Dawes, Stephanie Archer, Mary Miller
University: **Baton Rouge Community College**
Expected Graduation Date: Associates of Science General Science, Spring 2026
Mentor: Mary Miller
Mentor Email: millerm2@mybrcc.edu

Abstract:
Beginning in 2019, the Louisiana Freshwater Sponge Project (LFSP) is a longitudinal study focused on describing freshwater sponge species richness in Louisiana water systems. While very understudied, freshwater sponges have been reported to be environmental health indicators. Tracking any change in species richness over time provides a picture of the overall health of water systems as well as indicates the effects that changes in environmental conditions have on freshwater sponges. The LFSP ecological survey compares the current freshwater sponge species richness with a previous survey conducted in 1969. In addition to comparing these previously surveyed water systems, this study includes an additional 200 new sites and has identified over 1,600 sponge samples. Thus far, LFSP has revisited 146 out of the 152 sites included in the original survey, or over 95%, though 58 of these sites have been made inaccessible due to land development and other geographical changes. Utilizing the same sampling methods from the 1969 survey, submerged substrates within six feet of the shoreline were retrieved and examined for sponges. Freshwater sponge samples were identified through phenotypic spicule analysis and COX-1 sequencing. Comparison of results between the two studies indicates some consistency and variances. Consistent with the previous study, the most prevalent species in Louisiana are still *Trochospongilla horrida* and *Eunapius fragilis*. The most significant variation observed between the two studies is an overall decline in species richness across Louisiana.

Poster Title: **Heavy Metal induced spicule malformations in *Ephydatia fluviatilis***
Student Presenters: Hayley Howard and Mallory Rhyme
Hometown: Baton Rouge, LA
Authors: Hayley Howard, Candance Hill, Mallory Rhymer, Jesse Mehaffey, Phoebe Zito, Stephanie Archer, Mary G. Miller
University: **Baton Rouge Community College**
Expected Graduation Date: Associates of Science General Science, Summer 2025
Mentor: Mary Miller
Mentor Email: millerm2@mybrcc.edu

Abstract:
Freshwater sponges, such as *Ephydatia fluviatilis*, are important bioindicators of water quality of Louisiana. Recent surveys have documented malformations in this species, prompting an investigation into whether heavy metal contamination in local water bodies is a contributing factor. Dr. Michael A. Poirrier's 1981 laboratory study demonstrated that exposure to mercury led to malformed gemmuloscleres. To further investigate this relationship in Louisiana water systems, we conducted field surveys to locate E. fluviatilis, collected water samples, and analyzed the extent of sponge malformations alongside concentrations of mercury, lead, aluminum, and zinc. Malformations of the spicules and gemmules were further examined using scanning electron microscopy. Establishing a connection between heavy metal contamination and these abnormalities could provide scientific support for stronger environmental regulations.

Poster Title: ***Can Sediment Analysis be used to Further Describe Species Richness of Freshwater Sponges?***
Student Presenter: Marquis McQuirter
Hometown: Zachary, LA
Authors: Destiny Marvel, Marquis McQuirter, Hayley Howard, Mary G. Miller
University: **Baton Rouge Community College**
Expected Graduation Date: Associates of Science General Science, Spring 2026
Mentor: Mary Miller
Mentor Email: millerm2@mybrcc.edu

Abstract:
This study explores the role of sediment analysis as a contribution in defining freshwater sponge species richness in Louisiana. Freshwater sponges serve as vital indicators of environmental health, yet they remain largely under-researched. The Louisiana Freshwater Sponge Project (LFSP) is a longitudinal study aimed at documenting sponge diversity within Louisiana's freshwater systems. Sponge specimens are collected and identified through examination of spicule morphology in the sponge body and/or gemmules, complemented by COX-1 gene sequencing. Sediment samples from surveyed sites undergo drying and a series of chemical processes to remove inorganic and organic matter, leaving only silica-based participles, including sponge spicules, that can be observed with light microscopy. Findings from 47 different sites indicate that sponges are not always present in areas where they were previously collected. In such cases, sediment analysis reveals evidence of additional sponge species by examining the sediment, suggesting a broader species richness than documented solely on sponge sample collections. This method not only confirms the presence of observed sponge species but also expands known species richness for specific locations. Sediment analysis therefore provides a comprehensive view of species richness, allowing species verification at sites without direct sponge sampling and regardless of seasonal collection limitations.

Poster Title: ***Understanding Preferred Substrates of Louisiana Freshwater Sponges***
Student Presenters: Geremiah Perkins and Sarah Darst
Hometown: Baton Rouge, LA
Authors: Geremiah Perkins, Sarah Darst, Chris Hill, Mary G. Miller
University: **Baton Rouge Community College**
Expected Graduation Date: Associates of Science General Science, Spring 2026
Mentor: Mary Miller
Mentor Email: millerm2@mybrcc.edu

Abstract:
The Louisiana Freshwater Sponge Project investigates what substrates contribute to the growth and development of different freshwater sponge species. Freshwater sponges are understudied, environmental health indicators. These organisms are filter feeders that assist in cleaning freshwater ecosystems. To further understand the driving factors of freshwater sponges, the Louisiana Freshwater Sponge Project has prioritized identifying and tracking these organisms' species richness. Previous studies show that freshwater sponge survival depends on water quality and availability of substrates. However, the literature provides little research on the preferred substrates that contribute to sponge growth and development. This study analyzed the substrate specificity of over 1200 collected sponge samples from over 300 water systems in Louisiana. During sampling, sponges were photographed and attached to their substrates. In the lab, the sponges were identified using sponge morphology and/or DNA sequencing of the COX-1 gene. Substrates were classified as logs, rocks, tree roots, trash, plant roots, and bricks. Using Excel, substrates were documented for fifteen species in Louisiana. The analysis of this data collection has found rocks and logs to be the most abundant substrates. However, some species are limited to root systems and logs. This information contributes to the environmental parameters that support sponge growth.

Poster Title:
Revisiting Freshwater Sponge History: A review of the Michael Poirrier Collection
Student Presenters: Nicholas Teegraden and Lisa DiMaggio
Hometown: New Orleans, LA and Denham Springs, LA
Authors: Nicholas Teegarden, Sydney Gemeinhardt, Lisa DiMaggio, Mary G. Miller
University: **Baton Rouge Community College**
Expected Graduation Date: Associates of Science General Science, Spring 2026
Mentor: Mary Miller
Mentor Email: millerm2@mybrcc.edu

Abstract:
The late Michael Poirrier, PhD, was a zoologist who focused his research on benthic restoration ecology. His doctoral dissertation, in 1965, focused on the Louisiana freshwater sponge populations; this study led to many consulting opportunities during his academic career. In 2019, he began working as a mentor to Mary G. Miller on the Louisiana Freshwater Sponge Project, at Baton Rouge Community College. At the time of his passing in November 2023, his family entrusted Dr. Miller to oversee his sponge collection. The collection of 408 samples was obtained from his research lab at the University of New Orleans in July 2024. It consists of 21 species from 27 states and 15 countries, spanning over 100 years, from 1888 to 1998. When the samples were obtained, they consisted of dried and wet (preserved in ethanol) sponges that included extensive to limited classification information. Project participants confirmed and/or identified the sponge samples using phenotypic spicule observations. The samples were then organized based on the dates and origin of sample collection. Dr. Miller has worked with the Louisiana Universities Marine Consortium to house the samples at their Blue Works site museum. This poster will share the findings of his collection and how they can be obtained by other scientists.

Louisiana Biomedical Research Network (LBRN):

Contact Konstantin Kousoulas vtgusk@lsu.edu

Poster Title: ***Elucidation of Giardia Lamblia Transcription Initiation Factors: GleIF3i, GleIF3g, and GleIF4A***
Student Presenter: Brandon David
Hometown:
Authors: Brandon David, Kade Malone & Srinivas Garlapati
University: **University of Louisiana at Monroe/ LBRN**
Student's Major: Biology
Expected Graduation Date: May 2025
Mentor: Ojasvi Dutta
Mentor Email:

Abstract:

Elucidation of Giardia Lamblia Transcription Initiation Factors: GleIF3i, GleIF3g, and GleIF4A" University of Louisiana Monroe Srinivas Garlapati Giardia lamblia is a common waterborne human parasite. Giardia is a flagellated protozoan that causes gastrointestinal giardiasis in humans, a waterborne disease that causes diarrhea. New strains of Giardia are resistant to drugs such as Metronidazole and other derivatives. Because of current antibiotic-resistant strains of Giardia, new avenues of treatment must be pursued. Giardia lacks detectable homologs eIF4G, 4B, and 4H, has smaller 80S ribosomes, and an unusually short 5' untranslated region (0-6 nucleotides). eIF4G exists as a complex with cap binding protein eIF4E and RNA helicase eIF4A and is responsible for recruiting the PIC to the 5' end of the mRNA. eIF4B, eIF4H, and eIF4G together are responsible for stimulating eIF4A helicase activity. This activity is important for unwinding secondary structures within the untranslated regions.

The only detectable homologs of eIF4 in giardia were GleIF4A and GleIF4E2. Without its stimulating partners and with the lack of a 5' untranslated region containing secondary structures, the role of GleIF4A in translation is largely unknown in Giardia. Our lab has identified novel interactions of GleIF4A with two subunits GleIF3i and GleIF3g using its amino terminal and carboxy terminal domains respectively. Both the subunits GleIF3i and GleIF3g exist as a subcomplex with GleIF3b, this subcomplex is involved in nearly every step of translation initiation. This study focused on different ways to determine and understand the interactions GleIF4A may have with this eIF3 subcomplex, and what implications it may have in understanding GleIF4A's function utilizing both in vitro functional assays.

