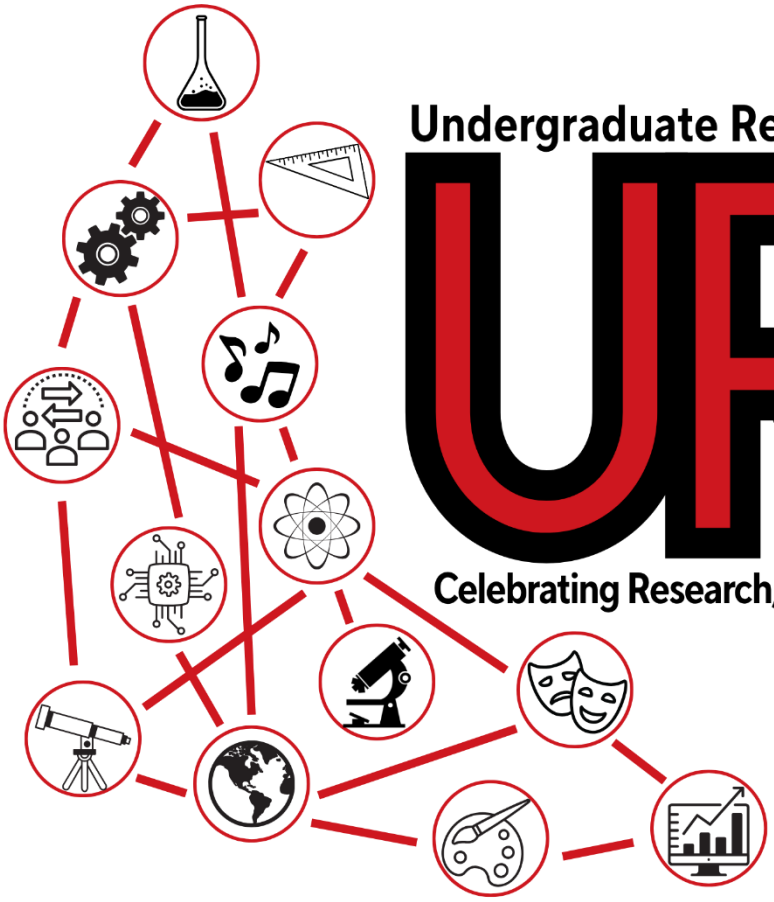


Undergraduate Research Conference

URC

Celebrating Research, Creativity, & Scholarship

2026 Program

University of Louisiana Lafayette

Student Center for Research, Creativity and Scholarship

Sponsored by CGI

Lafayette Regional Tech Council

Hosted by LRTC and its member companies

Undergraduate Research Conference 2026 Program

Click on each item in the Table of Contents for direct navigation.

Table of Contents

Message from Executive Director 6

Thank you 7

Conference Schedule 8

Location 9

On-Campus Parking 9

What's open in the Union 9

Preferred Hotels 9

Keynote Guest 10

Oral Presentation Schedules 11

Lightning Talk Schedule 14

Poster Schedules 15

Oral Presentation Abstracts 20

Arceneaux, Cale 20

Borel, Alyssa 21

Boteler, Dax 22

Bourgeois, Jessie 23

Chaumont, Audry 24

Cheramie, Madeline 25

Cunningham, Kyla 26

Davis, Dylan 27

Deshotels, Grant 28

Ja'kyron Duplechain 29

Dupuis, Robin 30

Eastridge, Ellie 31

Ellis, Avery 32

Farina, Maria 33

Gaffga, Elise 34

Griffard, Gabriel 35

Hill, Aniya 36

Himel, Natalie 37
Johnson, Emily; Mender, Erik 38
Kalagara, Meghna 39
Landry, Kailey 40
Myers, Alyssa 41
Newman, Sedric 42
Pennington, Cylie 43
Perkins, Geremiah 44
Pham, Kala 45
Quinn, Jack 46
Creative Activity Abstracts 47
Schexnider, Kylee 47
Lightning Talk Abstracts 48
Azzam, Sarah; Justice, Sophie 48
Bailey, Caroline 49
Bradford, Andrew 50
Chatman, Maggie 51
Cornette, David 53
Courville, Andrew 54
Doll, Anna 55
Donoghue, Susannah 56
Duhe, Luke 57
Mader, Sophie 58
Mire, Kylie 59
Pryor, Alana 60
Schwarz, Grace 61
Tatum, Michaiah 62
Williams, Alyana 63
Poster Abstracts 64
Abshire, Ana 64
Adams, Ethan 65
Albert, Sonja 66

Alexander, Joshua 67
Ashurst, Katherine 68
Attle, Dalaen 69
Azzam, Sarah; Justice, Sophia 70
Battaglia, Aubree; Bonin, Emily 71
Boudreaux, Katelynn 72
Bradley, Alarryal 73
Brocato, Lilyana 74
Broussard, Hannah 75
Brown, Ashleigh 76
Bullen, Amelie 77
Chaumont, Audry 78
Chotto, Jacey 79
Climo, Connor 80
Comeaux, Brooklyn 81
Coronel, Carlos Rodriguez 82
Couvillon, Sarah-Grace 83
Credeur, Breanna 84
Davenport, Marissa 85
DeRouen, Heaven 86
Deshotels, Grant 87
Falgout, Peter 88
Fox-Hunt, Spencer; Dugal, Garett; Hammett, Daniel; Roberts, Gerius; Shelton, Blake 89
Fuentas, Daniel 90
Garcia Valencia, Odette 91
Garza, Gabriella 92
Gautreaux, Jacob 93
Gautreaux, Jacob 94
Gray, Gracey 95
Guevara, Francisco 96
Guillory, Riley 97
Harris, Cady 98

Heneghan, Elizabeth 99
Hernandez, Andrea; Kidder, Alysa; Chrisman, Brooke 100
Hill, Kaitlyn 101
Johanson, Grace 102
Jones, Elijah 103
Kibodeaux, Kylie 104
Levesque, Allison 105
Louque, Maci 107
Martinez, Keegan 108
Mashia, Ashley 109
Mellado Suarez, Adolfo 110
Menard, Ross 111
Morgan, Jahnexi 112
Muguira, Dominic 113
Navarro, Nicolas; Cunningham, Collin; Reade, Morgan; Reinhardt, William 114
Nwaezeapu, Onyeka 115
Omes, Ana; Stanley, Ella 116
Perkins, Geremiah 117
Pitt, Lauren; Dunbar, Samuel 118
Riggs, Emily 119
Romero, Michael 120
Schexnider, Kylee 121
Smith, Jaimee 122
Soileau, Taylor; Begnaud, Camden; Blue, Ashlee; Holliday, Takhya 123
Starnes, Meredith; Hooks, Jenna; Louviere, Lauren; Allen, Arianna 124
Trahan, Kameron; Doucet, Ryley 127
Tran, Lilian; Donnelly, Allison 128
Vidrine, Megan 129
Watson, Ori 130
Wedeking, Josie; Burdsall, Cara; Nguyen, Lily 131
White, Ethan 132
Yarbrough, Tariq 133

Message from Executive Director

Dear Conference Attendees,

Welcome to the University of Louisiana's Undergraduate Research Conference, I am delighted to extend my warmest greetings to all participants, presenters, mentors, organizers, and guests. This conference celebrates the creativity, dedication, and intellectual curiosity that define undergraduate research and scholarship across disciplines.

Your engagement today—whether sharing findings, asking questions, or offering feedback—reflects a commitment to learning that extends beyond the classroom. I encourage you to take full advantage of this opportunity to connect with peers and mentors, exchange ideas, and be inspired by the diverse range of projects presented.

Thank you for contributing to this vibrant community of inquiry and discovery. I wish you a productive and rewarding conference experience.

Sincerely,
Sherry L. Krayesky-Self
Sherry L. Krayesky-Self, PhD
Executive Director
Advance Student Research Experience Program
Student Center for Research, Creativity, & Scholarship

Thank you

Thank you to all those who support the Undergraduate Research Conference.

Special Thanks to **Dianne Olivier** for her consistent support.

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Todd Henry
Jessica Thibodeaux
Asadullah Ahmad
Elise Gaffga
Ashton Leon
Fredrionna Hebert
Olivia Hebert
Mykala Walker

UL Student Union
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Nellie Fitch
Kiersten Freeman

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Chee Hyeon Choi
Tamla Springer
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Erika Caramillo-Hatch
Jennifer Ercoli
Celina Bernal
James Boffenmyer

Keynote Guest
Victor Foulk

CGI
William LaBar
Nicolette Darjean
Jessie White-Sanders
Kelsey Scalea
Siva Koppireddy
Deonta Trim
Murugan Amabalakannu
Anne Swanson
Tayonna Brumfield
Madhavi Thengdi
Manoj Nallamolu
Uma Priya Krishnan
Kunal Krishna
Muralikrishnaa Papaiyan
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Theresa Goldcamp Nunez

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Rosalyn Cook
Lacy Carrier

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Jackson Adams
Sara LaBore

Stuller
Anthony Bloom
Caroline Hohensee

Pelican Engineering LLC
Timothy Miguez

Ochsner
Louise Batiste
Pamela Jolivette

Wildlife and Fisheries
Jon Wiebe
Patrick Banks
Ryan Faul

Student Volunteers
Kathy Dinh
Gracie LeMaire
Asia Miller
Cassie Odom
Amelie Boatman
Brielle Jeansonne
Kayla Johnson
Lily Shute
Elizabeth Drell
Madelynne Broussard

Conference Schedule



Location

UL Lafayette Student Union
620 McKinley Street
Lafayette, LA 70504
Click here to view the campus map. The Union is number 65 on the map.

On-Campus Parking

Friday and Saturday Parking

Parking will be at the Olivier Parking Tower, on the second floor and ramp - See the map link below.

The Olivier Parking Tower gate code for this event is 62311#. It will be active Friday, 11/13 @ 1 pm through Saturday, 11/14 @ 3 pm.

The UL Traffic Code requires vehicles to park heading into a parking space. Backing into a space is not allowed.

Please Note: Approval to park in the location listed above does not reserve a specific space or guarantee availability. If no spaces are open in that area, please park on floors 1–3 of the Girard Park Circle Parking Garage and pay the hourly rate through ParkMobile.

Click here to view campus map. Olivier Parking Tower is number 54 on the map. Girard Park Circle Tower is number 32.

What's open in the Union

Chick Fil A
- Friday open until 6pm
- Saturday 12pm-6 pm

Starbucks
- Friday open until 3pm
- Saturday 9am-2pm

Smoothie King
- Friday open until 3pm
- Closed Saturday

McAlister's
- Friday open until 3pm
- Closed Saturday

Preferred Hotels

Comfort Suites Oil Center
114 Rue Fernand
Lafayette, LA 70508
Phone: (337) 347-9613

Fairfield Inn and Suites Lafayette South
1606 W Pinhook Road
Lafayette, LA 70508
(337) 233-5558

Keynote Guest

UNIVERSITY of LOUISIANA LAFAYETTE | Student Center for Research, Creativity and Scholarship

Undergraduate Research Conference URC Celebrating Research, Creativity, & Scholarship

Undergraduate Research Conference 2026

Sponsored by CGI

LAFAYETTE REGIONAL TECH COUNCIL

KEYNOTE SPEAKER



VICTOR FOULK

Leading CGI Federal's Emerging Technologies Practice, a team of innovative engineering professionals and academics, Victor Foulk leverages innovation as a strategic growth enabler for many of CGI Federal's key business sectors.

He is at the forefront of landing next-generation solutions to address the government's most pressing challenges. WashingtonExec chose him as a Top AI Executive to Watch in 2026.

Foulk has more than two decades of experience in critical technologies. His experience spans hydrogen peroxide monopropellant thruster systems and flight control systems at the dawn of commercial space programs to overseeing nuclear propulsion plant design efforts for the US Navy and Department of Energy. He's served as a Deputy CIO and as CISO for the Naval Nuclear Propulsion Program, and consistently driven innovation efforts in cybersecurity, counterintelligence, insider threat, acquisition, and digital transformation for sensitive interagency programs.

Mr. Foulk holds a Bachelor of Science in Systems Engineering from the University of Arizona, and a postgraduate certificate in Nuclear Engineering from the Department of Energy's Bettis Reactor Engineering School.

KEYNOTE: SATURDAY, NOVEMBER 14 AT 9:30 A.M.

For more information: advance.louisiana.edu

Oral Presentation Schedules

Location: Helma Constantine Forum—room 209A & B, 2nd floor			
Friday, November 13, 2026 (Oral Presentations 3:00-6:30)			
Moderator: Joe Richards **Judges: Victor Foulk, Jessie White-Sanders, Kelsey Scalea, Siva Koppireddy**			**Institution**
3:00-3:15	Gabriel Griffard	DC Series Arc Fault Dynamics and Detection	UL Lafayette
3:15-3:30	Alyssa Myers	Assessment of Environmental Conditions in Engineering Laboratories and Lecture Classrooms	Northwestern State University of Louisiana
3:30-3:45	Madeline Cheramie	Trials of the Synthesis of EuD4TEA and EuD3NO3TEA	UL Lafayette
3:45-4:00	Kyla Cunningham	Development of a Novel Technique for Sexing Hatchling Diamondback Terrapins	Nicholls State University
4:00-4:15	Dylan Davis	A Discrete Two-Sex Model for the Beet Webworm	UL Lafayette
4:15-4:30	Grant Deshotels	The Influence of Healthcare Infrastructure and Poverty on Cancer Incidence in Louisiana	UL Lafayette
4:30-4:45	**Break**		
4:45-5:00			
5:00-5:15	Cylie Pennington	Establishing a Galleria mellonella Infection Model to Assess the Effects of Prior Hydrocarbon Exposure on *Vibro vulniflcus* Virulence	Nicholls State University
5:15-5:30	Geremiah Perkins	Tracking Microplastics Across Lake Pontchartrain: Patterns in Abundance	Louisiana State University
5:30-5:45	Kailey Landry	Uncovering Health Threats and Conservation Needs for Louisiana's Critically Imperiled Gopher Tortois (*Gopherus polyphemus*)	Louisiana State University
5:45-6:00	Dax Boteler	EMA Response Dosage and Subsequent State and Trait Ratings: An Exploratory Reanalysis	UL Lafayette
6:00-6:15	Jack Quinn	Evaluating Vulnerability Detector Generalization to LLM-Generated Code	UL Lafayette
6:15-6:30	Maria Farina	ACL Re-injury Prevention in College Athletes	Northwestern State University of Louisiana