Poster Title: ***Development of a Smart Dual Acting Drug Delivery System (SDADDS)***
Student Presenter: Aimee Martin
Hometown:
Authors: Aimee Martin, Kayla Grant, Mya Jordan, Sri Hari Galla, Jayalakshmi Sridhar & Stassi DiMaggio
University: **Loyola University / LBRN**
Student's Major: Biological Sciences
Expected Graduation Date: May 2028
Mentor: Ojasvi Dutta
Mentor Email:

Abstract:

The present-day challenge of delivering anti-cancer agents selectively to tumor cells to mitigate systemic toxicity has led to greater focus on drug delivery research using nanoscale carriers. Despite progress in pre-clinical studies, the therapeutic effects have not lived up to their expectations in the clinical setting. Though promising, these systems typically exploit passive delivery of a single therapeutic to the target tissue, for example, by the encapsulation of drugs in carrier systems followed by drug release under an external trigger. The current technologies suffer from issues of stability, large scale synthesis, distribution control, drug loading efficiency, and ease of transport across cell membranes. Our current pilot project is addressing this issue through the design and synthesis of the two components of a Smart Dual Acting Drug Delivery System (SDADDS) consisting of bifunctional nanocarriers capable of synergistic targeting of multiple drivers of cancer thereby overcoming current limitations to treating cancers. The dual components consist of 1) extracellular receptor targeting through polyvalent binding to increase selective binding to cancerous cells (dendron A) and 2) Intracellular targeting by delivering chemotherapeutics selectively through controlled photorelease (dendron B). A fluorescent tagged model system is being synthesized for cellular imaging studies to confirm selective localization of dendron A on the surface of cancer cells. The ability of dendron A to target the AXL receptor will be quantified on TAM (+) or TAM(-) breast cancer cell lines as well as human ex vivo tumor models (tumorspheres), using fluorescent tagged complexes via inverted fluorescent microscopy.

Poster Title: ***Advancing Biomedical Research Through Collaborative Networks: The Role of the Louisiana Biomedical Research Network (LBRN)***
Student Presenter: Heather Parker
Hometown:
Authors: Heather Parker, Ojasvi Dutta, Seetharama Jois, Harikrishnan Mohan, Konstantin Kousoulas
University: **Bossier Parish Community College / LBRN**
Student's Major: Science
Expected Graduation Date: 2029
Mentor: Ojasvi Dutta
Mentor Email:

Abstract:

The Louisiana Biomedical Research Network (LBRN) plays a pivotal role in enhancing biomedical research capacity across the state of Louisiana. Supported by the National Institutes of Health (NIH) Institutional Development Award (IDeA) program, LBRN fosters interdisciplinary research collaborations, provides access to cutting-edge facilities, and offers comprehensive training programs for students, early-career scientists, and faculty at participating institutions. At the heart of LBRN's mission is the development of infrastructure and expertise in biomedical research across primarily undergraduate institutions (PUIs), research universities, and medical schools in Louisiana. Through its support of diverse research areas—ranging from cancer biology, infectious diseases, and neurobiology to bioinformatics and data science—LBRN facilitates the growth of an inclusive scientific community dedicated to improving health outcomes both regionally and nationally.

This presentation will highlight key LBRN initiatives, including its research project support, mentoring programs, and the development of a robust network for sharing resources and expertise. Special attention will be given to the outcomes of LBRN-supported projects that have contributed to scientific advancements, workforce development, and the preparation of underrepresented students for biomedical careers. As LBRN continues to expand its impact, it remains committed to strengthening Louisiana's position as a leader in biomedical research and innovation. The abstract aims to showcase LBRN's contributions to scientific knowledge, capacity building, and collaboration

Poster Title: ***Investigating Whether BEAF-32 Shows a Preference for Activating Certain Promoter Types in Drosophila melanogaster***
Student Presenter: Cristabell Simone-Alade
Hometown:
Authors: Christabel Simon-Alade, Sunday Negedu & Craig Hart
University: **McNeese State University / LBRN**
Student's Major: Biological Sciences
Expected Graduation Date: May 2029
Mentor: Seetharama Jois
Mentor Email:

Abstract:

The common fruit fly, Drosophila melanogaster, has an insulator-binding protein called BEAF-32 (Boundary Element Associated Factor of 32 kilodaltons) that plays a role in gene expression and regulation. BEAF-32 binds in close proximity to promoters, which are DNA sequences that specify where gene expression initiates. Although there are many DNA sequence motifs associated with promoter activity, promoters can be classified into two broad categories: housekeeping and regulated. Genome-wide mapping found that BEAF-32 usually binds near housekeeping promoters. We previously devised an assay to test the ability of BEAF-32 to activate promoters. We found that BEAF-32 generally activates promoters with low basal activity, whether a given promoter has motifs associated with housekeeping or regulated promoters. However, most tested regulated promoters had high basal activity while the opposite was true for most housekeeping promoters. A major subcategory of regulated promoter was not well represented in these data. Here we test promoters from this subcategory and find that they generally have low basal activity and are poorly activated by BEAF-32. This indicates that BEAF-32 has a preference for activating promoters that have housekeeping motifs. This information will guide future efforts to identify proteins that function with BEAF-32 to activate promoters.

Poster Title:
The Efficacy of Kinase Inhibitors in Preventing Viral Entry through EGFR Utilization
Student Presenter: Taeyeschanaye Villia
Hometown:
Authors: Christella Nelson, Imran Hossain, Jean Christopher Chamcheu & Konstantin Kousoulas
University: **Southern University Baton Rouge / LBRN**
Student's Major: Biology
Expected Graduation Date: May 2025
Mentor: Cristella Nelson
Mentor Email:

Abstract:

Southern University and A&M College Konstantin Kousoulas Herpes simplex virus type 1 (HSV-1) is a prevalent pathogen that causes various human diseases, ranging from minor mucocutaneous lesions to severe encephalitis. However, our understanding of the molecular mechanisms and interactions between HSV-1 and human host factors remains limited. Current therapeutic options primarily rely on nucleoside analogs, which can induce drug resistance over time. Recently, protein kinases have emerged as potential candidates for antiviral treatment. Protein kinases are pivotal in cellular signal transduction and offer promising targets for therapeutic intervention and disease prevention. Both cellular and viral kinases play critical roles in HSV-1 entry into cells and its intracellular transport. This study proposes that cellular kinases are crucial in regulating viral infection. Initial screening of a library of kinase inhibitors revealed several EGFR kinase inhibitors that drastically inhibited virus replication. HSV-1 may utilize EGFR (Epidermal Growth Factor Receptor) to attach and enter the host cells, as well as for potential intracellular signaling. This inhibition of virus replication was observed utilizing a recombinant HSV-1 virus constitutively expressing the green fluorescence protein providing for quantitation of fluorescence as a measure of virus replication in cell culture. The effectiveness of these EGFR (Epidermal Growth Factor Receptor) inhibitors is explored as potential antiviral agents using traditional drug assays, while the IC50 (inhibitory concentration) is determined in conjunction with cytotoxicity testing. These investigations aim to enhance our understanding of the molecular and cellular signaling pathways involved in HSV-1 infection and investigate the role of EGFR in HSV-1 infection.

Louisiana Space Grant / LaSPACE: Contact Colleen H. Fava colleenf@lsu.edu

Poster Title: ***Louisiana Undergraduate Student Scientific Flight Projects funded by LaSPACE (LA NASA Space Grant Consortium)***
Student Presenter: Abigail Peck
Hometown: Baton Rouge, LA
Author: Abigail Peck
Louisiana **Space Grant / LaSPACE**
Student's Major: Mechanical Engineering
Expected Graduation Date: May, 2027
Mentor: Dr. Colleen H. Fava
Mentor Email: colleenf@lsu.edu

Abstract:
The Louisiana Space Grant Consortium (LaSPACE) supports a comprehensive portfolio of scientific flight opportunities for undergraduate student teams at LaSPACE affiliate campuses. This poster will highlight four such programs: 1) Louisiana Aerospace Catalyst Experiences for Students (LaACES) program is our statewide, scientific ballooning project, which has been successfully serving the LaSPACE academic community for twenty years; 2) RockOn! is a hands-on workshop teaching participants how to create an experiment from scratch over a 5-day period and then launching it into space on the 6th day of the workshop. Teams from LaSPACE Teams have been participating since 2018; 3) The High Altitude Student Platform (HASP) is an international platform designed to carry more advanced student payloads to an altitude of about 36 kilometers with flight durations of 15 to 20 hours using a small volume, zero pressure balloon; 4) RockSAT-C is a follow on program to RockOn which is a program for students to design, build, and fly a sounding rocket experiment on a Terrier-Improved Orion sounding rocket. This poster will introduce these 4 projects through the context of an LSU Mechanical Engineering Student who has participated on a team for all four flight opportunities.

Louisiana State University: Contact Sarah Ferstel sferst1@lsu.edu

Poster Title:
Improving the Food Environment at Schools to Combat Childhood Obesity in Louisiana
Student Presenter: Virginia "Jena" Bordelon
Hometown: New Orleans, LA
Author: Virginia "Jena" Bordelon
University: **Louisiana State University**
College: Human Sciences and Education
Department: Kinesiology
Expected Graduation Date: May, 2026
Mentor: Senlin Chen
Mentor Email: senlinchen@lsu.edu

Abstract:
Childhood obesity is a critical public health challenge in Louisiana (23.1% vs. 17% national average; 3rd highest). ProudMe (Preventing Obesity Using Digital-Assisted Movement and Eating) is a funded obesity prevention intervention aimed at decreasing obesity risk among young students by enhancing the school food environment, integrating purposeful health and physical education, implementing artificial intelligence (AI) technology, and providing professional development for staff. This study presents scientific findings on disparities in the food environment at one of the largest public school district in Louisiana. Two trained observers conducted observations using the Smarter Lunchroom Scorecard to measure the food environment and policies of 13 schools' cafeteria. Among the participating schools, the free and price-reduced meal percentage was averaged to be 70.8%. Initial cafeteria quality scores ranged from 21 to 42 out of 59 ($M = 34.21 \pm 6.84$), suggesting significant rooms for improvement across scoring categories. Our data revealed that these 13 cafeterias struggled most with offering and promoting salad, as one of the eight scoring categories of the Smarter Lunchroom Scorecard. The cafeterias scored highest in offering white milk (3.83 ± 1.21). These findings directly led to the ProudMe intervention implementation at the half of the schools across 12 weeks, which are currently in progress. The ProudMe Cafeteria (1 of the 4 components) intervention includes frequent training and support with the cafeteria managers and their staff, following the motivational interviewing (MI) principles. Our ProudMe intervention, as a whole, is expected to result in significant improvements in health behaviors and food environment, which will lead to the fostering of healthier future generations of Louisiana citizens.

Poster Title: ***Production of Biodegradable Mardi Gras Beads and Asthma Medicine Using Louisiana-Grown Microalgae***

Student Presenter: Jennifer Cagnolatti
Hometown: Gonzales, LA
Author: Jennifer Cagnolatti
University: **Louisiana State University**
College: Science
Department: Biological Sciences
Expected Graduation Date: May, 2026
Mentor: Naohiro Kato
Mentor Email: kato@lsu.edu

Abstract:
Mardi Gras is a vital part of Louisiana's cultural heritage, uniting communities and fueling the local economy through vibrant celebrations. However, this iconic tradition also brings environmental challenges, such as the accumulation of plastic waste from non-biodegradable beads. At the same time, Louisiana faces high rates of asthma, emphasizing the need for solutions that address both environmental and public health concerns. This project is deeply rooted in Louisiana, drawing on local resources to develop sustainable solutions to these issues. By utilizing salt-tolerant microalgae cultivated in Louisiana, a dual-purpose system was developed: the algal biomass is used to produce biodegradable Mardi Gras beads, while valuable pigments like fucoxanthin are extracted for potential asthma therapy. To achieve this, dried microalgae were mixed with ethanol and incubated overnight in the dark. Fucoxanthin was isolated using solid phase extraction and enzymatically converted to fucoxanthinol. The identity and purity of the product were confirmed by high-performance liquid chromatography (HPLC). The remaining biomass was then repurposed to create biodegradable beads. Additionally, a 3D printing technique was developed to embed native plant seeds in biodegradable beads, promoting plant growth and faster degradation. In the future, the project will test the effectiveness of fucoxanthinol in both mouse and human cell models. Plans also include repurposing abandoned, salt-affected rice fields in Louisiana for large-scale microalgae cultivation and further developing scalable production methods for biodegradable beads. By utilizing Louisiana's local resources, this project provides a scalable model for using microalgae to tackle environmental and health challenges worldwide. This integrated approach highlights how Louisiana's unique assets can be transformed into innovative solutions to protect the environment and improve public health.

Poster Title:
Impacts of Vision-Based Autonomous Driving Technology on Transportation Systems
Student Presenter: Alcina Costa
Hometown: Baton Rouge, LA
Author: Alcina Costa
University: **Louisiana State University**
College: Engineering
Department: Electrical and Computer Engineering
Expected Graduation Date: May, 2026
Mentor: Xiangyu Meng
Mentor Email: xmeng5@lsu.edu

Abstract:
The alarming state of existing transportation systems has been well documented in various aspects. From the safety perspective, according to the National Motor Vehicle Crash Causation Survey, intersection crashes are the second most common, and 96% of intersection crashes are attributed to the driver. From the environmental perspective, a report compiled by the Environmental Defense Fund published the fact that in New York City alone, idling cars and trucks produce 130,000 tons of carbon dioxide each year. From the energy perspective, transportation accounts for 29% of greenhouse gas emissions in the U.S. Autonomous Vehicles (AVs) also known as self-driving cars are the upcoming solution to reducing collision fatality, energy consumption, and greenhouse gas emissions. Therefore, there is much to explore in using computer vision-based deep learning algorithms such as You Only Look Once (YOLO) to detect traffic lights and process this information along with automated brake and engine controls that calculate the optimal time to brake and turn off engines at the light. There are several car models in recent years that turn off engines when the driver brakes, however, this technology has yet to be applied in the context of automation. This research project seeks to determine the efficacy of traffic light detection algorithms with real-time applications by experimenting with a Turtlebot and traffic signal. Therefore, control technology can automate vehicle energy conservation and decrease gas emissions on the road creating a safer and cleaner environment.

Poster Title: ***Don't Tap and Drive: Dual-Tasking Effects on Driving Performance***
Student Presenter: Hannah Hauck
Hometown: LaPlace, LA
Author: Hannah Hauck
University: **Louisiana State University**
College: Humanities and Social Sciences
Department: Psychology
Expected Graduation Date: May, 2025
Mentor: Owen Carmichael
Mentor Email: owen.carmichael@pbrc.edu

Abstract:
Distraction due to cell phone use is one of the major causes of traffic accidents in the United States. Screen distractors cause slower reaction times, lane swerving, late braking, and other unsafe driving practices. It has been shown that doing multiple tasks at once causes a decrease in the performance of one or both of the tasks; this is referred to as a dual task hit. In this study, we assessed the dual task hit among participants completing a driving simulation while performing the AX Continuous Processing Task, a cognitive task. Participants completed the driving simulation without distraction and completed the AX-CPT without distraction ("single-tasking" conditions), and then completed both tasks simultaneously (the "dual-tasking" condition). To assure attention to both tasks, participants were informed they would be given a quiz after the driving simulation about what objects were present in the simulation; and they were told to achieve the highest accuracy possible on the AX-CPT. I hypothesized that both driving performance and performance on the AX-CPT would be decreased in the dual-tasking condition compared to the single-tasking condition. Additionally, I explored the idea that the processing speed would be faster for those in a younger age range, making the dual task effects larger on the older population when compared to data from a prior study. The results show that dual-tasking negatively impacts accuracy and reaction time on the AX-CPT task and on certain aspects of driving behavior, like force of braking and deviation from the center lane, while having no effect on velocity. This study shows that multitasking behind the wheel can cause decrements in driving performance and has real world implications surrounding distracted driving.

Poster Title: ***Documenting the Extent of Nurdle Pollution Around Capitol Lake***
Student Presenter: Taylor Horton
Hometown: Avery Island, LA
Author: Taylor Horton
University: **Louisiana State University**
College: Humanities and Social Sciences
Department: Coastal Environmental Science
Expected Graduation Date:
Mentor: Mark Benfield
Mentor Email: mbenfie@lsu.edu

Abstract:
Nurdles are tiny pellets of raw resin utilized in the production of all plastic materials. They are considered microplastics, and due to their size, are not regulated by the Environmental Protection Agency (EPA). They are not chemically toxic; the issue arises when they enter the ecosystem via railroads or other trading means. A particularly pertinent example of nurdle pollution is Capitol Lake; it is in the perfect location to amass large quantities due to its proximity to a major railroad. Nurdles are the perfect size to be mistaken as food for many marine and mammal species. They are typically colorless, making it easy to blend in with the ecology and take on its characteristics (i.e., turning the color of the sediment or algae it is residing in). They of course offer no nutritional value; organisms consume them by mistake, and it confuses their body into thinking it is full. As a result, many organisms die of starvation. Due to the growing amount of microplastics in our environment and the lack of EPA regulations, it is believed that documenting nurdle pollution around Capitol Lake will raise awareness and potentially hold companies responsible for the detrimental impact their pollution is having on the environment. The purpose of this study is to explore the extent of nurdle pollution present around Capitol Lake in Baton Rouge, LA. By mapping the pollution and measuring the polymer composition and morphology of the nurdles via FTIR spectroscopy, we will have an accurate depiction of this problem. Species present within the lake were observed to identify the potential for environmental impacts of nurdles. Possible sources of the nurdles were examined from map reconnaissance.

Poster Title:
Heightened Neural Oscillatory Power During Movement Preparation in Anxiety Disorders
Student Presenter: Olivia Perry
Hometown: New Orleans, LA
Author: Olivia Perry
University: **Louisiana State University**
College: Human Sciences and Education
Department: Kinesiology
Expected Graduation Date:
Mentor: Chris Hill
Mentor Email: chrishill@lsu.edu

Abstract:
According to the Centers for Disease Control, in 2023, 31% of Louisiana residents reported experiencing symptoms of an anxiety disorder. Many neurological diseases (e.g. Alzheimer's) develop an anxiety disorder prior to diagnosis and as a comorbidity. Previous studies have shown changes in motor behavior, like slower reaction time, in people with anxiety disorders (PwAD). Theta oscillations, a brain frequency (3-12 Hz) associated with cognitive control, are changed by anxiety disorders. Specifically, movement-related theta represents activation of the hippocampus, a subcortical area typically affected by anxiety. This suggests that movement-related theta may serve as an early biomarker for cognitive dysfunction. However, no study has examined theta oscillatory changes during motor behavior in PwAD. Thus, the purpose of this study is to investigate how theta oscillatory power changes during skill learning in PwAD. We recruited PwAD and without anxiety disorders (control) and had them learn a visuomotor adaptation task, where participants learn to reach and hit a target using a cursor corresponding to their hand movement on a computer screen. During testing, the cursor and hand movement eventually become incongruent, forcing the participant to adapt their movement to hit the target. To successfully hit the target, the participant must adapt 45 degrees counterclockwise to offset the incongruency. To assess learning, we monitored the hand's angular movement in response to the offset. Theta oscillatory power at movement onset was collected via electroencephalography (EEG). We found that PwAD demonstrated greater theta oscillatory power and greater rates of learning. These findings showcase the compensatory brain mechanisms used by PwAD to facilitate movement and skill learning. The overall goal of this research is to develop a model of movement cognition that can be applied to wider neurological diseases to better understand their underlying brain processes that affect quality of life.

Poster Title: ***The Application of Event Based Architecture Principles on Louisiana State Universities Campus***
Student Presenter: Haleigh Shelton
Hometown: Baton Rouge, LA
Author: Haleigh Shelton
University: **Louisiana State University**
College: Art and Design
Department: Architecture
Expected Graduation Date:
Mentor: Soo Jo
Mentor Email: soojo1@lsu.edu

Abstract:
This research explores how the Event-Based Architecture (EBA) principles can be applied to architecture, urban planning, and event operations on the Louisiana State University (LSU) campus and can enhance permanent architecture to accommodate diverse events. EBA is a specialized discipline where trained architects apply their expertise in venue design to the planning and executing of events. This field emphasizes strategic innovation through project management, overlay design, and the adaptive use of permanent architecture to accommodate dynamic event needs. By integrating technical and operational knowledge, professionals in this discipline bridge the gap between design and functionality, ensuring seamless experiences. This study analyzes how EBA methodologies can enhance event spaces and maximize revenue generation for LSU Athletics during Olympic sports events. Building on concepts from the Louisiana Ecosystem Design course, which explores design for community, economic, and cultural development through landscape and urban planning, and Modern Coliseum: Stadiums and American Culture, by Lisle (2017), this study examines the evolution of American sports facilities and culture, reimagining LSU's athletic event design footprint while preserving its integrity of planning. By analyzing the building systems, planning strategies, and event design of the Pete Maravich Assembly Center (PMAC) as a case study, the study evaluates how EBA strategies-overlay design, venue adaptability, sustainability, and operational efficiency-can enhance an athletics-focused cultural landscape while maintaining its core values and historical significance. Through a qualitative approach, including the case studies of Southeastern Conference (SEC) arenas, live event observations, and stakeholder interviews at leading EBA design firms, this study aims to develop a design framework for large-scale, multifunctional event spaces applicable across the campus. This exploration of the EBA's impact on fan engagement, operations, and economic growth positions will contribute to innovative event planning on the LSU campus.