Undergraduate Research Conference 2026 Program

Location: Pelican—room 207A & B, 2nd floor			
Friday, November 13, 2026 (Oral Presentations 3:00-6:30)			
Moderator: Amy Brown **Judges: Caroline Hohensee, Deonta Trim, Murugan Amabalakannu, Anne Swanson**			**Institution**
3:00-3:15	Jessie Bourgeois	From the Outside Looking In: Writing about New Orleans at the Turn of the Century	Louisiana State University
3:15-3:30	Avery Ellis	Evaluating the Louisiana Pay for Success Initiative	Louisiana State University
3:30-3:45	Robin Dupuis	After the Water Recedes: Memory & Water Hazards	UL Lafayette
3:45-4:00	Cale Arceneaux	The Cinematic Front: Hollywood, Propaganda, and the Evolution of American National Identity	Northwestern State University of Louisiana
4:00-4:15	Meghna Kalagara	Not All Acts of Discrimination are Alike: Exploring the Relationship Between Individual Experiences of Racism and Hypervigilance	Louisiana State University
4:15-4:30	Sedric Newman	The Influence of Early Life Adversity on Coping Strategies: Examining Attachment Style as a Moderator	UL Lafayette
4:30-4:45	**Break**		
4:45-5:00			
5:00-5:15	Kala Pham	Tuning into Reality: How Social Media Affects Gen Z's Daily Lives	UL Lafayette
5:15-5:30	Alyssa Borel	A Thematic Analysis of Qualitative Responses to a Sexual Assault Scenario	UL Lafayette
5:30-5:45	Natalie Himel	Phonological Competition in Spoken Word Recognition	UL Lafayette
5:45-6:00	Audry Chaumont	AI-Assisted Scan-to-BIM for Sustainable Campus Retrofit Planning	UL Lafayette
6:00-6:15	Ellie Eastridge	The Physiological Effects of Combined Drought & Pathogen Stress on the *Arabidopsis thaliana / Pseudomonas syringae* Pathosystem	UL Lafayette
6:15-6:30	Elise Gaffga	Local Trentepohliales's Potential as Bioindicator	UL Lafayette

Undergraduate Research Conference 2026 Program

Location: Magnolia—room 210A & B, 2nd floor			
Friday, November 13, 2026 (Oral Presentation 3:00-5:00)			
Moderator: Melissa Toups **Judges: Theresa Nunez, Latasha Holt, Tayonna Brumfield, Krishna Kunal**			**Institution**
3:00-3:15 (Creative Activity)	Kylee Schexnider	Preserving Cajun Folklore through Mediums of Storytelling	UL Lafayette
3:15-3:30	Emily Johnson & Erik Mender	UL Paino Palooza: Fostering Musicianship through Group Piano	UL Lafayette
3:30-3:45			
3:45-4:00	Maria Farina	Assessment of ACL Reinjury Risk Factors in Collegiate Athletes	Northwestern State University of Louisiana
4:00-4:15	Aniya Hill	Beyond the Game: The Influence of Personal Branding on Collegiate Athletes' Post-Athletic Opportunities	UL Lafayette
4:15-4:30	Ja'kyron Duplechain	A Study of Mental Health Among College Students: Effects and Contributing Factors	UL Lafayette
4:30-4:45	**Break: Prepare for Lightning Talks**		
4:45-5:00			

Lightning Talk Schedule

Location: Magnolia—room 210A & B, 2nd floor			
Friday, November 13, 2026 (Lightning Talks 5:00-6:30)			
Moderator: Melissa Toups **Judges: Theresa Nunez, Latasha Holt, Tayonna Brumfield, Krishna Kunal**			**Institution**
5:00-5:05	Introduction to Lightning Talks		
5:05-5:10	Maggie Chatman	Mechanical Characterization of Knee Wraps	UL Lafayette
5:10-5:15	Sarah Azzam & Sophia Justice	Development of a Hybrid Hydrogel-Exosome System for Targeted Drug Delivery in Lung Cancer	UL Lafayette
5:15-5:20	Andrew Bradford	Building a Large Format 3D Printer	UL Lafayette
5:20-5:25	Andrew Courville	Using the Arts as a Means of Political Activism	UL Lafayette
5:25-5:30	Anna Doll	Additive Manufacturing in Research of Orodispersible Films (ODFs)	UL Lafayette
5:30-5:35	Susannah Donoghue	DRL+GNN Architecture Tested on New Topologies	UL Lafayette
5:35-5:40	Luke Duhe	Grosse Sonate op.11 by Robert Schumman	UL Lafayette
5:40-5:45	Caroline Bailey	The Effects of Developmental Care and Kangaroo Care on Physiological Outcomes in Premature NICU Infants	UL Lafayette
5:45-5:50	Sophie Mader	Challenges in Developing Treatments for Usher Syndrome	UL Lafayette
5:50-5:55	Kylie Mire	Back and Forth: A Conversation in Amanda Maier's Violin Sonata in B minor	UL Lafayette
5:55-6:00	Alana Pryor	Evaluating the Mechanical Properties of Epoxy resin	UL Lafayette
6:00-6:05	Grace Schwarz	Human-AI Collaborations in a Qualitative Analysis	UL Lafayette
6:05-6:10	Michaiah Tatum	Exploration of Rhythm in Music Analysis	UL Lafayette
6:10-6:15	Alyana Williams	The Birth Order Effect	UL Lafayette
6:15-6:20			
6:20-6:25	Cade Chianelli	Conceptual Design for Lunar Manufacturing	UL Lafayette
6:25-6:30	David Cornette	One of "The Moldau's" Many Stories	UL Lafayette

Poster Schedules

Poster Session A numbers 1-34; 10:30am-11:30am			**Institution**
1	Ana Abshire	What's Going on with Grunt Sculpin? An Examination of Morphology Using CT Scans	UL Lafayette
2	Ethan Adams	Clonal Diversity of *Spartina alterniflora* (Smooth Cordgrass) Across Tidal Elevation in Louisiana and Florida Salt Marshes	UL Lafayette
3	Joshua Alexander	Magnitude vs. Sensitivity Based Parameter Pruning in Hyper-Parametrized Machine Learning & AI Models	UL Lafayette
4	Katherine Ashurst	Investigation of Advanced Oxidation Processes for Treatment of PFAS-Contaminated Waters	UL Lafayette
5	Dalaen Attle	Representation Matters: Black Male Teacher Representation and School Discipline Among Black Male Students	UL Lafayette
6	Sarah Azzam & Sophia Justice	Development of a Hybrid Hydrogel-Exosome System for Targeted Drug Delivery in Lung Cancer	UL Lafayette
7	Aubree Battaglia & Emily Bonin	Describing Targets in Connected Speech Assessment for Louisiana English	UL Lafayette
8	Alarryal Bradley	Women of Color Career Paths to Congress	Louisiana State University
9	Lilyana Brocato	Material Engagement Theory	UL Lafayette
10	Hannah Broussard	Why the Long Face? Gene Flow & Genetic Drift: The Evolution of the Human Face	UL Lafayette
11	Amelie Bullen	Dance Beyond the Studio	Tulane University
12	Audry Chaumont	AI-Assisted Scan-to-BIM for Sustainable Campus Retrofit Planning	UL Lafayette
13	Jacey Chotto	Microbial Water Quality Monitoring of Bayou Folse Watershed	Nicholls State University
14	Conor Climo	Liquid Metal that Stays Put	UL Lafayette
15	Brooklyn Comeaux	Is the Rabies Vaccination in Dogs and Cats Effective at Preventing the Spread of Rabies Virus?	UL Lafayette
16	Carlos Rodriguez Coronel	Triangular Consistency as a Universal Constraint for Learning Optical Flow	Louisiana State University
17	Sarah-Grace Couvillon	Effects of Colored ALAN on Memory in Adult Zebrafish	UL Lafayette

18	Breanna Credeur	Perceptions of Hypersexuality: Pilot Study	UL Lafayette
19	Marissa Davenport	Jewelry, Identity, and Power in Colonial New Orleans	UL Lafayette
20	Heaven DeRouen	Political Economy and Consumer Choice in the Historic Ceramics of Poverty Point	UL Lafayette
21	Grant Deshotels	A Comparative Review of Epoxy Resin Additive Manufacturing Techniques	UL Lafayette
22	Peter Falgout	Examining Ceramic Variation During the Late Woodland Period in Central Louisiana	UL Lafayette
23	Spencer Fox-Hunt, Garett Dugal, Daniel Hammett, Gerius Roberts, & Blake Shelton	VSM Grid Support	UL Lafayette
24	Daniel Fuentes	The CRT: Building a Multistage High Power Rocket	UL Lafayette
25	Gabriella Garza	The Dangers of Mental Health Stigma	UL Lafayette
26	Jacob Gautreaux	What Predicts Reported Campus Sexual Assault? Institutional Scale, Residentiality, and Administrative Capacity	UL Lafayette
27	Jacob Gautreaux	Campus Carry and Fifteen Clery Outcomes: No Evidence of Increased Violent or Sexual Offenses, Higher Drug-Law Arrests	UL Lafayette
28	Gracey Gray	Speak for Those Who Have No Voice: How Forensic Anthropology Assists in Animal Abuse Cases	UL Lafayette
29	Francisco Guevara	Drone Based Hyperspectral and Lidar Sensing for Mapping Flotant Marsh in the Barataria Terrebonne Estuary System	Nicholls State University
30	Riley Guillory	Fabrication Strategies for Conductive Hydrogel-Based Wearable Sensors	UL Lafayette
31	Cady Harris	El Niño- The Weather Event and Chemical Process	UL Lafayette
32	Elizabeth Heneghan	Investigating Environmental Contaminants' (Benzophone-1) Effects on Reproduction and Development in Marine Crustaceans (*Tigriopus californicus*)	Louisiana State University
33	Andrea Hernandez, Alysa Kidder, & Brooke Chrisman	Associations Between Childhood Adversity and Resilience in College Students	UL Lafayette
34	Kaitlyn Hill	Allelic Trends of Plague Resistance in Black-Tailed Prairie Dog Populations	UL Lafayette

Poster Session B numbers 35-68; 11:30am-12:30pm			**Institution**
35	Grace Johanson	Fruit Fly Avatars: Advancing Precision Medicine Through Patient-Specific Cancer Models	UL Lafayette
36	Elijah Jones	Greener Does Not Mean Better: Analyzing the Benefits and Risks of Grass vs. Turf in the NFL	UL Lafayette
37	Kylie Kibodeaux	Effects of Drought on Insect Communities	UL Lafayette
38	Allison Levesque	Can Regular Physical Activity Contribute to Healthier Skin?	UL Lafayette
39	Maci Louque	Determining the Best Material for Artificial Reefs Based of Molly Miller Blennies' Ability to Grip onto Each Substrate	UL Lafayette
40	Keegan Martinez	Estimation of the Germination Rate of Nandina domestica in the Grady Erwin Nature Reserve	Northwestern State University of Louisiana
41	Ashley Mashia	Plantation Progress: The Collateral Consequences	UL Lafayette
42	Adolfo Mellado Suarez	Low-Cost Ground Robotic Vehicle for Smart Crop Monitoring	Louisiana State University
43	Ross Menard	Genetic Analysis of cryptic hawker dragonflies: *Aeshna juncea* and *Aeshna subarctica*	UL Lafayette
44	Jahnexi Morgan	The Effects Prenatal CBD Exposure on Anxiety Behaviors and Adult Hippocampal Neurogensis	UL Lafayette
45	Dominic Muguira	Frogget-about-it! Invasive Cuban Treefrogs in the Audubon Zoo and Adjacent Riverside Park	UL Lafayette
46	Nicolas Navarro, Collin Cunningham, Morgan Reade, & William Reinhardt	A Year Under the Canopy: Seasonal Patterns in Live Oak Microclimate, Soil, and Leaf Physiology	UL Lafayette
47	Onyeka Nwaezeapu	Establishment and Recovery of Cryopreserved Primary Mouse Cells from Explant Cultures	UL Lafayette
48	Ana Omes & Ella Stanley	Distance Matters: Determining the Maximum Sensing Distance for Optimal Growth of *Agroathelia rolfsii*	Louisiana State University
49	Geremiah Perkins	Tracking Microplastics Across Lake Pontchartrain: Patterns in Abundance	Louisiana State University

50	Lauren Pitt & Samuel Dunbar	Bricks Along the Bayou: Costly Signaling at the Poverty Point Site	UL Lafayette
51	Emily Riggs	The Role of Religious Conservatism and Nationality in Sexual Assault Victim Blame and Perceived Similarity	UL Lafayette
52	Michael Romero	Archaeological Survey of the Fordoche Bridge Battlefield in Pointe Coupee Parish, Louisiana	UL Lafayette
53	Kylee Schexnider	The Bloody Truth: An Exploration of Period Poverty through Visual Storytelling	UL Lafayette
54	Jaimee Smith	Determining Validity of Heat Shock Protein 70 in *Minuca longisignalis* as Biomarker of Environmental Health	Nicholls State University
55	Taylor Soileau, Camden Begnaud, Ashlee Blue, & Takhya Holliday	The Association Between Abuse and Alcohol-Problem Screening in College Students	UL Lafayette
56	Meredith Starnes, Jenna Hooks, Lauren Louviere, & Arianna Allen	Mindfulness as a Multidimensional Construct: Associations with Emotional Well-Being and Psychological Distress in College Students	UL Lafayette
57	Aidan Thibodeaux, Natalie Himel, & Lucy Wild	Examining Multidimensional Differences of Perceived Social Support and Psychological Distress	UL Lafayette
58	Kameron Trahan & Ryley Doucet	Religiosity's Relation to Sexual Attitudes	UL Lafayette
59	Sonja Albert	Species Delimitation in Tube-snouted Amazonian Electric Fishes (*Sternarchorhynchus*) Using Micro-computed Tomography and Geometric Morphometrics	UL Lafayette
60	Lilian Tran & Allison Donnelly	Vibrio Prevalence in Southwest Louisiana Waterways	McNeese State University
61	Odette Garcia Valencia	Same Water, Different Discussions	UL Lafayette
62	Megan Vidrine	Secrets in a Bottle: Interpreting 19th-Century Bottle Fragments from Poverty Point	UL Lafayette
63	Ori Watson	Determining an Effective Feeding Rate for Endangered Gopher Tortoises	Northwestern State University of Louisiana
64	Josie Wedeking, Cara Burdsall, & Lily Nguyen	Childhood Adversity and Psychological Distress: Examining Abuse, Neglect, and Household Dysfunction	UL Lafayette

65	Ethan White	The Effects of Pitch and Beat Frequency on Anxiety in Zebrafish	UL Lafayette
66	Tariq Yarbrough	Effects of Surface Texture and Water Velocity on the Gripping Performance of Seaweed Blennies	UL Lafayette
67	Katelynn Boudreaux	The Price of Blue Blood	UL Lafayette
68	Ashleigh Brown	Effects of Prenatal Cannabidiol Exposure on Anxiety-Like Behaviors and Adult Hippocampal Neurogenesis	UL Lafayette

Oral Presentation Abstracts

Arceneaux, Cale

The Cinematic Front: Hollywood, Propaganda, and the Evolution of American National Identity

During World War II and its aftermath, the American motion picture industry transformed from a commercial entertainment business into an instrument of state propaganda Initially governed by domestic markets and foreign fears prior to the depression, studios deliberately avoided explicit political commentary until global stability took a turn for the worse and the Roosevelt administration enlisted the media for national defense. Cinematic propaganda evolved in three distinct phases: American pre-war preparedness (1935-1941), total wartime mobilization, and post-war ideological continuity.

Between the early 1930s and 1941, forward-thinking producers began depicting foreign espionage and military rearmament, conditioning an isolationist public against totalitarian expansion with films like Red Salute (1935) and Charlie Chaplins The Great Dictator (1940). Following the attack on Pearl Harbor, formal state-media alliances emerged under agencies like the Office of War Information (OWI). Commercial studios would quickly release films like Casablanca (1942) to boost morale, justify sacrifice, and broaden homefront strategy. Following the war, the nation celebrated, flaunting their victories across the screen and spreading a narrative of honor. These institutional mechanisms went on to shape permanent precedents for future national tensions and solidify state-society relations.

Borel, Alyssa

A Thematic Analysis of Qualitative Responses to a Sexual Assault Scenario

How do people explain sexual assault and justify their evaluations of victims and perpetrators? The study is a secondary data analysis applying thematic analysis to how people respond after reading vignettes about a sexual assault. The original study looked at the quantitative data and examined how ethnicity and perceived similarity impacted blame in a rape case. Coding is applying labels to data like transcripts or surveys to find common themes and patterns to capture the main idea of the content (Saldaña, 2015). Qualitative coding can reveal patterns in participants' responses that may not be captured through quantitative methods alone.

275 college students (65% women; 35% men) read one of two vignettes presented as a news article from 2010; An American reporter (female) raped by an Iraqi citizen (male), or an Iraqi citizen (female) raped by an American reporter (male). Participants first answered open-ended questions about their reactions and thoughts about the story, and descriptions of the story's end. Then, participants were asked to give numerical responses measuring perceptions of perpetrator and victim responsibility and similarity, followed by open-ended questions asking to explain the numerical values given. Coders measured all open-ended questions.

A team of five coders first created a preliminary codebook, then applied codes to each statement; all statements provided in response to each of the six questions were coded by two members of the team. After coding individually, team members met to discuss and came to a consensus on all codes. The coding framework encompasses several areas, including perpetrator blame and victim precipitation, cultural influences and national identity, perceived similarity and identification, personal experiences and perspective-taking, emotional reactions and empathy, and interpretations of the assault and its circumstances. The analysis also captures uncertainty about whether the assault occurred and judgments about the individuals involved. Through thematic coding, we examined how participants expressed their perceptions, reasoning, and reactions to a sexual assault scenario in their own words.

Boteler, Dax

EMA Response Dosage and Subsequent State and Trait Ratings: An Exploratory Reanalysis

Ecological momentary assessment (EMA) involves repeated in-context assessment, often delivered through mobile devices as individuals go about their daily lives. Consistent with Contextual Behavioral Science, EMA offers opportunities for more idiographic and contextually situated measurement than conventional retrospective questionnaires. Despite this method being more Contextual Behavioral Science consistent, few researchers have evaluated whether response patterns match patterns consistent with relevant learning principles. Presenting participants with repeated assessments is itself an environmental event that may influence subsequent responding. Determining which features of assessment most strongly influence ratings is important to improving the psychological measurement.

This exploratory reanalysis examines whether EMA response dosage and accumulated ratings add predictive value for subsequent state and trait questionnaire scores beyond initial scores. The original study included 127 undergraduates who completed an initial state and trait assessment package, 21 days of EMA assessing anxiety, sadness, and attempts to control these experiences, and a final assessment package. We will first predict final state and trait scores from the initial assessment package. We will then add response dosage, defined as the number of completed EMA responses, followed by the sum of ratings across those responses, retaining dosage in the model. These comparisons will evaluate whether responding frequency adds predictive information and whether accumulated endorsement further improves prediction, including whether higher summed ratings predict higher final scores after accounting for initial scores and response count.

Exploratory examination of response patterns within and across assessed domains will identify associations that may warrant further investigation. From a learning perspective, repeated contact with the same prompts may alter stimulus control, discrimination, or the probability of particular ratings over time. Though most ecological momentary assessment research now assumes detection of hypothesized mental states, this analysis is focused on determining whether more parsimonious basic learning principles need to be accounted for before these assumptions. This analysis focuses on competing explanations for ratings in context rather than assuming the content is phenomenologically forefront. Reanalysis is in process.

Bourgeois, Jessie

From the Outside Looking In: Writing about New Orleans at the Turn of the Century

This project argues that the culture of New Orleans at the turn of the twentieth century was influenced by residents' simultaneous acceptance of and resistance to northern perceptions, reflected through writings and representations of the city and Louisiana culture. Preconceptions brought upon different cultures, which are then reinforced through tourism and travel writing, can influence how a culture presents or thinks about itself, as well as how outsiders experience the culture. This project focuses on the comparison of primary sources such as personal letters, tourist ephemera, and newspaper articles about New Orleans at the turn of the twentieth century. The collections include papers and letter collections such as the Grace King, Charles Thompson, and William King Papers, along with various newspapers such as Harper's Magazine, and New Orleans Ephemera from the Louisiana and Lower Mississippi Valley ephemera collection located within the Louisiana State University archival Hill Memorial Library. The project locates and analyzes primary sources to find thematic connections across a multitude of collections, as well as close reading of primary sources to uncover threads of commonality. The turn of the century was a time when the South was beginning to establish their cultural image apart from the generalized American culture. However, it also stands out as a moment in time which Northern perceptions greatly influenced what was being said and promoted about the South, especially in New Orleans as it was a cultural hub that enticed many with it's odd and eccentric nature. By exploring the voices and stories of New Orleans residents it is evident that the Southern people were both playing into northern perceptions while also trying to break away from the preconceptions thrust upon them. Without exploration of these collections, the New Orleans story would largely be dictated by outside observers rather than the voices of residents' who lived and shaped the culture.

Chaumont, Audry

AI-Assisted Scan-to-BMI for Sustainable Campus Retrofit Planning

Historical drawings often provide an incomplete record of current conditions in campus buildings, making it difficult to estimate renovation quantities and plan retrofits reliably. This research develops a transferable framework that combines artificial intelligence (AI), terrestrial laser scanning, building information modeling (BIM), and construction scheduling so that every quantity used to evaluate and schedule a sustainable retrofit can be traced to its evidence. Rougeou Hall at the University of Louisiana at Lafayette serves as the case study. The first floor was captured with a Trimble X7 in 58 stations registered as one set (mean error 0.6 mm, overlap 52%, consistency 99%). Claude AI worked directly on photographs of the 1986 as-built drawings and on the gridded E57 data: it streamed the 52 first-floor stations (about 3.0 billion points) on a standard laptop, registered the point cloud to the drawing grid, and fitted walls, columns, openings, floors, and ceilings, tagging every element as scan-measured, scan-confirmed, or drawing-based. The registered scan matched the drawing datum within 1 mm at the south wall and placed columns on their grid lines within about 0.3 m. Of 715 m of first-floor walls, 417 m (58%) are now scan-measured; their median offset from the drawings is 94 mm, and 89% lie within the 0.3 m tolerance of the drawing trace. The comparison revealed a north-south clear width 0.24 m smaller than drawn, three columns and one full-height partition absent from the drawings, and suspended ceilings at 2.48 to 2.68 m against the 2.59 m specified. Reviewers check geometry, properties, and completeness before release. The outputs are an Industry Foundation Classes (IFC) model, a CSI-coded bill of quantities that records the evidence basis of each item, and a native Autodesk Revit build script, structured so the remaining floors follow the same steps. Scanning of the upper floors is underway. Reviewed quantities will be combined with production rates, crews, and calendars in Primavera P6, and with equipment ratings, operating hours, and utility data to compare lighting, HVAC, and envelope retrofits by energy use, carbon, life-cycle cost, and disruption to campus operations.

Keywords: Artificial intelligence; Scan-to-BIM; terrestrial laser scanning; as-built drawings; evidence-tagged BIM; sustainable retrofit planning; human-in-the-loop verification.

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Cheramie, Madeline

Trials of the Synthesis of EuD4TEA and EuD3NO3TEA

Like many inorganic complexes, the core and the ligands' coordination and functional groups create vastly different abilities of a molecule. One of these aspects is its luminescence. The luminescence of different complexes has been tested, but one complex, Eu(DBM)4TEA (or Europium tetrakis), is the brightest of these tests. These results were recorded several years ago, as well as later research discussing the properties of Europium and its respected ligands. We plan on revisiting the previous paper of the original synthesis of Europium tetrakis and refining the synthesis of Eu(DBM)4TEA and, as of recently, Eu(DBM)3NO3TEA.This refining will be accomplished with detailed lab notes from each step and description of the reactants, finalizes and photographed results and initial brightness under visible and UV light. Once crystals are collected from the final product, the crystals are collected and brought to an X-Ray diffraction system, a 1HNRM, and IR. An excitation and emission diagram will also be gathered. We hypothesize that based on the abundance of ligands and excitation of the Europium core, the final sample should be Eu(DBM)4TEA. As for the Eu(DBM)3NO3TEA, the synthesis of such would be relatively the same, except with less ligands (i.e. the DBM), causing a 3:1 ratio than a 4:1. Also, final identification on the excitation of Europium can be found using the ratio amount, with the excited state of Europium allowing certain amounts of ligands to form with the Europium.Bond lengths between the Europium and Oxygens would determine the molecular symmetry, thus its luminescence, of the complex. We hope that this research and its findings will contribute to, not only a better understanding of Europium complexes and its ligands' contribution, but to create a clear blueprint of synthesizing each complex. We also look forward to the further application of Europium tetrakis, particularly as a radiation or damage sensor for low temperature environments (i.e. space atmospheres).

Cunningham, Kyla

Development of a Novel Technique for Sexing Hatchling in Diamondback Terrapins

Diamondback Terrapins (Malaclemys terrapin) are a threatened species native to brackish areas of the Atlantic and Gulf coasts. Phenotypic variation is common among adults who display sexually dimorphic traits that are useful to visually discern between sexes, however hatchlings do not display any form of noticeable sexual dimorphism. Current methods of sexing hatchlings include laparoscopy and microscopic gonad inspection; laparoscopy is difficult as it requires specialized skills and is expensive while gonadal inspection is destructive—the terrapin must not be alive. Geometric morphometrics is a promising alternative tool to determine hatchling terrapin sex without causing harm. In geometric morphometrics, spatial data points are analyzed to determine spatial relatedness while considering necessary geometry, such as the carapace's curve. Terrapins undergo temperature sex determination; therefore, I used incubation temperature as a proxy for sex to determine if temperature consistently influences carapace shape. Digital software was used to create landmarks on photos of terrapin carapaces at the vertices of adjacent scutes and at the widest portion of the vertebral knob. Two ANOVA tests were run to test for differences in carapace shape across incubation temperatures and clutches. There were significant differences in carapace shape among incubation temperatures and among clutches, suggesting both environment and genetics influence carapace shape. The results of this study suggest that carapace shape could reliably predict hatchling sex, but more experiments must be done with known-sex individuals, predictive modeling, and full factorial designs.

Davis, Dylan

A Discrete Two-Sex Model for the Beet Webworm

The beet webworm (Loxostege sticticalis) is a migratory pest whose populations stay scarce for long periods and then rise into multi-year outbreaks. Outbreak years tend to be female-biased, and numbers tend to fall once there are fewer females than males. Age-stage life tables measure survival and fecundity for fully mated females, so they omit mate limitation. To our knowledge, no two-sex model has been used to test whether the sex ratio can sustain or end an outbreak.

We formulate a discrete-time, stage-structured model for eggs, larvae, pupae, unmated females, mated females, and adult males. Larval survival follows a Beverton–Holt function of density. Each female mates only once, the daily mating fraction is a harmonic-mean function of females and males, and only mated females lay eggs. The basic reproduction number R0 uses the mating fraction of a sparse population. A unique positive equilibrium exists exactly when R0 exceeds one. Parameterized from a laboratory life table on lambsquarters (Chenopodium album), which omits natural enemies, this R0 is an upper bound for the field.

At an even emergence ratio, R0 is about 83.3, slightly below the one-sex value of about 88.5 obtained with the same daily fecundity. Toward the female-biased end of the observed range, R0 rises above that benchmark, reaching about 111 at 2.2 females per male and about 127 at an emergence fraction near 0.82. A one-sex description fixed at an even ratio therefore understates invasion potential when females predominate. A one-sex model given that same female-biased fraction still gives a higher reproduction number, because every adult female reproduces without waiting for a mate. The maximizing fraction does not depend on immature survival, so a female-biased population tolerates the greatest added mortality of the immature stages and still increases when rare. Over the observed range R_0 remains well above one, so at laboratory rates a change in the sex ratio alone leaves the population able to grow from low density.

Deshotels, Grant

The Influence of Healthcare Infrastructure and Poverty on Cancer Incidence in Louisiana

Louisiana faces a critical public health crisis, consistently ranking among the states with the highest cancer incidence and mortality rates nationwide. In many of Louisiana's rural and lower-income parishes, residents face significant hurdles simply trying to access preventative screenings or specialized oncology care. When routine medical infrastructure is hours away and economic barriers restrict travel, people naturally delay preventative visits. Consequently, cancer is frequently detected at much later, more advanced stages when it is significantly harder to treat and survival rates drop.

This project examines the critical intersection of geography, wealth, and health outcomes. Specifically, it investigates how regional poverty levels and the physical distribution of healthcare facilities drive cancer incidence and late-stage detection across the state. Using spatial epidemiology, this research maps demographic indicators against the exact locations of oncology treatment centers. By overlaying socioeconomic data with healthcare infrastructure maps, the study visually and statistically tracks where the medical system is falling short for vulnerable populations.

These findings argue that improving cancer survival rates in Louisiana requires more than clinical and pharmaceutical advancements; it demands targeted interventions in physical healthcare infrastructure. By pinpointing the specific communities where economic disadvantages and medical deserts overlap, this research provides a practical framework for public health officials and state leaders. This spatial data can directly guide where new clinics should be built, where mobile health screening units should be deployed, and how funding can be effectively allocated to close the accessibility gap. Addressing these foundational geographic and economic barriers is a necessary step toward ensuring equitable care, improving early detection, and ultimately saving lives in the state's most underserved regions.