Louisiana Technical University: Contact Sherry Peveto speveto@latech.edu

Poster Title: ***Land Use Effects on Soil Health on a North Louisiana Soil***
Student Presenter: Jason Arena
Hometown: River Ridge, LA
Author: Jason Arena
University: **Louisiana Technical University**
College: College of Applied and Natural Sciences
Department: Environmental Science
Expected Graduation Date: May, 2025
Mentor: William B. Patterson and Joshua P. Adams
Mentor Email: wpatter@latech.edu, adamsj@latech.edu

Abstract:
The relationship between soil health and land use was investigated within the Louisiana Tech University Arboretum on a Sacul soil (fine, mixed, active, thermic Aquic Hapludult). Objectives were to relate soil physical, chemical, and biological activity properties of soil health to mature loblolly pine (Pinus taeda) forest and open grass land uses. Sampling and measurement locations were established on three open sites and paired with three adjacent forest sites. On each site, three bulk density cores at 0-10 cm were sampled, bulk soil was sampled for later determination of particle-size, pH, exchangeable bases, Phosphorus, and organic matter. Infiltration and percolation rates were measured at 0-10 cm and 45 cm depths. Cotton underwear was buried at each site at 5-10 cm depth for later determination of decomposition rate. Microbial respiration rate and aggregate stability was measured at each site. Litter layer and 0-5 cm soil at each site was heated in a Berlese funnel to assess soil invertebrate assemblages. Forested sites had significantly lower bulk density, significantly higher pore space, higher infiltration rates, and higher air volume percent than that of the open grassy sites. Forested sites had significantly higher number of invertebrate species, higher number of invertebrate organisms, and higher cotton decomposition rates. Increased traffic on open grassy sites, as well as shallower roots as compared to less disturbed forested sites, have decreased physical soil health and decreased aeration, which has decreased biological activity such as species presence and abundance and decomposition rates.

Poster Title: ***Observing Cellular Nature***
Student Presenter: Taylor Bailes
Hometown: West Monroe, LA
Author: Taylor Bailes
University: **Louisiana Technical University**
College: College of Liberal Arts
Department: Studio Art, Biological Visualization
Expected Graduation Date: May, 2025
Mentor: Nicole Duet
Mentor Email: nduet@latech.edu

Abstract:
Visual media is a bridge that connects everyday-people to scientific concepts. Research and pattern can be combined to promote education and curiosity in individuals from every walk of life. In this study, I seek to explore the visual and conceptual connections found between cellular structures and larger natural forms. I am developing a series that translates microscopic observations into large-scale paintings. Skeleton landscapes spring forth trees built from the osteons found within bones, while microscope slides are upscaled into large gradient paintings that highlight the hidden wonders of the microscopic world through bacterial formations and other organic structures. The purpose of this is to provide interesting and safe material for any person to engage with and learn without the need for access to a laboratory or protective wear.

Poster Title: ***Optimization of Production Process for Specialty Components***
Student Presenter: Camille Coco
Hometown: Marksville, LA
Authors: Camille Coco, Zachary Hebert, and Annie Mouton
University: **Louisiana Technical University**
College: College of Engineering and Science
Department: Industrial Engineering
Expected Graduation Date: May, 2025

Abstract:
At Mark Tool & Rubber, the introduction of new specialty components has led to extended lead times, increased production costs, and inconsistent quality, falling short of both internal and customer expectations. While promising for repeat business, these components have exposed inefficiencies such as complex manufacturing steps, vendor dependency, inconsistent material application, and frequent rework due to quality defects. This project aims to optimize the coating process while balancing efficiency, quality, and cost.

Our objectives include: reducing centralizer production time by 10–15 days, lowering average defect rates to less than 2 defects per part, reducing centralizer coating costs by up to 25%, improving process efficiency and promoting a sustainable culture of continuous improvement. We will apply Lean Six Sigma tools within the DMAIC framework to achieve these goals, including SIPOC diagrams, process mapping, root cause analysis (Fishbone, 5 Whys), Pareto charts, KPI tracking, and cost-benefit analysis.

Expected outcomes include reduced lead times and defects, increased reliability, measurable cost savings, and a more scalable, customer-focused production process.

Poster Title: ***Dollars & Sen$e***
Student Presenter: Haylee Shoemaker
Hometown: Dubach, LA
Author: Haylee Shoemaker and Meagan Grider
University: **Louisiana Technical University**
College: College of Education and Human Science
Department: Human Development and Family Child Studies
Expected Graduation Date: May, 2027
Mentor: Amy Yates
Mentor Email: yates@latech.edu

Abstract:
Dollars & Sen$e is a community-based partnership with North United Way of Northeast Louisiana designed for high school students that focuses on budgeting and managing expenses using real-life scenarios. The primary objective was to provide undergraduate students with a hands-on community educational experience while reinforcing the students' understanding of financial literacy as well as measuring the impact of financial literacy education. The simulation was conducted at the Ruston Civic Center. A total of 22 undergraduate students participated and served as coaches and role-played as
vendors and community agencies. Over 100 high school students from four area high schools participated in the simulation. The desired results of the project are for undergraduate students to successfully apply their knowledge of financial literacy to educate high school students to:

- Improve understanding of financial concepts among both college and high school students
- Enhance teaching skills and confidence among undergraduate students
- Increase engagement in community service

Poster Title:
Sky-High Impact! How Barksdale Air Force Base's Employment Drives the Local Economy
Student Presenter: Kennedy Stevens
Hometown: Bossier City, LA
Author: Kennedy Stevens
University: **Louisiana Technical University**
College: College of Business
Department: Economics
Expected Graduation Date: May, 2026
Mentor: Patrick Scott
Mentor Email: pscott@latech.edu

Abstract:
The purpose of this research is to examine the major economic impact of Barksdale Air Force Base's (BAFB) employment in Bossier Parish.

Barksdale Air Force Base is the pride of Northwest Louisiana, employing thousands of men and women. Because of the high volume of workforce, it makes for one of the largest compensation contributors and impacts the economic region in a big way through spending within the community. Total employment compensation for BAFB is just over $1.02B in 2022 dollars.

Loyola University: Contact Allyn Schoeffler ajschoef@loyno.edu

Poster Title: ***Mutagenesis of Erythromycin Resistance Methyltransferase E to Uncover Molecular Determinants of Resistance Specificity***
Student Presenter: Ella Yerger
Hometown: Lafayette, LA
Author/s: Ella Yerger, Juan Otero, Camila Lamy, Héctor Mújica
University: **Loyola University New Orleans**
Student's Major: Biology
Expected Graduation Date: 2027
Mentor: Dr. Allyn Schoeffler
Mentor Email: ajschoef@loyno.edu

Abstract:
Antibiotic resistance is a growing public health threat, resulting in millions of infections and tens of thousands of deaths per year in the United States. To combat this problem, new therapeutics are urgently needed, and adjuvant therapies are one way to meet this need. A successful adjuvant therapy requires a deep molecular understanding of resistance so that a novel agent can be designed that inhibits the resistance mechanism and restores the efficacy of an older drug. Erythromycin resistance methyltransferases (Erms) are one such molecular resistance agent. These enzymes bind to the bacterial 23S rRNA and dimethylate the adenine at position 2058, rendering bacteria resistant to the entire macrolide class of antibiotics, which includes erythromycin, azithromycin, and many others. Unfortunately, the means by which Erms recognize their macromolecular target is not known. Here, we have used Escherichia coli as a model system to investigate the specificity of ErmE. Using a novel, comparative bioinformatic approach, we identified regions of ErmE that are likely to be involved in target recognition. We have initiated a systematic mutagenesis campaign to determine which of these regions are involved in target selection. Our results may help reveal how ErmE engages rRNA, providing crucial molecular information for the fight against antibiotic resistant infections.

Poster Title: ***Phytoplankton primary production and community dynamics across nearshore habitats of Lake Pontchartrain***
Student Presenter: Luka Fabre
Hometown: New Orleans, LA
Author/s: Luka Fabre, Philip Bucolo, Christopher Torres
University: **Loyola University New Orleans**
Student's Major: Biology
Expected Graduation Date: 2027
Mentor: Dr. Philip Bucolo
Mentor Email: apbucolo@loyno.edu

Abstract:
Economic impact of South Louisiana fisheries exceeds $2 billion per year with $19 million from inshore habitats such as Lake Pontchartrain. Lake Pontchartrain water quality is extremely susceptible to imminent disturbances such as increasing salinities from storm surges, or diversions of Mississippi River water altering nutrient and light regimes. Phytoplankton are photosynthetic cells in the water column and are the base of subtidal food webs. This vital community is responsible for half of global CO2 sequestration and fixation into sugars known as primary production, the conduit of energy up the food web. Responses of phytoplankton to disturbances are swift and can induce harmful algal blooms (HABs) or the senescence of cells driving hypoxic events and dead zones. This endeavor aimed to decipher whether phytoplankton primary production and community structure differs spatial and temporally during summer 2024 bi-weekly nearshore samplings of Lake Pontchartrain, and whether production is light limited at depth. In addition, populations with propensity to form harmful algal blooms were identified, and concentrations were quantified which will aid in future conservation initiatives. Surface water primary production rates were typical of an oligotrophic lake (-67 - 941 mg C/m2/d) but inhibited at depth (-595 - 303 mg C/m2/d) by reduced light availabilities. Spatial differences were found and northwestern communities were impacted by excessive rain and runoff driving heterotrophic outputs from reduced irradiances. Populations of cyanobacteria and diatoms consistently dominated phytoplankton and included species associated with HABs, but those populations were never found in threatening concentrations during the study.

Poster Title: ***Creating an Open-Source Python Nonlinear Fitting Program to Analyze Complex Protein Denaturation Data***
Student Presenter: Lily Manzi
Hometown: Brooklyn, NY
Author/s: Lily Manzi, Allyn Schoeffler, Anna Duggar
University: **Loyola University New Orleans**
Student's Major: Biochemistry
Expected Graduation Date: 2025
Mentor: Dr. Anna Duggar
Mentor Email: aduggar@loyno.edu

Abstract:
Chemical denaturation of proteins is a powerful biophysical tool for understanding protein stability and ligand association. Quantitative analysis of denaturation data, however, requires expensive nonlinear fitting programs that are not always accessible to undergraduate researchers. Here, we have created a custom Python program that directly analyzes chemical denaturation data via the nonlinear implementation of the linear extrapolation method. We tested our program on existing data and confirmed its accuracy. We then applied our program to two in-house projects: First, we investigated the stability of a complex molecular machine, DNA gyrase. These experiments are aimed at understanding how mutations in this enzyme can confer extremophilic properties. Second, we investigated the stability of human hemoglobin. These results are being used to investigate the role of leather fungicides in false negatives in forensic blood testing. Our results indicate that our open-source program can be used in multiple complex systems, making complex nonlinear fitting accessible to all.