Ja’kyron Duplechain

A Study of Mental Health Among College Students: Effects and Contributing Factors

Mental health concerns among college students have become an increasingly important issue because of their potential effects on academic performance, personal well-being, and overall college success. This literature review examined the prevalence of mental health challenges among college students and explored factors associated with psychological distress and reduced academic achievement. It was hypothesized that greater academic pressure, financial stress, and environmental challenges would be associated with poorer mental health and academic outcomes. A review of peer-reviewed articles published in English between 2020 and 2025 was conducted using Google Scholar and the University of Louisiana at Lafayette library databases. Search terms focused on college student mental health, academic performance, psychological well-being, and contributing risk factors. The initial search identified 359 articles, of which 79 were evaluated in greater detail and 14 met the inclusion criteria. Across these studies, the combined sample included 94,865 college students. Results showed that 8 of the 14 studies reported an association between mental health concerns and academic performance. Several contributing factors emerged throughout the literature, including loneliness, financial difficulties, health concerns, gender, access to healthcare services, wellness interventions, and the lasting effects of the COVID-19 pandemic. Academic demands and financial uncertainty were also frequently identified as significant sources of stress. These findings suggest that students' mental health is influenced by multiple overlapping personal, social, and institutional factors that may interfere with their ability to succeed academically. Although the reviewed studies varied in their approaches and findings, the overall evidence highlights the importance of addressing mental health within higher education. Colleges and universities may benefit from expanding accessible counseling services, strengthening financial and academic support, and implementing preventive wellness initiatives. Understanding these relationships can help institutions develop more effective strategies to support student well-being, promote academic achievement, and improve the overall college experience for students.

Dupuis, Robin

After the Water Recedes: Memory and Water Hazards

Communities along the Gulf Coast often understand their flood risk but struggle to act on that knowledge in a way that would last. Drawing on 29 interviews with planners, engineers, emergency managers, NGO staff, and elected officials in Louisiana, Mississippi, and Alabama, as part of an NSF EPSCoR-funded Water Hazards project, this study asks how attitudes toward water hazards shape infrastructure decisions, and whether those attitudes change over time. Participants describe a recurring “disaster clock.” Major events such as the 2016 Louisiana flood and Hurricane Sally in 2020 open brief windows of political will, during which communities adopt stronger drainage and low-impact development rules. As the crisis fades and the costs of action become visible, attention and support decline. Memory is also unevenly distributed: technical staff and long-term residents retain it, while newer residents and elected officials, who control funding, often do not. Institutional tools such as repetitive loss analyses, hazard mitigation plans, gauge networks, and public education can preserve memory, but they work only when tied to community outcomes. We argue that memory alone does not produce action. It must be paired with funding, political will, and institutional capacity, all of which decay together. We recommend that planners treat post-disaster windows as a finite resource, target outreach to newer residents and officials, and connect data to decisions. In short, memory is a form of infrastructure and requires maintenance.

Eastridge, Ellie

The Physiological Effects of Combined Drought & Pathogen Stress on the Arabidopsis thaliana/Pseudomonas syringae Pathosystem

Plants frequently experience multiple abiotic and biotic stressors simultaneously, but physiological responses to combined stress may differ from responses to individual stressors. Here, I examined the effects of drought and combined drought and pathogenic infection on plant physiology, growth, and biomass allocation using the Arabidopsis thaliana–Pseudomonas syringae pathosystem. Seedlings were germinated on agar medium and transplanted into soil under controlled growth-chamber conditions. Col-0 plants were assigned to well-watered control, drought-only, or combined drought-and-infection treatments, with drought imposed by withholding water for seven consecutive days. Due to limitations in germination and replication, genotypic differences among Col-0, aba1, and npr1-1 were evaluated only under well-watered control conditions.

Contrary to predictions, drought-treated plants exhibited significantly higher stomatal conductance, stem biomass, and total aboveground biomass than well-watered controls. However, these results must be interpreted cautiously because stomatal conductance measurements differed in timing and personnel, while differences in experimental batches and drying time before biomass measurements may have contributed to observed treatment effects. Combined-stress plants exhibited intermediate stem and total aboveground biomass, with neither differing significantly from control or drought-only plants. Growth rates and chlorophyll content did not differ significantly among treatments. Stomatal conductance was positively associated with aboveground biomass across treatments, although the measurement limitations prevent definitive interpretation of this relationship. Combined-stress plants exhibited significantly lower leaf:aboveground biomass and higher stem:aboveground biomass than controls, suggesting a shift in relative biomass allocation toward stems. Under well-watered conditions, genotype significantly influenced biomass allocation, with aba1 exhibiting greater leaf:aboveground biomass and lower stem:aboveground biomass than Col-0, while npr1-1 exhibited intermediate values.

These findings did not support a synergistic reduction in plant performance under combined drought and pathogen stress. Although the observed differences in biomass and allocation may be consistent with compensatory or drought-avoidance responses, experimental limitations prevent distinguishing these potential mechanisms from methodological effects. In particular, unequal treatment representation across experimental batches, variation in biomass drying time, and limited replication constrain the interpretation and generalizability of the results. Genotypic differences suggest a potential role for hormonal regulation in biomass allocation, but genotype-specific stress responses could not be evaluated. Together, these findings highlight the importance of considering physiological traits and biomass allocation when investigating combined environmental stressors, while emphasizing the need for balanced experimental designs and standardized measurements to distinguish biological responses from experimental variation.

Ellis, Avery

Evaluating the Louisiana Pay for Success Initiative

The Second Chance Act Pay for Success Initiative (Pay for Success) in Louisiana uses outcomes-based funding to support recovery housing and reentry services for people leaving prison with substance use histories. Funded by the U.S. Department of Justice's Bureau of Justice Assistance and implemented by the Louisiana Department of Public Safety & Corrections (DPS&C), the Pay for Success grant was designed to 1) expand access to critical reentry services for formerly incarcerated individuals with substance use needs, with a strong focus on racial equity and participant-centered support, and 2) build the DPS&C's internal capacity to adopt outcomes-based contracting strategies across broad social service efforts. The project began in September 2022 and includes two main phases: an initial prototype framework at Keep It Real (KIR) located in Chalmette, and a more structured Level 3 recovery housing model at Hope House (HH) located in Lafayette.

The Social Research and Evaluation Center (SREC) at LSU, serving as the independent program evaluator for Pay for Success, conducted a mixed-methods evaluation to assess implementation, describe early outcomes, and examine equity in access. Challenges faced in the initial prototype KIR were addressed and resolved in phase two, resulting in encouraging findings that suggest stronger implementation and participant engagement in Phase 2. As of March 31, 2026, in Phase 2 of the Pay for Success Program, Hope House, 57.5% of men obtained full-time employment, with 45% completing the Pay for Success program. The average length of stay was 5 months, with a typical stay of about 7 months. Qualitative data reveals themes of brotherhood, leadership, and appreciation for resources.

This presentation will summarize the Louisiana Pay for Success Initiative Recovery Housing and Reentry Support Services Final Evaluation Report and include analyses of both quantitative and qualitative data.

Farina, Maria

Assessment of ACL Reinjury Risk Factors in Collegiate Athletes

Anterior cruciate ligament (ACL) injuries remain among the most prevalent and severe musculoskeletal injuries in collegiate athletes, particularly in sports that require rapid deceleration, cutting, pivoting, and landing movements. Despite advances in surgical techniques, rehabilitation protocols, and return-to-play assessments, a substantial proportion of athletes sustain a second ACL injury after returning to competition.

Previous work for this project consisted of an extensive literature review examining ACL injury prevention, rehabilitation strategies, biomechanical risk factors, psychological readiness, and the emerging use of wearable sensor technologies in sports medicine. The review identified persistent neuromuscular deficits, biomechanical asymmetries, movement compensations, and psychological barriers as potential contributors to reinjury risk. It also highlighted the growing potential of technologies such as inertial measurement units (IMUs), surface electromyography (sEMG), force plates, and plantar pressure systems to support objective return-to-sport decision making.

Building on these findings, the current phase of the research focuses on evaluating factors that may contribute to ACL reinjury among collegiate athletes through a survey-based study. Three primary hypotheses are being investigated: (1) insufficient physical recovery increases the risk of reinjury, (2) psychological factors such as fear of reinjury and reduced confidence contribute to a greater likelihood of a second injury, and (3) quality movement patterns and proper sport-specific technique significantly influence reinjury outcomes. To ensure ethical compliance and participant protection, the study is currently undergoing Institutional Review Board (IRB/REB) review and approval. Once approval is granted, survey distribution and participant recruitment will begin through the Northwestern State University athletic community, followed by data collection and statistical analysis. This process will enable the collection of stakeholder perspectives from individuals directly involved in rehabilitation and return-to-sport decisions while ensuring adherence to established research ethics standards.

A comprehensive survey has been developed to examine perceptions and experiences related to ACL reinjury risk. The instrument consists of 14 questions. It begins with demographic and background questions, including participant role (athlete, athletic trainer, or coach), age, sport, and whether responding athletes have previously experienced an ACL injury. The survey is organized into four domains: psychological factors, quality of movement and sport-specific mechanics, strength and physical recovery, and commonly used injury prevention practices. The study aims to recruit a minimum of 30 participants across the three stakeholder groups. Survey responses will be analyzed using descriptive statistics and one-tailed hypothesis tests comparing stakeholder responses against predefined hypotheses derived from the literature review. The results will be used to determine which proposed risk factors receive the strongest support across participant groups.

The long-term goal of this research is to identify the factors that most strongly influence ACL reinjury risk and provide a data-driven foundation for future predictive models that support safer return-to-sport decision making.

Gaffga, Elise

Local Trentepohliales's Potential as Bioindicator

Trentepohlia is a genus of filamentous, carotenoid, terrestrial, green algae. Trentepohlia is the only non-parasitic and non-pathogenic genera out of the three genre in the family Trentepohliaceae which is the only family in the order Trentepoliales (Brooks et al.). I collected 8 samples of Trentepohlia from Lafayette parish to identify the Trentepohlia species, update the phylogenetic tree of current data, and potentially contrast its use as bioindicator with established bioindicators. Currently, terrestrial algae Trentepohlia is understudied in sub-tropical and tropical regions (Lopez-Bautista et al. 2007) Morphologically is insufficient to identify Trentepohlia species as spatial, temporal scales, salinity can affect the morphological structures. I used rbcl gene RH1 & RT1134 primer recommended for Chlorophyta. The rbcl gene is used for PCR for it is a highly conservative gene and coding for the large unit of RuBisCo and is important for carbon fixation (Pauleen Fredrick et al 2016). Alignment of genetic sequences using MEGA soft wear for conducted and produced a current phylogenetic tree.

Trentepohlia was confirmed in 2018 as an epiphytic bioindicator for atmospheric pollutants including its absorption of trace heavy metals (García-Florentino et al.). Previously Trentepohlia was used as a bioindicator, and evaluated for its effectiveness of removal of nitrates, Ammonium and Phosphate from water (Abe et al, 2002). Despite its worldwide distribution, few research has been conducted on Trentepohlia's bioindicator outside of China. The Trentepohlia samples I collected from Lafayette Parish, Louisiana is beneficial for analyzing vegetative bioindicators because of the rainfall in the subtropical climate belt. A previous study analyzed wet deposition through precipitation was responsible for 68-75% absorption of Cd and Zn, whereases dry deposition was between 25-33% (Vithanage et al, 2022). Preliminary data on local Trentepohlia sample's atmospheric pollutants was measured in 17 samples with 8 measurements each, using ULL's Scanning Electron Microscope Energy Dispersive X-Ray Spectrometry (SEM_EDS). These results indicated the need for sensitive measurement using Inductively Coupled Plasma Optical Emission Spectrometry (ICP) to accurately quantify the pollutant when it is detected under 1% from within each measurement.

Future projects are to conduct ICP-MS and contrast pollutant levels of Trentepohlia photobiont lichen and stand-alone Trentepohlia studies estimate 23% of lichen forming algae photobionts are Trentepohliales (20011, Nelson). Additionally, contrasting absorption levels of Trentepohlia compared to Tillandsia usneoides and a bryophyte species is of interest for further research.

In addition to pollutant levels, Dr Fabio, who received doctorate at ULL, demonstrated the rarity of Trentepohlia's sexual reproductive structure zoospores, as he only observed a zoospore in one sample from the 350 samples collected.

Griffard, Gabriel

High Voltage DC Series Arc Fault Detection Testbench

DC Series Arc Faults can occur when a DC electrical connection is loose or when a conductor is severed. DC arcs do not have a zero-crossing (zero instantaneous voltage, current, and therefore power) like AC arcs that can self-extinguish, so line inductance can perpetuate arcs for longer durations. These faults can be highly destructive from the dynamics within the plasma that jumps the gap, so it is important that the faulty branch is isolated as soon as possible before damage can compromise circuit elements nearby. Higher voltages and lower pressure (high altitude flight, low earth orbit, or lunar atmosphere) increase the likelihood of arcing, but there is still a push in aerospace to use higher voltage DC systems for minimizing vehicle weight, especially More Electrified Aircraft (MEAs), spacecraft, and lunar infrastructure. Thus, we must equip these systems with tools to prevent damage and improve lifespan.

Our Summer 2026 work with the NASA Glenn Research Center's Power Management and Distribution Branch set out to develop upon existing work to detect DC series arc faults. Existing methods and training datasets showed promise but had flaws from modeling, data acquisition, and topology. Our team set out to address each of these flaws in parallel. We hypothesized new detection methods that would apply to generic topology without additional hardware, mostly attempting to take advantage of the additional plasma dynamics in the faulty circuits.

To complement detection methods, some of our work also needed to focus on data acquisition. Our testbench development sought to improve control and replicability, voltage and current measurement resolution, sample rate, and voltage levels, while at the same time introducing the capability to apply a vacuum. My contributions were mainly focused on a hypothesized detection technique called Largest Lyapunov Exponent, which seeks to identify chaotic attractors in data time series, and testbench improvements.

Through this work, we supported the NASA team in exploring novel solutions to a relatively understudied field of power systems. After internal safety review of the testbench, the team can continue this research.

Hill, Aniya

Beyond the Game: The Influence of Personal Branding on Collegiate Athletes' Post-Athletic Opportunities

Since NCAA name, image, and likeness (NIL) rules changed in 2021, college athletes have been able to earn money through brand partnerships. Research has begun to estimate the social media value of current student-athletes and to describe how consumers view retired professional athletes, but less is known about what happens to former college athletes' paid partnerships after their competitive careers end. This proposed study asks whether athletes who build personal brands beyond their sport while competing are more likely to maintain or secure paid brand partnerships after college athletics. The working hypothesis is that former athletes whose brands included established non-sport interests, content, and audience connections will show a higher rate of paid partnerships in the 12 months after their last collegiate competition than athletes whose brands centered primarily on sport. The study will also consider that a sport-centered identity may remain commercially valuable.

Pending faculty oversight and the required Institutional Review Board determination, the study plans to recruit 10–20 former NCAA athletes from the NIL era who are not competing professionally. A short questionnaire will distinguish retained, renewed, and newly signed paid agreements from gifted products, affiliate links, and unclear posts. With consent, public posts from the year before each athlete's last competition will be coded with a simple rubric to classify brand breadth. Three to five brand or agency professionals will be interviewed about how they evaluate former athletes. Analysis will compare counts and rates between groups descriptively and will note factors such as audience size, sport visibility, and agency support. Because the design is observational and the sample small, results will describe associations rather than causes, and findings that do not support the hypothesis will be reported. The project aims to give athletes, athletic departments, and brands early evidence about commercial opportunities after college sport.

Himel, Natalie

Phonological Competition in Spoken Word Recognition: A Mouse-Tracking Study

Introduction: Spoken word recognition (SWR) uses individual sounds (phonological units) to distinguish words from one another in language comprehension (Marslen-Wilson, 1987). Previous research has shown that lexical activation can occur simultaneously in phonologically similar words, resulting in phonological competition (Lin et al., 2023). Despite prior research, questions remain regarding whether the amount of word-initial phonological overlap (C vs. CV) could affect the strength and time course of phonological competition during SWR. The purpose of this study was to examine the differential competition effects between C and CV while demonstrating the dynamic nature of SWR through mouse tracking. We predicted greater competition in competitor-present than control conditions, with stronger competition for CV than C overlap.

Method: A sample of 100 participants was recruited from SONA participant recruitment system at the University of Louisiana at Lafayette with an average age of M = 22.9 (SD = 4.8) and with the majority of the sample being female (71%). Before data collection, participants completed measures of English language proficiency and daily language exposure. After prescreening, each participant completed the Spoken Word Task, where they listened to a word and selected the visual representation corresponding to the spoken target using a computer mouse. Each participant was exposed to all experimental conditions when engaging in the task (CV-CP, CVC, C-CP, and C-C). Both spatial trajectory (AUC, MD) and chronometric (TRT, MT) measures were recorded for each trial. To analyze, we primarily used a Growth Curve Analysis (GCA). Generalized Additive Mixed Models (GAMM), Ex-Gaussian DRTA, and Bayesian Linear Mixed Models (BLMM) were also used as complementary analyses.

Results: GCA revealed competition type effects were significant across all polynomial terms (all ps <0.001), with CV competition rising earlier and reaching greater magnitude than C competition. GAMM competition smooths for both CV conditions (edf =17.63, F = 16.19, p < .001) and C conditions (edf = 16.61, F = 9.13, p < .001) were significant. C-competition onset occurred at step 18 (~209 ms post-stimulus), in line with the established English monolingual benchmark. Response time distribution (Ex-Gaussian DRTA) reported CV condition estimates (μ = 50.70 ms, τ = 0.41 ms) and C condition estimates (μ = 15.10 ms, τ = 3.12 ms). BLMM found all within-group BF_{01} values fell between 0.95 and 1.01 across all summary measures – confirming competition in both conditions while remaining inconclusive at the aggregate level.

Discussion: CV competitors produced earlier and stronger competition effects than C competitors across spatial trajectory and chronometric analyses, suggesting that a greater amount of word-initial overlap increases lexical competition during SWR. The presence of significant competition effects in both CV and C conditions establishes an important monolingual English benchmark for future comparisons with bilingual populations in a larger cross-linguistic study (Lin, Y.-C. et al., manuscript in preparation). The findings also demonstrate the value of continuous mouse tracking for capturing the evolving time course of lexical competition that may not be apparent from endpoint measures alone.

Johnson, Emily; Mender, Erik

UL PianoPalooza: Fostering Musicianship Through Group Piano

Private, one-on-one piano lessons remain the most common instructional format for addressing each student's individual needs and abilities. Group piano classes, however, have been widely embraced since the early 20th Century by American piano pedagogues as an effective way to enrich learning through peer interaction, collaborative activities, and engaging musical experiences.

The University of Louisiana Piano Institute (ULPI) provides weekly private piano instruction to members of the community through its piano pedagogy program. In addition to these lessons, ULPI offers a one-day group piano event, PianoPalooza, designed to offer students experiences beyond the private lesson setting. The event encourages students to discover the joy of learning with peers, develop poise when performing for others, strengthen critical listening skills, and explore musical styles and activities outside their individual repertoire.

Given the unique benefits that group instruction can provide, how can piano programs effectively integrate meaningful group experiences alongside private lessons? What elements contribute to a successful and educational group piano event? This presentation examines strategies used at ULPI to design and implement engaging group piano activities that foster musicianship, collaboration, and active participation.

The program incorporates a variety of experiences, including ensemble performance, collaborative learning, interactive music games, and creative activities that broaden students' musical perspectives while providing opportunities for social engagement centered around a shared interest in piano study.

The presentation will also discuss the planning and preparation process, including scheduling, registration, promotional materials, activity selection for diverse ages and skill levels, resource preparation, and communication with families. Particular attention will be given to designing activities that sustain student engagement, facilitate ensemble playing and peer interaction, and create an inclusive learning environment. Attendees will gain practical ideas and organizational strategies for developing successful group events within their own teaching programs.

Kalagara, Meghna

Not All Acts of Discrimination are Alike: Exploring the Relationship Between Individual Experiences of Racism and Hypervigilance

Psychologists define hypervigilance as a heightened awareness and watchfulness (Dalgleish et al., 2001). Much of the literature in psychology and health has explored factors that shape hypervigilance. For example, research findings have shown that hypervigilance is shaped by experiences such as PTSD, abuse, discrimination, and community/police violence. However, there are very few studies that explore the relationship between individual acts of discrimination on hypervigilance, specifically due to experiences of racism as measured by the Race-Based Traumatic Stress Symptom Scale (RBTSSS). Consequently, this paper asks the following question: Is there a relationship between individual acts of discrimination (as measured with the Everyday Discrimination Scale) and RBTS hypervigilance symptom? Everyday discrimination is defined as "routine and relatively minor day-to-day interpersonal experiences of unfair treatment" (Williams et al., 1997), and this measure included 9 items; being treated with less courtesy than other; being treated with less respect than others; others being afraid of them; being perceived as dishonest by others, others acting like they were better than them; being called names, and being insulted by others. Instead of creating a sum score for this scale (as many researchers do), I look at how each different act of discrimination affects hypervigilance. RBTS hypervigilance symptom, which is distinct from general measures of hypervigilance, is captured with 3 items; feel easily intimidated, frequently worried, and easily frightened due to experiences racial discrimination. Drawing form an analytical sample of 4,082 African Americans, this study reveals compelling evidence of a significant relationship between exposure to individual acts of discrimination and RBTS hypervigilance symptom; experiencing discrimination (regardless of the specific act) increases the probability of experiencing RBTS hypervigilance symptoms. Importantly, each individual act of discrimination had a significant, distinct positive effect on RBTS hypervigilance symptom. There are several implications for this finding; one important implication is to acknowledge that discrimination exists. The second implication is to recognize that each act of discrimination has its own distinct consequences for RBTS hypervigilance symptom, which can aid mental health professionals in addressing psychopathological outcomes of patients.

Keywords: African American, hypervigilance, discrimination, race-based trauma symptoms

Landry, Kailey

Uncovering Health Threats and Conservation Needs for Louisiana's Critically Imperiled Gopher Tortoise (Gopherus polyphemus)

Gopher tortoises (Gopherus polyphemus) are large burrowing chelonians found in the Southeastern United States. The International Union for Conservation of Nature lists them as critically endangered because of population declines due to habitat loss, poaching, and disease. These threats can lead to physiologic changes in the tortoises (e.g., inflammation) that can impact their survival. To date, there has been limited testing to characterize the inflammatory response of wild gopher tortoises. This study aimed to measure erythrocyte sedimentation rates (ESR) and perform protein electrophoresis in healthy wild gopher tortoises to develop robust reference intervals for evaluating the impacts facing these tortoises. Our hypothesis was that the ESR would positively correlate with protein electrophoresis results. Tortoises were sampled from two locations in Louisiana during July and August 2026. These areas consisted of open grassy areas and dense long-leaf savannas. Burrows in these areas were scoped to confirm the presence of a tortoise, and live traps were set to capture the tortoises in active burrows. Once captured, the tortoises were given a thorough examination, morphometrics collected, and blood collected for ESR and protein electrophoresis. Tortoises were sedated with alfaxalone so that the head could be extended for jugular venipuncture. This was done to minimize the likelihood of lymph-diluted samples. There was no significant correlation between the ESR and any of the different proteins measured by electrophoresis (all $P>0.05$). Nonparametric reference intervals were calculated for each of the protein values and ESR using the methods described for sample populations between 20 and 40 individuals. This study provides new insights into methods for measuring inflammation in gopher tortoises, while also informing conservation methods that can be implemented to help these animals when assessing them at the population level. Further research may help identify early indicators of disease and improve long-term conservation strategies for wild populations.

Myers, Alyssa

Assessment of Environmental Conditions in Engineering Laboratories and Lecture Classrooms

Several environmental factors, including noise, sunlight exposure, air quality, humidity, temperature, surface reflectivity, light color temperature, and illuminance, can influence learning effectiveness in classrooms and other educational spaces. However, limited research has examined these factors in higher education institutions in northern Louisiana. The region's geographical setting, surrounded by the Sabine and Kisatchie National Forests, and its hot, humid climate with seasonal pollen exposure present unique environmental conditions that may affect indoor learning environments. This study evaluates key environmental parameters in ten classrooms and laboratories in Williamson Hall at Northwestern State University of Louisiana, where engineering lectures and laboratory activities are conducted.

Environmental data were collected using standard measurement instruments and iOS applications, including a psychrometer, light meter, and decibel meter. The measured values were compared with recommended thresholds and ranges reported in the relevant literature to identify potential environmental concerns.

The results revealed several areas requiring attention. Room 122 exceeded the recommended maximum noise level of 75 dBA while a laser engraving machine was operating. All ten classrooms had window-to-wall ratios below the recommended minimum of 58.41%, with Room 220 having no windows. Carbon dioxide concentrations in Rooms 122 and 223 exceeded the ideal threshold of 800 ppm but remained below the maximum recommended level of 1,000 ppm. These rooms contained a laser cutter and soldering stations, respectively. Only three of the ten classrooms met or exceeded the minimum recommended relative humidity of 60%, while all classrooms had temperatures below the target of 25°C. Ceiling reflectivity was below the recommended 80% level in five classrooms. Wall reflectivity exceeded the recommended maximum of 60% in two rooms, while the remaining rooms fell within the recommended range. In Room 112, light color temperature exceeded the upper recommended limit of 5,000 K, potentially due to incoming sunlight. Illuminance levels in Rooms 112 and 223 exceeded the recommended upper limit of 500 lux, whereas Rooms 106 and 220 frequently recorded levels below the recommended minimum of 300 lux.

These findings provide an initial assessment of indoor environmental conditions in the Engineering Technology Department at Northwestern State University. The results can inform improvements to classroom design, ventilation, lighting, and laboratory operations to support more effective learning environments. The study also establishes a foundation for expanding environmental assessments to additional campus buildings and other higher education institutions throughout northern Louisiana

Newman, Sedric

The Influence of Early Life Adversity on Coping Strategies: Examining Attachment Style as a Moderator

Early life adversity (ELA), including abuse, neglect, and household dysfunction, is associated with long-term differences in psychological development, emotional regulation, and stress responses. Although greater exposure to childhood adversity has been linked to increased vulnerability to stress-related mental health outcomes and maladaptive coping behaviors, the role of adult attachment style in this relationship remains insufficiently understood. Attachment theory provides a framework for examining how early caregiver relationships shape internal working models that influence emotional regulation, interpersonal behavior, and coping strategies throughout adulthood. In particular, secure and insecure attachment patterns may contribute to individual differences in responses to stress. This study investigates the relationship between ELA, adult attachment style, and coping strategy selection. Specifically, we examine whether the frequency of adverse childhood experiences predicts adult attachment classification and whether ELA and attachment style are associated with the use of adaptive and maladaptive coping strategies. We further hypothesize that adult attachment style moderates the relationship between ELA and coping strategy selection, such that individuals reporting greater childhood adversity will demonstrate a greater likelihood of using maladaptive coping strategies. By examining these relationships, this study aims to clarify how early experiences and interpersonal attachment patterns may contribute to individual differences in adult stress-management behaviors.

Pennington, Cylie

Establishing a Galleria mellonella Infection Model to Assess the Effects of Prior Hydrocarbon Exposure on Vibrio vulnificus Virulence

Vibrio vulnificus is an opportunistic pathogen found in coastal environments where petroleum hydrocarbons may influence bacterial physiology and potentially alter subsequent interactions with a host. This study established a greater wax moth (Galleria mellonella) infection model to investigate whether prolonged exposure to n-hexadecane, a model petroleum hydrocarbon, affects V. vulnificus virulence. Bacterial cultures were serially passaged for 14 days in artificial seawater with or without n-hexadecane, subsequently grown in heart infusion broth, and injected into G. mellonella larvae. Larval survival, activity, and melanization were monitored to assess infection outcomes. Preliminary dose-ranging experiments identified bacterial concentrations suitable for evaluating differences in larval mortality. In the final experiment, six larvae per treatment and dose received approximately 680, 1,590, and 4,100 CFU/larva of hexadecane-exposed bacteria or 930, 2,040, and 3,900 CFU/larva of unexposed bacteria. Across all three challenge doses, 12 of 18 larvae infected with hexadecane-exposed bacteria survived through 48 hours, compared with only 1 of 18 larvae infected with unexposed bacteria. At the highest dose, five of six larvae infected with hexadecane-exposed bacteria survived to 18 hours, whereas all six larvae infected with unexposed bacteria died, despite receiving a slightly lower inoculum. Larvae infected with unexposed bacteria also exhibited earlier melanization and loss of movement, while all uninjected and PBS-injected control larvae survived. These preliminary findings suggest that prior n-hexadecane exposure may be associated with reduced V. vulnificus virulence in G. mellonella. Further experiments using independently passaged bacterial populations are needed to determine whether these differences are reproducible and to investigate potential mechanisms underlying the observed infection outcomes.