Poster Title: ***Designing a species-specific eDNA protocol for detecting the Asian swamp eel Amphipnous cuchia (Family Synbranchidae) in Louisiana waterways and beyond.***
Student Presenter: Lucille McCain
Hometown: Ridgeland, MS
Author/s: Lucille McCain, Susan Thomassie, Laurie Earls, Frank Jordan
University: **Loyola University New Orleans**
Student's Major: Environmental Science
Expected Graduation Date: 2026
Mentor: Dr. Frank Jordan
Mentor Email: jordan@loyno.edu

Abstract:
Amphipnous cuchia is a species of obligate air-breathing swamp eel from Southeast Asia that was discovered in Bayou St. John in New Orleans in the summer of 2019. It has proven difficult to monitor the abundance and spread of this potentially invasive species using traditional sampling methods (e.g., seines and throw traps) because Cuchia are nocturnal, fossorial, and occupy densely vegetated habitats. To overcome these difficulties, we are developing an eDNA protocol to detect the presence of Cuchia DNA in water samples collected from monitoring sites in Bayou St. John and adjacent water bodies. To create the eDNA assay, we designed species-specific primers and probes targeting ~150bp regions of the COI and Cytb genes. We are using PCR and qPCR to test sensitivity and specificity of these primers/probes using DNA isolated from tissue samples from Cuchia and other fish species caught in Bayou St. John, and swamp eel specimens from other populations established in Texas and Florida. We will also determine the limit of detection for each primer/probe set, as well as how many days can pass after DNA is released into the water for the primer to remain effective. Ideally, our eDNA protocol will provide fishery managers with an accurate and relatively inexpensive tool to monitor the invasion dynamics of Cuchia in Bayou St. John and beyond.

Poster Title: ***The Relationship Between Mental Imagery and Trauma Symptoms***
Student Presenter: Olivia Zachary
Hometown: New Orleans, LA
Author/s: Olivia Zachary, Kate Yurgil
University: ***Loyola University New Orleans***
Student's Major: Psychology
Expected Graduation Date: 2025
Mentor: Dr. Kate Yurgil
Mentor Email: kyurgil@loyno.edu

Abstract:
One of the hallmark symptoms of post-traumatic stress disorder (PTSD) is re-experiencing the event through intrusive thoughts and memories. Vivid mental imagery fuels much of the sensory information that drives these episodes. Emerging research suggest that individuals differ in their ability produce mental imagery, however little is known how this ability may impact trauma-related symptoms. The purpose of this study is to determine how general mental imagery ability may affect an individual's symptom expression and treatment needs after trauma exposure. A total of 60 adults (mean age 23, 80% female, 60% White) completed online surveys that captured prior trauma exposure, PTSD symptom severity, and mental imagery ability across several sensory domains (visual, auditory, and olfactory. Of the 60 participants, 51 had experienced a lifetime traumatic event and were included in analysis. Results indicated significant positive correlations of imagery ability across sensory domains ($p<.01$), suggesting that mental imagery might be a general cognitive trait rather than modality-specific. Auditory and olfactory imagery ability were significantly correlated with re-experiencing symptoms ($p<.05$), with higher auditory imagery predicting more severe Re-experiencing symptoms ($p<.01$). These findings suggest that high sensory imagery ability – especially auditory – may be a risk factor for intrusive PTSD symptoms. Future research should explore tailoring PTSD treatments based on an individual's sensory imagery profile. In addition, techniques that focus on desensitizing specific imagery may be especially helpful for high-imagers.

Poster Title: ***Individual Differences in Mental Imagery and Sensory Processing***
Student Presenter: Abigail Miserendino
Hometown: New Orleans, LA
Author/s: Abigail Miserendino, Zaria Rodriguez, Que Nguyen, Megan Stempkovski, Shelsy Zuniga Talbott, and Kate Yurgil
University: **Loyola University New Orleans**
Student's Major: Neuroscience
Expected Graduation Date: 2025
Mentor: Dr. Kate Yurgil
Mentor Email: kyurgil@loyno.edu

Abstract:
Close your eyes and imagine the face of your best friend. How clear is this mental image? People differ in their capacity to produce mental imagery or imagined sights, sounds, and other sensory experiences that are not physically present. Some people have difficulty forming clear mental images, a condition known as aphantasia. Research suggests that aphantasia may be associated with altered neural and sensory processing, however a precise neural mechanism is unclear. The purpose of this study was to examine associations between mental imagery, sensory habituation, and sensory-seeking behaviors. Twenty-two adults ages 18-25 completed a series of questionnaires to measure visual mental imagery ability and sensory-related behaviors. Sensory habituation was measured using a computerized passive observation task consisting of 300 trials of a repeated visual stimulus. Electrical brain activity was recorded throughout the duration of the habituation task using electroencephalography (EEG). Results showed that electrical brain activity was significantly reduced over time – a sign of sensory habituation ($p<.001$). This pattern was more noticeable in individuals with higher mental imagery ability compared to those with lower mental imagery ($p<.05$), suggesting that low imagers may not habituate as readily to a repeated stimulus. Mental imagery ability was also correlated with sensory registration ($p<.05$), such that lower imagers are less likely to detect sensory stimuli. These findings suggest that aphantasia is associated with altered sensory detection and habituation. Future research may investigate whether sensory training or neurofeedback interventions can enhance sensory processing and, in turn, improve mental imagery ability.

McNeese State University: Contact Aron Stephens astephens@mcneese.edu

Poster Title:
An Assessment of Coyote (Canis latrans) Ecology Along Coastal Louisiana and Texas
Student Presenter: Tanner Broussard
Hometown: Vinton, Louisiana
Authors: Tanner Broussard, Justin Hoffman
University: **McNeese State University**
College: College of Engineering and Sciences
Department: Natural Resource Conservation ManagementBiological Sciences
Expected Graduation Date: May, 2025
Mentor: Justin Hoffman
Mentor Email: jhoffman@mcneese.edu

Abstract:
Coyotes (Canis latrans) in southwest Louisiana have been referred to as Gulf Coast canids because they share genetic similarities with the extirpated red wolf (Canis rufus), are similar in size to known red wolf-coyote hybrids, and may represent a unique hybrid population. The objectives of this research are to investigate coyote spatial ecology, survival, genetic makeup, diet, and disease prevalence. During 2024-2025, canids were captured at several locations in Cameron Parish, Louisiana using foothold traps with offset jaws. For each individual, external measurements and blood samples were collected, and a GPS collar programmed to collect approximately 4-6 locations/day until collar failure (1–2 years) was fitted to their neck. Whisker and hair samples were collected to determine diet using stable isotope analysis. Currently, eight coyotes (2 M, 6 F) have been collected. Mean external measurements are: hind foot length (20.88 cm ± 0.95), body mass (16.59 kg ± 2.09), skull width (9.44 cm ± 1.02), and tail length (37.88 cm ± 2.28). Except for one transient male, all coyotes appear to be members of small family units or packs with little to no overlap in their home ranges. Two coyotes have movements centered around human activity, with one occurring in the town of Hackberry and one in the beach community at Holly Beach. The transient male has moved a maximum straight-line distance of 29.04 km from where it was originally captured. Future research will continue to trap and monitor additional coyotes in southwest Louisiana and southeast Texas.

Poster Title: ***A Survey of Antimicrobial Resistance Genes in Calcasieu Parish***
Student Presenter: Payge Roberts
Hometown: DeRidder, Louisiana
Authors: Payge Roberts, Caroline Hennigan
University: **McNeese State University**
College: College of Engineering and Sciences
Department: Biological Sciences
Expected Graduation Date: May, 2025
Mentor: Caroline Hennigan
Mentor Email: chennigan@mcneese.edu

Abstract:
Due to a rise in antibiotic resistant bacteria, antimicrobial resistance research has increased. One mechanism that contributes to the spread of resistance is the transfer of antibiotic resistance genes (ARGs) between bacteria. Therefore, ARG surveillance is an important tool that can be used to understand the potential for bacteria within a region to transfer and develop antibiotic resistance. Currently, there is limited research concerning ARGs in Louisiana. This study aims to determine the presence of three ARGs at six sample sites located in Calcasieu Parish, Louisiana. Water samples were collected from each site and molecular analysis used to assess the presence of ARGs.

Poster Title: ***Holarctic Distribution of Three Tardigrade Species***
Student Presenter: Erik Roy
Hometown: Bell City, Louisiana
Authors: Erik Roy, Caroline Hennigan
University: **McNeese State University**
College: College of Engineering and Sciences
Department: Biological Sciences
Expected Graduation Date: May, 2026
Mentor: Caroline Hennigan
Mentor Email: chennigan@mcneese.edu

Abstract:
The understanding of the distribution of three tardigrade species—*Diphascon pingue*, *Macrobiotus hannae*, and *Paramacrobiotus fairbanksi*—has been expanded to include the state of Montana. These three species were confirmed to be present in Montana by DNA profiling. *Diphascon pingue* has a documented Holarctic distribution, including Europe, North America, and Asia. Three specimens were confirmed as *D. pingue* sensu stricto using DNA sequence comparison of the ITS2 gene for the first time in Montana. Similarly, *M. hannae* was confirmed to be present in Montana by sequence comparison of both the ITS2 and 28S gene sequences from five specimens. Previously, the only other record of the species was its type locality in Poland. *Paramacrobiotus fairbanksi* was also identified by ITS2 and 28S sequence comparison from a specimen collected in Montana. This species has additional known records from Italy, Spain, and Poland. This study used molecular analysis to confirm the presence of these three tardigrade species in Montana, a region where they had not been previously documented. These results contribute to the understanding of the Holarctic distribution of these species and could support future biogeographical research on tardigrades.

Poster Title: ***Characterizing the Mandibles of Mite-Biting McNeese Honeybees***
Student Presenter: Olivia Sexton
Authors: Olivia Sexton, Amber Hale
University: **McNeese State University**
College: College of Engineering and Sciences
Department: Biological Sciences
Expected Graduation Date: May, 2026
Mentor: Amber Hale
Mentor Email: ahale@mcneese.edu

Abstract:
Varroa destructor is one of the leading causes of overwinter colony loss in honeybees (*Apis mellifera*). *Varroa* is a parasitic mite that feeds on larva and attaches to the back of adult honeybees. A selective breeding program at Purdue University produced a line of bees that protect themselves by chewing off the legs of mites attached to other bees in the hive, termed "mite-biting" behavior. Smith et al. 2021 linked this behavior to altered mandible anatomy in mite-biting colonies using microtomography. The "long edge" parameter was significantly shorter in mite-biting colonies when compared to non-mite-biters. We have characterized mite-biting behavior in McNeese's colonies. Bees were collected from 10 of the McNeese colonies for this study. Both mandibles of three bees from each colony were examined under a light microscope (60 total). We are measuring five parameters per mandible of the McNeese bees, per the methods of Smith et al. We hypothesize that the measurements of the McNeese honeybees will be statistically the same as the Indiana mite-biting bees, and different than bees that do not exhibit mite-biting behavior.

Poster Title: ***Cultivating Nannochloropsis oculata Microalgae Species to Extract Total Algal Lipids and Isolate Phospholipids via Solid-Phase Extraction***
Student Presenter: Mustafa Velioglu
Author: Mustafa Velioglu, Ahmet Manisali
University: **McNeese State University**
College: College of Engineering and Sciences
Department: Engineering and Computer ScienceChemical Engineering
Expected Graduation Date: May, 2028
Mentor: Ahmet Manisali
Mentor Email: amanisali@mcneese.edu

Abstract:
Algae, photosynthetic aquatic organisms, have recently caught attention of the food, cosmetic/cosmeceutical, pharmaceutical, and nutraceutical industries due to the variety of natural compounds (e.g., carbohydrates, lipids, and proteins) in their cellular bodies. Specifically, microalgae-derived natural compounds such as phospholipids are extensively utilized in cosmetics as part of liposome formers, emulsifiers, solubilizers, and wetting agents. Although several specific phospholipids such as phosphatidylcholine (PC), phosphatidylethanolamine (PE), phosphatidylinositol (PI), and lyso-phosphatidylcholine (Lyso-PC) are currently isolated from food sources (i.e., soy, soya bean, egg yolk), this practice raises sustainability concerns. Based on purity level, these individual phospholipid compounds can be sold at prices of $400–$500 per 250 mg as analytical reference materials and/or cosmetics/cosmeceuticals/pharmaceuticals ingredients. Nannochloropsis oculata microalgae was cultivated in Erlenmeyer flasks by manipulating macronutrients-ratio by weight (i.e., NO3-/PO43-: 15, 10, 5, and 1) to boost phospholipid productivity. Algae biomass-derived total lipids (neutral + phospholipids + glycolipids) were extracted via Modified Folch Method using solvents such as chloroform, methanol/ethanol, and water. Total lipids extracted from the biomass were fractionated into neutral lipids, phospholipids, and glycolipids through a solid-phase extraction process utilizing silica-packed HyperSep™ C18 Cartridges. Quantifying these lipid fractions helped compare phospholipid productivities for different macronutrient ratios implemented during flask cultivations. Data gathered from this study will provide future opportunities to switch to more sustainable and greener extraction technologies such as supercritical fluid extraction and supercritical fluid chromatography (SFC).

Nicholls State University: Contact Bliss Broussard bliss.broussard@nicholls.edu

Poster Title:
Development of a Novel Technique to Break Down Cholesterol Using Iron Nanoparticles
Student Presenter: Maegan Bousegard
Hometown: Cut Off, LA
Authors: Maegan Bousegard, Darcey Wayment, Ph.D., Catherine Cobb, Raj Boopathy, Rajkumar Nathaniel, Himanshu Raje
University: **Nicholls State University**
College: Sciences and Technology
Department: Biological Sciences
Expected Graduation Date: May, 2025
Mentor: Dr. Himanshu Raje
Mentor Email: himanshu.raje@nicholls.edu

Abstract:
Ischemic heart disease is a major cause of death in the United States of America. It results from a combination of genetic, dietary, and lifestyle factors that contribute to vascular plaque formation, which is primarily composed of cholesterol. Lipase with bile extract can break down cholesterol into glycerol and fatty acids. This study aims to design a novel method to conjugate lipase to iron nanoparticles using cellulose as a mediator. A mixture was created using iron nanoparticles, empty cellulose capsules, phosphate-buffered saline (PBS), and bovine lipase activated by bile extract. This mixture formed a film at room temperature within 48 hours. A control film was created without lipase. Both films were dissolved in PBS, and the iron nanoparticles were collected with magnets and resuspended. Cholesterol was incubated with each preparation, and the organic phase was extracted using chloroform. After filtration, samples were analyzed via GC-MS. The cholesterol-treated sample with lipase showed cholesterol degradation, evidenced by the absence of a cholesterol peak and the presence of cholesterol esters. Future work will investigate chemical interactions within the nanocomposites.

Poster Title: ***Blood and Bay: Essential Netting Practices in Cell-Mediated Immunity and Coastal Louisiana***
Student Presenter: Breanna Gros
Hometown: Thibodeaux, LA
Authors: Breanna Gros, Ethan Ordoyne, Bliss Broussard, and John P. Doucet
University: **Nicholls State University**
College: Sciences and Technology
Department: Biological Sciences
Expected Graduation Date: May, 2026
Mentor: Dr. Bliss Broussard
Mentor Email: bliss.broussard@nicholls.edu

Abstract:
Neutrophils trap invading microbes by releasing web-like structures made of DNA and proteins, known as neutrophil extracellular traps (NETs), through a process called NETosis. Due to the visual and functional resemblance between NETs and fishing nets, a deeper analogy can be drawn between NETosis and traditional net-based fishing techniques used by Louisiana fishermen, including trawling, cast netting, and seining. A comparative analysis using peer-reviewed immunology literature and resources on Louisiana fishing practices revealed four key themes: structure (chromatin meshwork vs. net construction), function (pathogen vs. prey capture), efficiency and sustainability (regulated NET degradation vs. fisheries management), and unintended consequences (tissue damage vs. ecological disruption). Both immune and fishing systems rely on targeted capture strategies to maximize efficiency. When unchecked, NETs cause chronic and systemic inflammation, much like overfishing damages marine biodiversity and ecosystem health. Recognizing these parallels highlights the importance of balance and regulation in both immunity and environmental stewardship. By connecting immune biology to culturally familiar fishing practices, this work offers a novel and grounded approach to science communication.

Poster Title: ***Utilizing GeoAI for Rapid and Accurate Damage Assessment***
Student Presenter: Samuel Landry
Hometown: Thibodeaux, LA
Authors: Samuel Landry, Kaleb Breaux, Reece Toups, Balaji Ramachandran
University: **Nicholls State University**
College: Sciences and Technology
Department: Geomatics Program, Department of Applied Sciences
Expected Graduation Date: May, 2028
Mentor: Dr. Balaji Ramachandran
Mentor Email: balaji.ram@nicholls.edu

Abstract:
Geographic Information System (GIS) Artificial Intelligence [GeoAI] is a tool for analyzing and interpreting large spatial data with many applications. GeoAI enhances interpretation, analytics, and scalability of spatial data processing. GeoAI can extract data that may be hidden that normally would be looked over. GeoAI can aid a geospatial analyst in various needs and expedite the process of analyzing data sets and complex functions, thus increasing productivity. Subsets of GeoAI such as machine learning [ML] and deep learning [DL], allow for the automation of complex tasks such as data classification, object detection, and pattern recognition. AI/ML/DL models require a substantial amount of data to train a model. To reduce the amount of data needed to train a model, Pre-trained deep learning models were used. Pre-trained AI models are ML models that are trained on large datasets that can be implemented in a GIS environment to address problems such as hurricane damage assessment in south Louisiana. The objective of this project is to showcase the significance of GeoAI in damage assessment classification and detection. Using pre-trained DL AI model's post-hurricane damage assessment and other use cases in South Louisiana were attempted. Preliminary results from this ongoing project are presented.

Poster Title: ***Biodegradation of an antibiotic, sulfamethoxazole by a bacterial consortium isolated from the Hurricane Ida sediment***
Student Presenter: Tristan Nilsson
Hometown: Slidell, LA
Authors: Tristan Nilsson, Nghi Vu, Darcey Wayment, and Raj Boopathy
University: **Nicholls State University**
College: Sciences and Technology
Department: Biological Sciences
Expected Graduation Date: May, 2026
Mentor: Dr. Raj Boopathy
Mentor Email: Ramaraj.Boopathy@nicholls.edu

Abstract:
Antibiotic resistance has been a widespread problem for all communities in the past few years. Through hospital effluent, wastewater treatment plants, and agricultural runoff, antibiotics are released into the environment, creating reservoirs of contamination that drive the emergence and spread of antibiotic resistant bacteria (ARBs) and antibiotic resistance genes (ARGs). Antibiotic pollution contributes to a long-term ecological disruption by altering microbial communities and placing selection pressure on bacteria. These resistant bacteria and genes can persist in sediments, surface waters, and soils, impacting both environmental and human health. This selection pressure is amplified by environmental disturbances such as natural disasters. In August of 2021, Hurricane Ida caused severe flooding in Louisiana depositing sediment contaminated with industrial chemicals, antibiotics, and ARBs in residential areas. This created an ideal environment for microbial mobilization, further aiding the spread of resistance genes in the ecosystem. To combat antibiotic pollution, remediation by biodegradation, the use of microorganisms to break down pollutants, offers a promising solution. This study monitored the growth of bacteria from a consortium collected shortly after Hurricane Ida with different concentrations of antibiotic, sulfamethoxazole (SMX). The consortium contains members of the phylum firmicutes, proteobacteria, and actinobacteria. The study has shown the consortium can grow in the presence of SMX as the sole carbon source at the highest concentration tested, 500 mg/L of SMX. When the consortium was grown in a basic mineral salt medium with SMX as the carbon source, an average of 93.5% SMX was removed. HPLC analysis shows the production of two metabolites, peaks that were independent from SMX peak confirming degradation of SMX. LCMS identified a metabolite, N,N-diethyl ethanesulfonamide, with a mass of 166 m/z at a retention time of 1.667 min. The consortium shows a significant removal of carbon in the structure of SMX indicating the ability of the consortium to biodegrade SMX.

Southeastern Louisiana University:
Contact Justin Anderson justin.anderson-3@selu.edu

Poster Title: ***Dialect and Décimas: Unique Features of St. Bernard's Isleño Community***
Student Presenter: Sara Cavalier
University: **Southeastern Louisiana University**
College: Arts, Humanities, and Social Sciences
Department: General Studies
Expected Graduation Date: May, 2025

Abstract:
The Isleños, a little-known cultural group descended from Canary Islander immigrants to the Spanish Louisiana Territory in the late 16th century, settled in the isolated and resource-rich marshlands of what is now St. Bernard Parish, Louisiana. Two of their most researched, and arguably most unique, cultural traditions are also at the greatest risk of extinction: their Spanish dialect and Isleño décimas (folk music). Beginning in the early 20th century, these aspects of Isleño life were among several to experience a decline due to increased contact with non-Spanish groups, Isleño activities during WWII which required them to learn English, mandated English-only education in public schools, and ultimately, an increasingly aging population of fluent Isleño Spanish-speakers. This project provides an overview of the characteristics, history, and decline of Isleño Spanish and décimas in St. Bernard Parish.