Perkins, Geremiah

Tracking Microplastics Across Lake Pontchartrain: Patterns in Abundance

Microplastics are small plastic particles that are becoming increasingly common in aquatic environments. Trillions of microplastic particles are transported through the Mississippi River, yet their distribution and transport within connected water systems remain poorly understood. Lake Pontchartrain receives water from multiple tributaries, urban drainage systems, and occasional Mississippi River diversions, creating complex pathways that may influence microplastic movement throughout the lake. This study investigates the abundance and potential transport of microplastics within Lake Pontchartrain by combining field observations with hydrodynamic modeling. Water samples were collected from nine sites throughout the lake and analyzed for suspected microplastics. Particles were identified and classified by type, including fibers, fragments, and transparent films. Microplastics were observed across multiple sampling sites, with differences in abundance and particle type between locations. Field observations were incorporated with a Lake Pontchartrain Delft3D model to examine how hydrodynamic conditions and diversion flow may influence microplastic distribution and transport. Modeled diversion-flow exposure times were used to evaluate spatial differences in water movement across the lake under multiple exposure scenarios. Combining observed microplastic abundance with hydrodynamic modeling provides insight into the relationship between water movement and microplastic distribution and may improve our understanding of how microplastics are transported throughout Lake Pontchartrain.

Pham, Kala

Tuning Into Reality: How Social Media Affects Gen Z’S Daily Lives

This research focuses on the effects of social media on Generation Z and how it greatly influences their self-perception, behavior, values, and daily lives. Discovering the effects of social media on Generation Z will reveal how it influences their motivations, mental health, and social interactions. Research shows that Generation Zs’ social media uses links to their emotional expressivity, emotion regulation, self-esteem, academic achievement, and personality traits. The purpose of this research is to examine both positive and negative social media effects on Generation Z. This study also aims to understand whether social media influencers play a role in how Generation Z perceives themselves, makes decisions, and develops standards. This study will conduct a survey to collect data from Generation Z participants. The survey will collect information on social media habits and engagement with influencers. In addition, scholarly articles and prior research will provide insight into the current research on the topic. The survey results, combined with the literature review, expand knowledge of social media connections among Generation Z. Future research could explore how excessive social media use may have long-term effects on Generation Zs' identity, social development, and psychological well-being over time and into adulthood.

Generation Z has grown in an era where social media is the primary focus of their daily lives. Research suggests the overuse of social media could impact mental health, physical well-being, and social interaction. Social media is implemented into Generation Z's daily routines, serving as the new form of communication, entertainment, and self-expression. Face-to-face interactions are decreasing due to online communication. Some studies suggest that the overuse of social media undermines community involvement and social interaction. Platforms such as Instagram, TikTok, Facebook, Snapchat, and X have been shown in research to be associated with excessive social media use. This study examines how different levels of social media use, including excessive use and limited or no use, influence Generation Z's mental health, social interactions, and physical well-being.

Quinn, Jack

Evaluating Vulnerability Detector: Generalization to LLM-Generated Code

Large language models (LLMs) are increasingly integrated into software development, yet continuous integration and continuous deployment (CI/CD) security pipelines often apply the same vulnerability detection tools regardless of code provenance. We hypothesize that this uniform treatment is insufficient because LLM-generated and human-written code may exhibit different vulnerability patterns, potentially limiting the generalization of detectors trained on human-written code. As AI-assisted development becomes more common, understanding these differences is important for building reliable security workflows.

In this research preview, we evaluate existing vulnerability detectors across multiple datasets of human-written and LLM-generated C/C++ functions to investigate their generalization to LLMgenerated code. Our work focuses on evaluating selected language models, predominantly BERT-based models, and comparing their performance before and after fine-tuning. Initial findings show that the evaluated models have poor generalization and perform better when fine-tuned. These findings highlight the importance of evaluating detectors across different code sources and examining how fine-tuning can improve vulnerability detection.

To address this challenge, we propose PIVD (Provenance-Informed Vulnerability Detection), a provenance-aware framework for pre-merge security analysis. PIVD retains existing static application security testing (SAST) tools for human-written code while routing LLM-generated code, identified through available provenance metadata, to specialized vulnerability detectors. By incorporating code provenance, PIVD augments rather than replaces existing SAST tools, enabling tailored vulnerability analysis for different code sources. The framework connects our evaluation work to the practical goal of improving security analysis within CI/CD pipelines.

The next stage of this work will use the fine-tuned models to evaluate performance on the selected datasets. These results will guide model selection for a specialized vulnerability predictor, which will be trained on a large, generalized dataset with the goal of integration into a CI/CD developer tool. The current findings establish poor generalization and improved performance after fine-tuning as key considerations for this development. This research advances toward more reliable, provenance-aware security workflows for AI-assisted software development.

Creative Activity Abstracts

Schexnider, Kylee

Preserving Cajun Folklore Through Mediums of Storytelling

In 1755, the ancestors of people who are now known as Cajuns, were forced to surrender their homes and land, or sign an oath that stood against their own people. As a result of this Great Expulsion, the Acadiens, now known as Cajuns, lost a great deal of their population through sickness and close quarters on long journeys to a place they have not considered home in decades. The few that survived, migrated to what is now deep south Louisiana. The Cajuns are rich in culture and yet their stories and traditions struggle to be shared to later generations. One of those stories being a swamp monster, The Rougarou. It is often described as half beast, half man, who fell victim to their own temptation. A curse that is inflicted by another Rougarou or in some stories a witch. Through the lens of screenwriting this story would be given a chance to drive mass human empathy, be exposed and therefore preserved in global culture. If told through animation, another powerful medium, it would turn this very creolized story into a visual experience that connects to emotions, and crosses cultural boundaries.

I am proposing an exploration and preservation of Cajun Folklore and Oral Tradition through various modes of storytelling. Through Screenwriting, I will organize the Rougarou narrative into a three act structure, developing and pushing the film forward through action, dialogue and behavior. Through storyboarding and imploring all 12 of the Animation principles the unique story revolving around cajun folklore will be captured visually and therefore safeguarded.

Lightning Talk Abstracts

Azzam, Sarah; Justice, Sophie

Development of a Hybrid Hydrogel-Exome System for Targeted Drug Delivery in Lung Cancer

Cancer drug delivery, particularly in the treatment of lung cancer, currently requires prolonged and repeated treatment with numerous side effects. The clinical use of chemotherapeutic drugs is effective against lung tumors, but their extensive toxicity to healthy cells necessitates new strategies. Advanced delivery systems have the potential to address this limitation. Hydrogels are three-dimensional polymer networks that serve as scaffolds capable of releasing drugs in a controlled manner tailored to a tumor's characteristics. Additionally, exosomes are small, cell-generated lipid vesicles that act as nanocarriers that potentially minimize systemic toxicity by shielding the drug from healthy tissue and either actively or passively targeting tumors. While hydrogels and exosomes are intended to increase drug retention and reduce side effects, they have limitations when used alone, such as poor targeting or early degradation. A delivery system that unites the two offers an advantage in delivering chemotherapeutic agents by combining hydrogels' sustained drug release capabilities with exosomes' improved tumor localization. The objective of this work is to develop pH-sensitive hydrogel-exosome hybrids loaded with P4, a pyrazolone compound that has demonstrated antiproliferative activity against non-small cell lung cancer cells (A549 and H522) but also exhibits high cytotoxicity toward noncancerous human lung fibroblasts (HLF). An initial prototype of a P4-loaded hydrogel without exosomes was fabricated using chitosan, a polymer chosen for its biocompatibility and biodegradability. A solid, deep-blue gel formed after 48 hours of crosslinking, and the structure became visibly porous after freeze-drying. The chitosan underwent a dual ionic and covalent crosslinking process with sodium tripolyphosphate (TPP) and genipin; TPP forms reversible ionic bonds that weaken at low pH, whereas genipin forms irreversible covalent bonds that maintain structural integrity. This dual crosslinking is expected to yield a pH-responsive hydrogel that is stable at neutral to high pH and swells at low pH, accelerating drug release once in the mildly acidic tumor environment. The freeze-dried hydrogel will undergo comprehensive characterization, including Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and Raman spectroscopy. Future research will include testing different chitosan concentrations and crosslinker ratios to optimize the hydrogel's properties. Later, yogurt-derived exosomes will be incorporated due to their low immunogenicity, stability in the body, and accessibility. The drug-release kinetics of this exosome-loaded gel will be evaluated across different pH levels. This work will generate a biologically compatible drug-delivery platform with the potential to improve lung cancer treatment outcomes by localizing drug release, providing a foundation for future translational research.

Bailey, Caroline

The Effects of Developmental Care and Kangaroo Care on Physiological Outcomes in Premature NICU Infants

Premature birth remains a major global health concern and is associated with increased risks of physiological instability, developmental delays, feeding difficulties, and long-term neurodevelopmental complications. Although neonatal intensive care units (NICUs) provide essential medical support for premature infants, the NICU environment can expose infants to numerous stressors, including frequent medical procedures, excessive noise, bright lighting, and repeated handling. Developmental care interventions have been developed to reduce these stressors and promote more individualized, supportive care. One widely used developmental care intervention is kangaroo care, which involves direct skin-to-skin contact between an infant and a parent or caregiver. This literature review examines the effects of developmental care practices, particularly kangaroo care, on physiological regulation and developmental outcomes in premature infants receiving NICU care. Primary research articles were identified through PubMed, Google Scholar, and Web of Science using search terms related to kangaroo care, developmental care, neonatal intensive care, physiological stability, and neurodevelopmental outcomes. Studies were selected based on their focus on preterm or premature infants and their evaluation of physiological, stress-related, or developmental measures.

Current evidence suggests that kangaroo care and other developmental care interventions positively influence several indicators of physiological stability. Reported benefits include improvements in oxygen saturation, cerebral oxygenation, heart rate regulation, respiratory stability, temperature maintenance, perfusion, and infant comfort. Developmental care strategies have also been associated with reductions in pain and stress responses during routine NICU procedures. Additionally, several studies indicate that early and prolonged exposure to kangaroo care may contribute to improved neurobehavioral functioning, cognitive development, language outcomes, and adaptive behavior during infancy.

The findings of this review support the growing body of evidence that developmental care interventions, particularly kangaroo care, provide meaningful physiological and developmental benefits for premature infants. These practices may promote greater physiological regulation, reduce the effects of environmental stressors, and enhance long-term developmental outcomes. Continued implementation and evaluation of evidence-based developmental care strategies may improve the quality of care delivered in NICUs and contribute to better health outcomes for vulnerable premature infants.

Bradford, Andrew

Building a Large Format 3D Printer

Have you ever wanted to 3D print the chair you are sitting in? Maybe not, but Large Format Additive Manufacturing (LFAM) would allow you to do just that. Large-scale 3D printers, specifically Fused Deposition Modeling (FDM) printers, or the extrusion of thermoplastics layer by layer, allow for faster prototyping of large-scale projects since little to no assembly is required.

The University of Louisiana at Lafayette does not currently have a large-scale FDM 3D printer. Typically, industrial grade printers of this scale cost tens of thousands of dollars to purchase, so undergraduates in the Cajun Integrated Computational Materials Engineering Lab (C-ICME) have been developing their own, with every decision made to be budget friendly yet engineering sound.

The frame of the printer has been repurposed from the aluminum frame of a 3 feet wide, 8 feet long, and 6 feet tall crane model. The gantry uses motors connected to timing belts in the X and Y plane, and lead screws in the Z plane for movement across three dimensions, making it a fixed bed cartesian 3D printer. The bed will stay fixed since it is safer to move less weight at this scale.

The largest investment in this project will likely be a pellet extruder. Though industrial pellet extruders can approach $10,000, thermoplastics in pellet form are a cheaper alternative to filament spools in large applications. Additionally, pellet extruders allow for a mixture of materials and creation of copolymers as the protype is being printed. Future works of this project will be optimizing polypropylene (PP) for large-scale printing for its water- and heat-resistant properties, as the lab has an abundance of pellets of this polymer. The challenge with printing PP is that it will only adhere to itself, so the print bed would have to be covered by a layer of PP before printing. One day, we will be able to print a boat.

Chatman, Maggie

Mechanical Characterization of Knee Wraps

In equipped powerlifting, lifters widely believe that knee wraps, squat suits, and bench shirts store elastic energy during the lowering phase of a lift and return it during the ascent. Existing research has largely examined what lifters do while wearing this gear, including changes in kinematics, force output, and loads lifted. Very little work has characterized the gear itself, and to my knowledge no study has directly measured how much elastic energy these garments store and return. As a result, the claim that equipment “gives something back” rests on lifter perception rather than quantitative evidence.

This project asks how much elastic energy powerlifting equipment stores and how much it returns. As the first stage of a multi-year effort, I focused on the simplest component, the knee wrap.

Strips were cut from a titan support systems knee wrap and tested using a tensile tester, with force and elongation recorded continuously. Each strip underwent repeated stretch-and-release cycles. Loading and unloading curves were compared, and the area under each was integrated to calculate the energy stored (loading) and returned (unloading). The difference between the two represents energy dissipated as heat within the material, a property known as hysteresis. Cycling was used because a material that returns less energy than it stores behaves differently from an ideal spring, and its properties may change with repeated loading.

At 50% stretch, the wrap stored 0.4 J per gram and returned 70% of that energy. The loading and unloading curves did not overlap, confirming measurable hysteresis, but the wrap material did return a substantial portion of the energy put into it. These results show that knee wrap material functions as an elastic spring, storing and returning energy, while also losing a measurable fraction as heat. This provides a first quantitative basis for a claim that until now has been anecdotal. The findings have limits. A strip tested in a lab does not capture a wrap applied to a knee, where overlapping layers, friction, and joint geometry affect behavior. In addition, the testing speed was slower than the movement speed of an actual lift, and elastic materials can respond differently at higher rates. This work therefore characterizes the material, not the full system. Future work will test at higher strain rates, in wrapped configurations that replicate real application, with the long-term goal of replacing “it feels like it helps” with measured values.

Chianelli, Cade

Conceptual Design for Lunar Manufacturing

The purpose behind this research is to examine the feasibility behind using lunar regolith and electrical arcs to generate a structure that is cheap and reliable for future lunar colonization. The proposed machine would continuously feed nearly unfiltered regolith into a melting region and push the molten material through a nozzle. Similar to 3D printing, this would be deposited and allowed to solidify into the desired geometry. This process of using regolith for construction would greatly reduce or eliminate the need of structural material that would have to be transported from Earth. However, the process would need to produce material at a useful rate while keeping energy requirements manageable and the finished material consistent.

This research would focus on balancing three things: how much material the machine produces, how much energy it uses per kilogram, and the quality of the material after it solidifies. These data points would have to be considered as a whole because improving one part of each of the three may affect the others. Increasing the feed rate could increase production, but the regolith would still need enough time and energy to melt before moving through the nozzle. Applying more power may help maintain melting, but the effect on energy use per kilogram would also need to be examined.

The material processing would have three key areas of evaluation: melting, movement through the nozzle, and cooling to determine where the material might fail or production might slow down. Material and energy balances would make up most of the work as they would be used to estimate how changes in feed rate, arc power, and nozzle design could affect the process. The cooling of the material is especially important as it would be closely examined to understand how quickly the deposited material could hold its shape and whether uneven cooling could cause cracking or other inconsistencies. Failures in either of these areas could result in a nearly unusable system. Regolith simulant would be needed for real world data like flow stability, energy use, and the strength. In the meantime, simulated environments or estimations could be used to show promise.