Poster Title: ***Microchip Pipeline for Reading Brain Signals***
Student Presenter: Erick Diaz
University: **Southeastern Louisiana University**
College: Science and Technology
Department: Computer Science
Expected Graduation Date: May, 2026

Abstract:
This project presents a brain-computer interface system that utilizes EEG signals to control a character in a Python-based game. This EEG setup uses two forehead electrodes and an earlobe reference. The signal is amplified, filtered (60Hz/120Hz notch, 1Hz/7Hz high-pass, 40Hz low-pass), digitized via Arduino, and processed in Python with FFT. Once individual signals have been extracted, a threshold is then introduced allowing Gamma waves to control the character's jump. While Beta controls character movement. Showcasing real-time brainwave control, through the use of a python game.

Poster Title: ***Team Name: Dodogama***
Student Presenter: Trent Law, Brennan Kimbrell
Authors: Trent Law, Brennan Kimbrell
University: **Southeastern Louisiana University**
College: Science and Technology
Department: Computer Science
Expected Graduation Date: May, 2026

Abstract:
In this project, we plan to use four different machine learning algorithms to determine which algorithm is the most accurate and efficient in uncovering which Monster Hunter: World weapons have hidden elements. The four machine learning algorithms we will be testing in this project are ANN (Artificial Neural Network), SVM (Support Vector Machine), DT (Decision Tree), and K-NN (K-Nearest Neighbors). Some background information needed before continuing is that Monster Hunter: World (MHW) is a video game in which players hunt monsters and then use the drops from those monsters to craft weapons. Many of these weapons have elemental damage, but some have their element "hidden." Weapons with hidden elements require the player to equip a special item that unlocks the weapon's element, allowing it to deal elemental damage.

The University of New Orleans: Contact Elizabeth Sigler ESigler@uno.edu

Poster Title: ***Echoes of Pointe-au-Chien: Unraveling an Effigy Pipe's Roots***
Student Presenter: Jody Billiot
Hometown: Pointe-au-Chien
Author: Jody Billiot
University: **The University of New Orleans**
College: College of Liberal Arts & Education
Department: Anthropology
Expected Graduation Date: May, 2026
Mentor: Dr. Ryan Gray
Mentor Email: drgray1@uno.edu

Abstract:
Echoes of Pointe-au-Chien: Unraveling an Effigy Pipe's Roots is a poster showing my research on an effigy pipe found in Pointe-au-Chien, Louisiana. This research was done with the permission of the Pointe-au-Chien Indian Tribe to understand the creation date of the pipe. Through the use of thermoluminescence testing a date of 825 AD was attained, and shows an early Mississippian cultural presence on a remote area of Louisiana's gulf coast.

Poster Title: ***Frequency and Patterns of Plastic Nurdles in Spotted Seatrout (Cynoscion nebulosus) Stomach Contents across the Louisiana Coast***
Student Presenter: Walker Reisman
Hometown: New Orleans
Author: Walker Reisman
University: **The University of New Orleans**
College: College of Sciences
Department: Environmental Science
Expected Graduation Date: May, 2027
Mentor: Martin T OConnell
Mentor Email: moconnel@uno.edu

Abstract:
Pre-consumer plastic nurdles are the second largest source of microplastics in the world's oceans. They enter the environment due to industrial transportation spills as well as loss from manufacturing plant drainage systems. I measured the occurrence and distribution of 1-5 mm plastics nurdles found in the gut contents of Spotted Seatrout (*Cynoscion nebulosus*) in coastal Louisiana. The research is ongoing but to date we have dissected 439 specimens ranging from 193 mm to 510 mm. Nurdles were present in specimens collected in 8 different locations and in the gut contents of 8.06% of the fish from when we first noticed them and 2.28% of all the Spotted Seatrout in the study. My research suggested that enough primary plastic was entering Louisiana's coastal water that it was showing up in the food web at multiple locations. To determine the source of the nurdles, I compared locations of nurdle containing Spotted Seatrout to watersheds with manufacturing facilities on them. These data can help determine if the source of nurdles is local manufacturing facilities or other offshore sources from sea transport. The majority of plastic production in Louisiana happens on two major watersheds: The Mississippi River from Baton Rouge to New Orleans and The Calcasieu River in and around Lake Charles. For this project, I mapped the occurrence of the nurdles in relation to the watersheds on which manufactures operate and have determined the primary inshore and offshore transportation routes used to move nurdles on the gulf coast.

Tulane University: Contact Anderew Squitiro asquitiro@tulane.edu

Poster Title: ***Impact of DEK Protein Dysregulation on Liver Fibrosis***
Student Presenter: Arya Chandrasheker
Hometown: Blaine, MN
Author: Arya Chandrasheker, Kamal Baral, Shadie Shrestha, Leah Spade, Bilon Khambu
University: **Tulane University**
College: Newcomb-Tulane College
Department: Neuroscience
Expected Graduation Date: May, 2026
Mentor: Bilon Khambu
Mentor Email: bkhambu@tulane.edu

Abstract:
Liver fibrosis, a precursor to cirrhosis and liver failure, is emerging as a major public health concern. The escalating burden of this disease poses a significant threat to both the health and economy of Louisiana, where 649 residents died from liver-related conditions in 2022. Nationally, chronic liver disease and cirrhosis accounted for 54,803 deaths, making it the 10th leading cause of death in the U.S. Alarmingly, liver-related mortality is projected to rise by 178% by 2030, reaching an estimated 78,300 deaths annually. Louisiana is especially vulnerable, ranking among the top five states for adult obesity, with approximately 40% of adults affected as of 2023. The economic burden is equally substantial. Managing metabolic-associated steatohepatitis, a severe form of fatty liver disease, leads to high healthcare costs. Patients with cirrhosis face annual medical expenses between $55,742 and $67,563, while those with progressive disease without cirrhosis can accrue $42,000–$63,000 over six years.

Our research explores DEK, a nuclear protein involved in DNA repair and gene regulation, as a potential anti-fibrotic agent. Preliminary data show DEK is expressed in all liver cell types, with cytosolic punctate expression uniquely observed in hepatocytes under normal conditions. Under hepatotoxic stress, DEK knockout (DEK-/-) mice develop significantly worsened liver fibrosis following carbon tetrachloride exposure.

Promoting DEK function may offer a novel therapeutic strategy. Our findings position DEK as a promising molecular target for reducing liver fibrosis and its rising health and economic burden in Louisiana and beyond.

Poster Title: ***Self-Healing Modular Panels for Space Missions***
Student Presenter: Joshua Nguyen
Hometown: Lafayette, LA
Author: Kenneth Agbakansi, Joshua Nguyen, Noshir Pesika Phd.
University: **Tulane University**
College: Newcomb-Tulane College
Department: Chemical and Biomolecular Engineering
Expected Graduation Date: May, 2027
Mentor: Noshir Pesika
Mentor Email: npesika@tulane.edu

Abstract:
As human space travel advances and long-duration missions become feasible, the hazards of the space environment—extreme temperature fluctuations, oxygen loss, and micrometeoroid impacts—pose significant risks to astronaut safety. In response, we propose the design of a self-healing structural panel made from a composite polymer engineered for enhanced thermal conductivity. Upon micrometeoroid impact, the heat triggers the material to flow and seal the puncture autonomously, preventing oxygen leakage.

Poster Title: ***Testing for differences in sperm across an urbanization gradient***
Student Presenter: Britta Pellegrin
Hometown: Raceland, LA
Author: Britta Pellegrin and Benjamin Pethe
University: **Tulane University**
College: Newcomb-Tulane College
Department: Ecology and Evolutionary Biology
Expected Graduation Date: May, 2026
Mentor: Shannan Yates
Mentor Email: syates1@tulane.ed

Abstract:
Rising global temperatures present an ever-growing threat to the organisms on our planet. Many studies have examined the effects of heat on adult and sub-adult individuals, but the impact of climate change on gametes like sperm requires further study. Reproductive success is heavily dependent on gamete performance, and drastic changes in temperature may decrease their functionality. Cities provide a way to investigate adaptation to rapid climate change because they are warmer than nearby rural areas due to the Urban Heat Island effect. We tested for differences in sperm heat tolerance between male green anole lizards (Anolis carolinensis) from rural and urban areas in Baton Rouge, Louisiana. We predicted that urban animals would have a greater sperm tolerance than rural animals.

Poster Title:
Cross-Disciplinary Insights from Arabic Linguistics to the Biology of Genetic Codes
Student Presenter: Lily Sahihi
Hometown: Nashville, TN
Author: Lily Sahihi
University: **Tulane University**
College: Newcomb-Tulane College
Department: Chemistry
Expected Graduation Date: May, 2027
Mentor: Bouchaib Gadir
Mentor Email: bgadir@tulane.ed

Abstract:
In Arabic linguistics, the root serves as the fundamental unit from which words are derived, typically consisting of three consonants that encapsulate the meaning of a verb. For example, in the word maktaba (library), the root k-t-b conveys the concept of writing. These roots follow specific morphological patterns and the vocabulary associated with a given structural pattern emerges by realizing these consonants within a systematic framework. This research explores the conceptual parallels between the structure of Arabic roots and patterns and the biological function of stem cells. Just as Arabic roots generate diverse words through specific patterns, stem cells differentiate into specialized cell types based on biological cues as well as the functions of the separate amino acids based on their codon structure. By examining these linguistic and biological systems side by side, this study seeks to highlight structural and functional analogies that may offer new interdisciplinary insights.

Poster Title: ***The Role of Bald Cypress in Structuring Their Root Endophyte Communities Across Salinity Gradients***
Student Presenter: Kristen Webster
Hometown: Scottsdale, AZ
Author: Kristen Webster
University: **Tulane University**
College: Newcomb-Tulane College
Department: Evolutionary Biology
Expected Graduation Date: May, 2026
Mentor: Sunshine Van Bael
Mentor Email: svanbael@tulane.edu

Abstract:
Bald cypress swamps help with carbon cycling and reduce environmental stressors like erosion and wave surge along the Southeast U.S. coastline. But these ecosystems are at risk due to saltwater intrusion from rising sea levels and altered hydrology from past logging and oil and gas activity. Wetland microbes play an important role in plant growth and stress tolerance. These microbes may help bald cypress survive saltwater intrusion and prevent swamp degradation into open marsh. Microbial communities can be shaped by both environmental conditions and host plants. Understanding how bald cypress shape the microbes in and around their roots can help us predict how wetlands change over time.