The project is currently conceptual, and no experimental results have been collected. The goal of this is to identify the main design questions and develop a basis for future modeling and testing. If the continuous arc process shows promise then it could be an incredibly cheap way to produce lunar structures.

Cornette, David

An Interpretation of “The Moldau” by Smetana

The Moldau is a piece by Bedrich Smentana, a Czechoslovakian composer born in 1824. The piece represents the mighty Moldau river that spans Czechoslovakia yet begins from two modest streams in the Bohemian forest. (Britannica editors, Britannica) The piece attributes a sense of Czechoslovakian culture and does a great deal to immerse the listener into 19th century Bohemia and the rolling hills surrounding Prague. The Moldau is an orchestral piece written in the Romantic Era and is relevant to understanding Romantic Era style themes, and structure and how they compare to modern works. The piece has a written meaning but to me in my analysis of its exposition, I believe depicts the beginnings of a young couple's journey through life as the river is made of two smaller rivers that together form the Moldau.

Courville, Andrew

Using the Arts as a Means of Political Activism

It’s important to balance the need for political discussion with the preference to stay away from the division, frustration, and dullness that politics can bring. This research proposes using the arts as a means of political activism. It introduces a classification of political messages, teaching it to a generation of disaffected citizens, and inspiring them to act on causes they’re passionate about. The methodology identifies a qualitative approach to analyzing the forms of media for their level of political overtness or subtleness, and how that differs by method of interpretation: textualism, originalism, and interpretive freedom. Art is a complex field, including photography, sculpture, musical theatre, books, movies and television, meme culture, and more. Combined with the unique conditions and intentions of each artist, it should be expected that not all art has clear political meanings. Individuals are expected to have a greater political understanding of art with the most overt messaging and the kind they have the most exposure to. An empirical approach assesses various pieces of art on an axis of subtleness to overtness. Then, interviewees are questioned about the political messages of a piece of art of their choosing. After a discussion viewing the art again, the interviewee is tested a second time about how their perception of the art has changed and whether they feel more inspired to take action. This addresses the literature gap about formulaic approach to explaining politics through art. Future research may produce a process to quantify how political a piece of art is and how effective it is at inspiring activism. Challenges likely remain around how much guidance an individual will need to detect political messages, and therefore make a connection strong enough to turn it into action.

Doll, Anna

Additive Manufacturing in Research of Orodispersible Films (ODFs)

Orodispersible films (ODF) are thin, sheet - like drugs that dissolve orally. The main goal of ODF's is to ease the taking of certain medications, especially for young children, elderly adults, and individuals who struggle with taking conventional forms of medicine. Although ODFs were commercialized in the late 1990's, there are still many opportunities that remain to improve their manufacturing process, formulation, and effectiveness. The research involves finding a way to optimize the production of this drug delivery system for industry and optimize the drug itself for the general public. The proposed manufacturing process proposes utilizing binder jetting technology as well as inkjet printing technology. Similar to inkjet printing, this proposed design uses microscopic droplets delivered through tiny nozzles to achieve particle placement. In this design, the nozzles could deposit the API and selected excipients allowing more control over drug composition and distribution. This system will consist of an XY gantry system, an inkjet printer head and feeder system, and a sectioned polymer bed. This polymer bed will allow for more specialized drug distributions, such as controlled release or Bilayered drugs. In addition to developing a manufacturing system that could be used on a laboratory scale, this research will also determine the engineering standards that are necessary for the production of effective ODFs. In addition, material selection will be very important to consider for the design of the system, as it has to uphold Good Manufacturing Practice (GMP) codes for sanitation. For example, the parts of the system that will touch the API and selected excipients must be smooth, nonporous surfaces composed of either stainless steel, coated metals, or approved plastics. Ultimately, this research aims to test the feasibility of binder jetting and inkjet additive manufacturing methods with the production of ODFs. Overall, this project aims to contribute to the development of reliable and efficient drug delivery systems.

Donoghue, Susannah

DRL+GNN Architecture Tested on New Topologies

As consumers' needs grow, network strain increases. Thousands of messages are passed across nationwide Internet provider networks every day. In order to keep up with the rising demand, especially with the increase in AI datacenters across the country, providers and companies responsible for data centers have to adapt. In "Deep reinforcement learning meets graph neural networks: Exploring a routing optimization use case," Paul Almasan explores implementing Graph Neural Networks (GNNs) into Deep Reinforcement Learning (DRL). This architecture allows for generalization over unseen scenarios.

In his testing code, Almasan tests the DRL+GNN architecture on four different network topologies: the National Science Foundation Network, GEANT2, the German Biobank Network, and a small test topology. The architecture's performance is then compared to two other architectures: the Load Balancing Agent (LB) and the Shortest Available Path (SAP). To further test the efficacy of the DRL+GNN architecture, the following study aims to evaluate the architecture on three more topologies: the spine-leaf topology, the three-tier topology, and the star topology. Spine-leaf and three-tier are both commonly used in AI datacenters. Here, the star topology acts as a control. Since all nodes are tied to a central node, DRL+GNN, LB, and SAP all perform the same.

The model will be trained with 50, 100, 500, 1000, and 10000 iterations, and compared against the SAP and LB models each time. If the DRL+GNN is trained with more episodes, it will outperform the LB and SAP architectures. However, the training is resource intensive and takes a long time to see significant results. This is useful to reduce emissions and increase sustainability as data centers become more prevalent and AI is incorporated into more aspects of everyday life. For future work, it will be beneficial to apply this test to topologies of nationwide Internet providers and data centers to evaluate for efficiency.

Duhe, Luke

Grosse Sonate op. 11 by Robert Schumman

Grosse Sonate, Op. 11 by Robert Schumman is a piano sonata written in 1835-1836 for his wife Clara Schumman. He refers to the piece as a “Grand Sonata” expressing all of his emotions and passions in a lyrical but still dramatic arrangement.

Starting in the very beginning, measure one comes in with this idea that flows slowly and sweetly. The somewhat repeated rhythms matched with a major key for most of the introduction makes it feel at home although the overall movement is in minor. Then closer towards the end of the section it gets a little more on edge, as if it feels like it’s missing something, with switching to a minor key allows us to feel more like were a little lost not knowing what will happen next. Without love in our lives its normal to feel like we’re missing something until it comes along and he portrays that emotion very well in this piece. Then in the next section of the piece, on the third page it picks up, everything gets more excited and happy but still a sense of there being some fear of some sorts. It goes back and forth between major and upbeat to minor and slow multiple times over the course of this second section. I believe this is signifying he’s met the person that is going to be his wife and he’s so excited to get to see her but scared to talk to her. He continuously excites himself every time he’s going to see her but shuts down in fear of rejection and embarrassment. Coming across as the dynamics and modes in the piece is different yet effective way to tell the story of one’s peak and downfall.

The last two pages are the last section where he gives up. It goes back to the original melody from the beginning of the piece but this time in a quieter and more uneasy feeling. I think this symbolizes him giving up on trying to peruse his future wife because he believes he cannot do it. Trying to live his life as he once was but still feeling that missing something mixed with his regret of not trying harder while he had the chance. It ends in a very upsetting way because the whole piece leading up to the ending is all back and forth, but it finishes more unsettling than expected. Again, a very well-rounded viewpoint of emotions in the ending because still his life is good its just missing someone which is noticeable without a doubt.

Mader, Sophie

Challenges in Developing Treatments for Usher Syndrome

Introduction: The research question of my project is "what factors about Usher syndrome make it so challenging to provide/design effective treatments for affected individuals?" Usher syndrome, also known as USH, is a genetic disorder that causes hearing loss and progressive vision loss. There are three different types, USH1, USH2, and USH3. These types are characterized based on the phenotypic effects they produce. Understanding the reasons behind why Usher syndrome is hard to treat is crucial in further developments towards a cure.

Methodology: My research involves synthesizing a literature review after reading different peer reviewed articles in order to determine how current literature answers my research question. I'm doing this by using databases such as Web of Science and ULL's own library catalogue to find articles. My literature review is currently in progress.

Results: The preliminary findings of my literature synthesis currently suggest that one of the main reasons Usher syndrome is challenging to treat is because of its genetic heterogeneity, i.e. the fact that the disease can be caused by mutations in different genes across the human genome. There are currently nine different genes identified as being related to USH. Pathogenic variants of these genes are the underlying cause of USH. There is much variation in the mutations across the three types of USH and within individuals of the same type. The uncertainty surrounding the relative contribution of specific pathogenic variants is another factor that makes USH challenging to treat. Different pathogenic variants may require different treatment approaches.

Significance: The results suggest that, with further research into the Usher related genes, gene therapy could prove a future effective treatment for the disease. A better understanding of these genomic challenges could lead to development of effective treatments that are specific to a certain individual's genome. Identifying the relative amounts that pathogenic variants of genes contribute to Usher syndrome can help researchers prioritize potential therapeutic targets. The importance of understanding and identifying different Usher related genes is highlighted across current research.

Mire, Kylie

Back and Forth: A Conversation in Amanda Maier's Violin Sonata in B Minor

In the second movement of Amanda Maier's Violin Sonata in B minor, the continuous dialogue between the violin and piano creates a sense of contrast and, ultimately, unity at the end of the piece. The instruments exchange melodic material, imitate one another, and shift between having the melodic and accompaniment role. In the first section of movement two the violin introduces the central melody of the piece to establish the lyrical character of the piece and familiarize the listener with the central melody. As the phrase develops, the melody is handed off to the piano, shifting the musical focus from one instrument to another. This exchange establishes a pattern of musical dialogue that will be seen through the rest of the piece, in which neither instrument is left with the full responsibility of carrying the melodic line. The violin and piano create a feeling of continuity as the melody moves between each instrument. This overall idea shows a deviation from the typical role of the piano, instead of being the accompaniment it is used as an equal part of the melodic line rather than just a source of harmonic support. The middle, Allegretto, section introduces a new melody and a new way the violin and piano interact. Unlike the opening section, in which the melody is passed from one instrument to the other, this section features both instruments performing the same melodic material with one beat of separation. The piano follows the violin by one beat, creating a canonic texture through the delayed imitation of the melodic line. This overlapping relationship allows the listener to hear the same musical idea in two different instrumentations while maintaining a sense of forward motion. As a result, the Allegretto section provides a contrast to the opening while continuing the movement's central idea of musical conversation. The concluding section, Tempo Primo, returns to the original tempo and opening melody, reestablishing the lyrical character seen in the beginning of the movement. The violin once again presents the familiar theme, reminding the listener of the musical material of the overall piece. The piano again restates the melody, returning to the pattern of melodic exchange heard in the opening sections. This return to the opening material creates structural unity as this main theme is both the first and last thing the listener hears. This return is significant because it reinforces the relationship between the two instruments by allowing each to present one half of the main melody. As the movement approaches its conclusion, the violin and piano finally come together, playing the melody together in one unified line. This convergence provides a sense of resolution and finality to the ongoing conversation by transforming their back-and-forth exchange into a unified musical dialogue.

Pryor, Alana

Evaluating the Mechanical Properties of Epoxy Resin

Epoxy resins are versatile polymer based materials that are widely used in industries such as automotive manufacturing, construction, electronics, and aerospace engineering. Their applications range from structural adhesives and protective coatings to components requiring strength, durability, and resistance to environmental conditions. However, the mechanical performance of epoxy resins can vary depending on their chemical composition and formulation. Understanding these variations is essential for determining how different epoxy based materials respond to external forces and identifying their suitability for specific engineering applications.

The purpose of this research is to investigate and compare the mechanical properties of different epoxy resin formulations provided by an industrial company, with a particular focus on their behavior under compressive loading. Although the samples are all epoxy based materials, differences in their formulations may influence their compressive strength, stiffness, deformation characteristics, and overall mechanical reliability. By evaluating these properties, this study aims to establish relationships between variations in resin composition and measurable differences in mechanical performance.

The experimental process will involve sample preparation and mechanical testing. A waterjet cutting machine will be used to prepare the epoxy resin samples to consistent dimensions, helping minimize variations associated with specimen geometry. Following preparation, the samples will undergo compression testing using a mechanical testing machine that applies controlled compressive loads. Measurements obtained during testing will be analyzed to evaluate the materials' responses to increasing forces, including their resistance to deformation and potential failure. The results will then be compared across formulations to identify differences in mechanical behavior.

As this research is currently ongoing, experimental findings have not yet been established. However, the anticipated outcomes include identifying which epoxy resin formulations demonstrate greater compressive strength, stiffness, and resistance to deformation, as well as determining potential mechanical limitations. These comparisons may provide insight into how variations in material composition influence performance and whether certain formulations are better suited for applications involving compressive forces.

The significance of this research lies in its potential to support more informed material selection and improve the understanding of epoxy resin performance in engineering applications. By identifying the strengths and limitations of different formulations, this study seeks to contribute to the development and selection of materials that provide greater mechanical strength, durability, and reliability in practical applications.

Schwarz, Grace

Human-AI Collaborations in a Qualitative Analysis

As the pace of technology development accelerates, information systems researchers must find a way to expedite our research contributions to keep pace with ongoing innovation. Artificial Intelligence (AI) can accelerate the analysis process, improve the quality of results, and provide results much faster than using traditional analysis methods. Expecting that AI will be transformative for research, researchers are widely using AI tools, often for primary tasks. However, with dramatic increases in AI use over the past few years, researchers still struggle with effectively using AI in their studies, including which prompt engineering practices are most appropriate for research. This may be due to a lack of research-based, practical guidelines in qualitative analysis using AI. However, there has been considerable debate surrounding the use of AI in qualitative research. Some scholars argue for prohibiting the use of AI in qualitative research, while others encourage the use of technology to modernize the process. While the debate continues, researchers have begun analyzing the ethical and practical considerations surrounding the use of AI for qualitative analysis. Extant studies have considered its accuracy, compared it to human analysis, and listed ethical concerns with its use. Rather than focusing on these issues, we assume that the reader has already considered these factors and has chosen to pursue the use of AI for qualitative analysis. Thus, we seek to provide specific guidelines for using AI to analyze qualitative data, for those researchers who choose to employ this emerging approach. We focus on employing research-based methods to produce accurate analyses based on best practices of using Large Language Models (LLMs) and suggest a framework and guidelines to follow while using AI for qualitative analysis. Utilizing qualitative interview data on creativity with IT, we compare data analysis using AI with traditional qualitative analysis methods to provide guidelines on how researchers can work with AI as an additional analyst to attain analyst triangulation, provide cross-data validity checks, and offer opportunities for more nuanced insights into the concept being studied.