This study looks at the role of bald cypress in structuring microbial communities across eight study sites. We think the bald cypress's genotype will directly and indirectly (through root and rhizosphere traits) influence microbial communities inside the roots, but that environmental factors like salinity, distance, water level, and nutrients will have the strongest overall influence. Fieldwork was conducted at eight sites across the Atchafalaya and Mississippi River basins. We collected root, rhizosphere, and bulk soil samples to study microbiomes, nutrient levels, and root traits. This summer, I'll extract plant and microbial DNA from the roots, scan and dry them to analyze traits, and, if time allows, start soil DNA extractions and library prep for ITS sequencing to study fungal communities. Future sequencing (ITS, 16S, ddRAD) will help identify microbial and plant genotypes and use path analysis to determine what's really driving community formation.

University of Louisiana at Lafayette:

Contact Sherry Krayesky-Self sherry.krayesky@louisisana.edu

Poster Title: ***The Presence of Microplastics in Tillandsia usneoides***
Student Presenter: Ethan Adams
Hometown: Houma, LA
Authors: Ethan Adams, Hallie Blondiau, Ava Thibodeaux, Madison Maier
University: **University of Louisiana at Lafayette**
College: Ray P. Authement College of Sciences
Department: Biology
Expected Graduation Date: May, 2027
Mentor: William Schmidt
Mentor Email: william.schmidt@louisiana.edu

Abstract:
Tillandsia usneoides is an epiphytic plant found in subtropical regions that have been explored as bioindicators. Microplastics are a current topic of interest due to their proximity to important ecosystems and manifestation in the human body. Oceanic microplastics are highly studied while atmospheric nanoplastics are neglected. The aim of this study is to determine the presence of atmospheric microplastics in *Tillandsia usneoides* in order to pioneer a methodology of studying airborne plastics and to further understand effects on air quality, human health, and ecosystems. After collecting several samples across the University of Louisiana Lafayette, the *T. usneoides* was dried and homogenized before a visual assessment under 440-520 nm light filters. Additionally, a digestion method adapted from oceanic microplastic analysis was also used to isolate plastics from sedimentary samples in a three-stage filtration process. There was no apparent plastic under 0.22µm in filtered liquid with plastic fibers embedded into the filter itself. Various plastic morphologies and colors were found with fibers being the most prevalent. Using the oceanic wet peroxide digestion solution, there was significant degradation of plastic. Prior to performing qualitative analysis, contamination from centralized air was found and minimized as much as possible. Future detection methods will include stains and spectroscopic analysis to better identify plastics. Currently, this is an ongoing research project focused on separating plastics based on density to avoid issues of degradation.

Poster Title: ***Modular and Resilient Cubesat Power System Design***
Student Presenter: Maxwell Boutte
Hometown: Lafayette, LA
Author: Maxwell Boutte
University: **University of Louisiana at Lafayette**
College: Engineering
Department: William Hansen Hall Department of Electrical and Computer Engineering
Expected Graduation Date: 2025
Mentor: Nick Pugh
Mentor Email: quadpugh@bellsouth.net

Abstract:
CubeSats are small satellites measured in units of 10 cm cubes, introduced to the world in the 1990s. They are used for education, research, and experimentation. Since their introduction, thousands of CubeSats have been launched, including 3 from the University of Louisiana at Lafayette. Currently, the University has two projects headed to space via NASA's CubeSat Launch Initiative (CSLI). CAPE 4 is a 3U satellite in development. This poster focuses on the design and development of the power system for CAPE 4. Given the isolated nature of a satellite in orbit executing its mission, the power system's resilience is paramount. It must be able to get systems operational after an interruption to normal operations. Modularity is also of importance, as the CAPE Program aims to use this power system as a platform for future missions. Positioning students in an aerospace environment stimulates Louisiana's economy by diversifying the experience of graduates and by allowing new pathways for creating aerospace jobs in the state.

Poster Title: ***"No Tax on Tips" - The Implications of Newly Proposed Tax Legislation***
Student Presenter: Debra Crawford, Hannah Sonnier
Hometowns: Thibodeaux, LA & Lafayette, LA
Authors: Debra Crawford, My Le, Bethany Webre, Hannah Sonnier
University: **University of Louisiana at Lafayette**
College: B. I. Moody College of Business Administration
Department: Accounting
Expected Graduation Date: May, 2025
Mentor: Laura R. Guichard Latiolais
Mentor Email: laura.guichard@louisiana.edu

Abstract:
This work examines the potential implications of the proposed "No Tax on Tips" Act (S.4621 and H.R. 482), which offers exempting cash tips from taxable income. Utilizing a comprehensive literature review—categorizing sources into supportive, critical, and neutral perspectives—and quantitative analyses of changes in tax liability and variation in deduction amounts across states, the study evaluates both the potential financial relief for service workers and the broader economic consequences. Findings suggest that although the bill may benefit some tipped employees, it also risks reducing federal revenues and altering wage practices. Further empirical investigation is recommended to assess its overall feasibility and impact.

Poster Title: ***Clementine Hunter: Folk Art Inspiration from a Louisiana Plantation***
Student Presenter: Sydnei Henson
Hometown:
Author: Sydnei Henson
University: **University of Louisiana at Lafayette**
College: Arts and Design
Department: Visual Arts; Graphic Design
Expected Graduation Date: May, 2026
Mentor: Dr. Christopher Bennett
Mentor Email: christopher.bennett@louisiana.edu

Abstract:
This research explores the significance of an artist's influences shaped by individual experiences and adversities. It specifically focuses on Clementine Hunter, a self-taught Black folk artist from Louisiana who began her artistic journey on a plantation. By examining Hunter's work and the context of its creation, the study provides a deeper understanding of her influences. Hunter's paintings, created solely from memory, reflect her daily life—picking cotton, attending church, and performing household chores. This research highlights how one can comprehend an artist's experiences without firsthand knowledge, emphasizing the importance of design principles, such as balance and scale, in creating compelling art without formal training. The context of an artwork's conception is as vital as its execution. Hunter's innovative use of unconventional surfaces and her unique techniques reveal her resilience and creativity, showcasing how she found solace in painting amid her long workdays. This journey serves as an inspiration to recognize the role of mentality in creativity, influencing approaches, techniques, and interpretations of art.

Poster Title: ***Breaking Barriers: Dismantling the School-to-Prison Pipeline Through the Use of Positive Behavior Interventions***
Student Presenter: Abbey Poirier
Hometown: St. Martinville, LA
Authors: Abbey Poirier & Ronald Dore'
University: **University of Louisiana at Lafayette**
College: Education and Human Development
Department: Elementary Education Gr 1-5
Expected Graduation Date: May, 2026
Mentor: Ronald Dore'
Mentor Email: ronald.dore@louisiana.edu

Abstract:
The trend of students, especially from low-income areas, being funneled into the criminal justice system is a concerning phenomenon known as the school-to-prison pipeline. Instead of teachers managing the behavior of their students, law enforcement becomes involved, which results in students being funneled from the school into the prison pipeline. The majority of students who are affected through the prison pipeline are students from minorities and underrepresented backgrounds. This research seeks to answer, "What specific behavior interventions are most effective in reducing disciplinary referrals in schools?" To help dismantle the school-to-prison pipeline, we need to implement positive reinforcement and establish social-emotional learning in schools. This proactive approach that aims to do this is called Positive Behavior Interventions and Supports as known as PBIS. PBIS in our schools will create a healthy school environment by reducing behavior issues and seeing positive academic outcomes in our students. This research will highlight the capability of positive behavior interventions as a transformative discipline approach through the examination of PBIS's effectiveness in encouraging positive behavior and reducing disciplinary referrals. This research examines the proposed solutions to eliminate the school-to-prison pipeline.

Poster Title: ***Remote Sensing Applications in Identifying High Probability Archaeological Locales on the South Central Louisiana Coastline***
Student Presenter: Ian Robicheaux
Hometown: New Iberia, LA
Author: Ian Robicheaux
University: **University of Louisiana at Lafayette**
College: College of Liberal Arts
Department: Anthropology
Expected Graduation Date: May, 2026
Mentor: Dr. Mark Rees
Mentor Email: rees@louisiana.edu

Abstract:
Archaeological sites along Louisiana's coastline are threatened by adverse coastal processes, such as erosion and subsidence. The reality that many sites face risk of total loss and destruction creates an adverse circumstance for archaeologists' efforts to protect and interpret the invaluable data within prehistoric coastal sites. Sites along the coast are often difficult to locate and nearly impossible to access. With environmental conditions making site access incredibly difficult, we are required to reevaluate the way we identify areas of high probability before entering the field. Using remote sensing, spatially defining locales where there is a high probability for archaeological sites is possible. Focusing on the areas of Vermilion and Cote Blanche Bay, I have applied the use of LiDAR shaded relief data along with patterns in the geography throughout the area of interest to identify the previously mentioned high probability areas. When considering how to visit and identify new coastal sites, a method to better qualify the search remotely is incredibly useful for shortening the identification process and guiding researchers more directly toward new discoveries

Poster Title: ***BURNOUT: The Silent Epidemic Supporting Nurses' Mental Health***
Student Presenter: Edie Bollich, Gracie Becker, Torey Smith, Anna White, Emily Wilcox
Authors: Edie Bollich, Gracie Becker, Torey Smith, Anna White, Emily Wilcox
Hometowns: Youngsville, LA
University: **University of Louisiana at Lafayette**
College: Nursing & Health Sciences
Department: LHC Group • Myers School of Nursing
Expected Graduation Date: May, 2025 (all students)
Mentor: Dr. Tricia Templet
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Abstract:
The American Nurses Association (ANA) recommends accessible, unfettered mental health resources that do not jeopardize nurses' licensure. Supporting nurses' mental health is critical to sustaining a functional healthcare system. Burnout is a prevalent and growing issue among nurses. Contributing factors include workforce shortages, decreased quality of care, and serious mental health consequences such as substance abuse and suicidal ideation. This evidence-based practice (EBP) presentation aims to address nurse burnout by promoting the implementation of comprehensive mental health support and programs in healthcare settings. Critical care nurses in labor and delivery, neonatal, and pediatric intensive care units are particularly vulnerable to burnout. Gaps remain in understanding how best to implement and sustain these interventions system-wide. Based on the best available evidence, nursing practice should prioritize building a supportive work environment that includes resilience training, debriefing after difficult events, and accessible therapeutic outlets such as creative expression. Further research is needed to evaluate long-term outcomes of these interventions on nurse retention and patient care quality.

Poster viewing schedule (for public)