Tatum, Michaiah

Explorations of Rhythm in Music Analysis

In Lalo's Cello Concert in D Minor, he establishes the feeling of resilience in what seems heavy and dark until a deeper listen even despite its minor key. Building an expectation of where the music is moving, he uses rhythmic contrast in the cello and orchestra to push the piece forward. Teetering between duple and triple pulses, and, a tempo and ad libitum, Lalo creates a sense of push and pull, playing with the rhythm and we will understand how he solidifies the sense of resilience through analysis.

In the concerto, the time meter is 12/8. This is a special meter because twelve can be divided into both two and three, that is (6 x 2), or (4 x 3). Lalo uses this to experiment with the rhythmic pulse. For the sake of discussion, you must know that 12/8 falls into four main beats where three eighth-notes make up each main beat. How the notes are broken up is left to the composer, and partially the musician who is counting.

There is a certain freedom in the way these beats are displayed and actually played. The cello has ad libitum written in the music, which is latin for "at one's pleasure." While the cello has ad libitum there is nothing else being played in the orchestra which allows the cellist to decide how to play the notes and their values, within the confines of what is allowed and reasonable. Then there is a tempo which means to return to the original tempo. In mm. 10, and mm. 12 when the cello has a tempo the orchestra plays a big chord on the 4th beat. In mm. 10, a fully diminished 7th chord is played, and then in mm. 12, fully diminished 7th of V which acts as a half cadence. This especially being on the fourth beat propels us into the exposition and when this pattern returns, it is always to move us forward. When the piece feels like it might end, there are sections of sixteenth-note runs in mm. 111-116, and mm. 141-156 to modulate and take us somewhere new. The sixteenth-notes return in mm. 211- 232 when the orchestra takes over for the ending, resembling the way the piece started, yet more triumphant and victorious than ever before.

In the majority of the music analysis field, harmonic analysis is most often the focus. I want to look at how rhythm influences what the notes are making us feel.

Williams, Alyana

The Birth Order Effect

Birth order is simple. It’s the numerical rank of an individual among their siblings. Although previous research suggests that birth order has little to no significant effect on emotional development, this study challenges the idea that “age ain’t nothing but a number” by exploring how an individual’s position within the family and the dynamics surrounding sibling relationships may influence emotional growth. Psychologist Alfred Adler provides a theoretical foundation for this research through his theory of Individual Psychology, which emphasizes the importance of social connection, feelings of inferiority, and an individual’s place within their family. Alongside Adler’s perspective, this research aims to answer a central question: Is birth order merely a numerical ranking, or does it hold deeper implications for emotional development?

Poster Abstracts

Abshire, Ana

What's Going on with Grunt Sculpin? An Examination of Morphology Using CT Scans

For thousands of years, fish have adapted to a way of moving that has not changed much over species and is easily identifiable. Typically, movement is guided by fins and a tail and uses pectoral fins for smaller movements like stability or help maneuvering (Westneat et al., 2004). One specific fish species, the Grunt Sculpin, can be seen using a "walking" motion where their fins act as legs and allow the head and body to move independently, which is unusual in fish. These fish have "improved control over the shape of fin surface, and therefore, over overall fin function" (Taft et et., 2023). Because this movement is not usually observed in fish, it may suggest a specialized movement unique to this species that has yet to be identified. Using CT scans of the grunt sculpin, the movements as well as the muscular makeup of the fish can be observed to help better understand their unique movements and how this relates to other species.

In performing this research, we hypothesize that the Grunt Sculpin may have developed a different muscular makeup of the pectoral and pelvic girdle than other fish. This may be what allows the movement of the girdle, as well as a certain machinery that allows the "walking" motion to take place.

CT scans of the Grunt Sculpin will be observed and run through three-dimensional software to isolate each muscle and tissue and apply this to how the fish move. The segments obtained through scans and slices will help identify differences between sculpins and other species of fish, as well as a possible mechanism that allows for their type of movement.

It was expected that there was some mechanism within the bones and muscles observed that help propel the fish, whether that is a spring-like system that propels the fish or less restrictions in the fish's muscles that allow it to be so free-moving. The results of the CT scans can be compared to other fish to observe evolutionary differences or even similarities in physical makeup. The results of using the Slicer program to observe the bones showed that there is fusing in the pelvic and pectoral girdle, which may help them propel. The postcleithrum, a bone in the fish, are also bigger in Grunt Sculpin than in poachers. This could support the fact that this bone helps in specialized movement.

Adams, Ethan

Clonal Diversity of *Spartina alterniflora* (Smooth Cordgrass) Across Tidal Elevation in Louisiana and Florida Salt Marshes

Salt marshes are critical estuarine grassland that provide numerous ecosystem services but are currently threatened by a host of anthropogenic stressors (i.e. sea-level rise). Salt marshes are shaped by strong environmental gradients in flooding, salinity, and anoxic soil that vary greatly across tidal elevation. These gradients shape the plant community driven by plant trade-off in physiological stress tolerance and competitive ability. Along the Gulf Coast, Spartina alterniflora (smooth cordgrass) is the foundation clonal plant that dominates the low to mid-marsh. Spartina provides habitat for various benthic organisms, stores carbon, and has been shown to aid in erosion mitigation. Spartina genotypic richness naturally varies across small-spatial scale and can be shaped by the aforementioned environmental stressors. Here, we investigated whether the clonal diversity varied across stress gradients across multiple Gulf Coast marshes. To do so we collected eight to twelve tissue samples in eight quadrats, four placed in the low marsh and high marsh respectively, at two sites in Louisiana and two sites in Florida. To assess Spartina genotypic richness and differentiation across both sites and tidal elevation, we genotyped each individual using ten microsatellite markers developed specifically for Spartina. Microsatellite markers used are largely neutral, thus, we are not testing directly for stress adaptation, but they are useful to identify individuals and variation in genetic identity that could be suggestive of environmental selective gradients. Individual clones were called on GenoDive. Using this, we tested for allelic richness, and clonal diversity across sites and tidal elevation. In addition, we also looked at pairwise Fst and AMOVA to determine the source of variation among individuals, tidal inundation, and geographic regions. We found some variation among geographic locations and tidal inundation. Based on these findings, Spartina diversity may help buffer the response of saltmarshes to inundation stress associated with sea-level rise and should incorporated into restoration to increase resilience and future success.

Albert, Sonja

Species delimitation in tube-snouted Amazonian electric fishes (*Sternarchorhynchus*) using micro-computed tomography and geometric morphometrics

Species richness is the most widely used metric of biodiversity, serving as the common currency for conservation planning, biogeographic comparisons, and evolutionary studies of diversification. Accurate species counts, however, depend on species boundaries that remain poorly resolved in megadiverse tropical faunas, where many lineages are still undescribed. Tube-snouted ghost knifefishes of the genus *Sternarchorhynchus* include more than 30 valid species, making this the most diverse genus in the South American electric fish family Apteronotidae. Species boundaries in this clade are difficult to resolve because diagnostic characters overlap among congeners, and the long, narrow skull varies with growth, sex, and habitat. Earlier comparative work showed that long-snouted skulls evolved at least twice within Apteronotidae and that skull shape changes readily among closely related species. Here we use high-resolution micro-computed tomography (μCT) to reconstruct the skeletons of 38 specimens representing 25 nominal species from across Greater Amazonia. We quantify shape variation in six morphofunctional skeletal units (neurocranium, suspensorium, oral jaws, opercular series, pectoral girdle, and Weberian apparatus) using 22 landmarks, and compare alternative species hypotheses with principal component analysis. Skull shape sorts specimens into clusters that largely match recognized species and also reveals several cryptic lineages with partially overlapping phenotypes. Snout length and braincase proportions vary partly independently, suggesting that the long-snouted skull is built from two separate developmental modules, a pattern known as heterocephaly. These results show that 3D geometric morphometrics provides diagnostic characters that complement traditional meristic counts and external measurements, offering an integrative framework for delimiting species in a taxonomically difficult clade. More broadly, geometric morphometrics can reveal previously unrecognized lineages where external characters fail, sharpening estimates of species richness and of the true scale of Neotropical freshwater fish diversity.

Alexander, Joshua

Magnitude vs. Sensitivity Based Parameter Pruning in Hyper-Parametrized Machine Learning & AI Models

In modern machine learning, over-parameterized models commonly possess significant redundancy, leading to high computational and memory costs. As models become more complex, parameter pruning offers a solution to the growing overhead cost of running machine learning & AI models. The primary goal of parameter pruning is to essentially remove as many parameters as possible without losing validation accuracy in a model. This study evaluates two parameter pruning methods, Saliency-Based Pruning (SBP) and Magnitude-Based Pruning (MBP), to resolve which method better preserves validation accuracy under intense model compression. A completely connected regression neural network with 2,233,600 weights was trained on the Weather in Szeged (2006–2016) dataset to predict apparent temperature from ten different meteorological attributes. Each pruning method was applied to a baseline model with a set pruning schedule from 10% to 90% sparsity. Validation accuracy was measured by mean squared error (MSE) and efficiency was measured by inference latency. Magnitude Based Pruning, which ranks weights by computational magnitude, slightly improved on the baseline model at lower sparsity. (MSE 26.74 at 20% versus 38.51 at baseline). MSE started to degrade past 50% sparsity and reached an MSE of 130.54 at 90%. Saliency Based Pruning, which ranks parameters by a first-order Taylor estimate of their effect on error, held test loss at the baseline across all sparsity levels, including 90%. However, neither method reduced inference latency at 80% sparsity. This shows that faster dense computation is not a consequence of unstructured sparsity. These results suggest that the individual magnitude of model weights is an unreliable metric for saliency. They also suggest that hybrid structured pruning may lead to much more practical speedups. Results on a much more compact model might prove more significant given the sheer number of weights compared to inputs for the model we used. Future research would be centered around developing a hybrid pruning schedule that combines SBP and MBP and applies them at specific intervals during pruning. This would be ideal for applications involving structured tabular data or supply chain demand forecasting.

Ashurst, Katherine

Investigation of Advanced Oxidation Processes for Treatment of PFAS-Contaminated Waters

Per- and polyfluoroalkyl substances (PFAS) are a class of over 14,000 synthetic compounds that are valued for their thermal stability, surfactant properties, and resistance to water, oil, and degradation. These properties make PFAS environmentally persistent, mobile in water and soil, bioaccumulative, and non-biodegradable. PFAS are difficult to remove using conventional treatments due to their high number of carbon-fluorine bonds.

PFAS have been detected in produced water with a notable presence of perfluorobutanoic acid (PFBA). Much of these PFAS come from use of contaminated source water in hydraulic fracturing although the extensive use of perfluorinated surfactants for enhanced oil recovery, in drilling fluids and fire suppression foams, and hydraulic fluids also contribute to their presence. This water contains high concentrations of organic compounds and dissolved salts and could be reused after treatment. In the past, the majority of produced water has been discarded into saltwater disposal wells but concerns over the impact on seismic activity and capacity limits create a motivation for treatment, recycling, and reuse. Treated produced water can be used within oil and gas operations but can also be used in agricultural and land management settings among others. Potential applications include hydraulic fracturing makeup water, industrial cooling, crop irrigation, livestock watering, dust suppression, and municipal supplementation.

Advanced oxidation processes (AOPs) are often used as a polishing step during treatment of produced waters for reuse. These processes use oxidative species like hydrogen peroxide and ozone combined with activators, like ultraviolet irradiation, to initiate formation of highly reactive, non-selective oxidizing hydroxyl radicals. There is evidence that UV/peroxide treatments are effective for PFOA removal, but application to produced water treatment requires the consideration of different matrices and their effect on removal. Produced water has a high salinity and alkalinity as well as containing dissolved organic carbon, residual hydrocarbons, and inorganic species that may absorb UV photons, react with oxidizers, or scavenge radicals. These effects could reduce the removal of PFAS species when compared to clean laboratory water.

Overall, there is a demand for implementation of AOPs in the treatment of produced water as a polishing strategy for reuse. While some methods have demonstrated removal of PFOA under controlled conditions, the effectiveness in the treatment of produced water would depend highly on the operational conditions needed to accommodate a complex matrix. Future work should assess PFAS degradation in representative matrices and consider how AOPs can be integrated with other technologies. Establishing a treatment under realistic conditions is integral to determining the viability of advanced oxidation processes in produced water treatment.

Attle, Dalaen

Representation Matters: Black Male Teacher Representation and School Discipline Among Black Male Students

Black male teachers remain significantly underrepresented in the United States education workforce, while Black male students continue to experience disproportionately high rates of school discipline. Although these issues have been widely studied independently, limited research has examined the relationship between educator representation and disciplinary outcomes. This correlational study investigates whether the proportion of Black male teachers within public school districts is associated with disciplinary referral rates among Black male students.

A review of existing literature examines the relationship between the percentage of Black male teachers and the frequency of disciplinary incidents involving Black male students. The study is grounded in literature suggesting that teacher diversity contributes to improved student outcomes through culturally responsive practices, stronger teacher-student relationships, reduced implicit bias, and increased student engagement. Existing research also highlights disparities in disciplinary practices and the potential influence of educators' perceptions, expectations, and interactions on student behavior. Examining these factors provides a foundation for understanding how teacher representation may relate to disciplinary outcomes across public school districts. Also, examining these patterns across school districts may help clarify whether districts with higher percentages of Black male teachers also report fewer disciplinary referrals among Black male students. This information may provide a foundation for future research on teacher representation and school discipline.

By exploring the connection between representation and school discipline, this study seeks to contribute to conversations surrounding educational equity and the creation of more inclusive learning environments. Additionally, the research addresses a gap in the literature by examining these two educational issues within a single empirical framework. The findings may help inform future research, district-level policies, and recruitment initiatives focused on increasing the representation of Black male educators. Ultimately, this study aims to provide evidence that may support efforts to diversify the educator workforce while promoting equitable disciplinary practices and improved educational experiences for Black male students.

Azzam, Sarah; Justice, Sophia

Development of a Hybrid Hydrogel-Exosome System for Targeted Drug Delivery in Lung Cancer

Cancer drug delivery, particularly in the treatment of lung cancer, currently requires prolonged and repeated treatment with numerous side effects. The clinical use of chemotherapeutic drugs is effective against lung tumors, but their extensive toxicity to healthy cells necessitates new strategies. Advanced delivery systems have the potential to address this limitation. Hydrogels are three-dimensional polymer networks that serve as scaffolds capable of releasing drugs in a controlled manner tailored to a tumor's characteristics. Additionally, exosomes are small, cell-generated lipid vesicles that act as nanocarriers that potentially minimize systemic toxicity by shielding the drug from healthy tissue and either actively or passively targeting tumors. While hydrogels and exosomes are intended to increase drug retention and reduce side effects, they have limitations when used alone, such as poor targeting or early degradation. A delivery system that unites the two offers an advantage in delivering chemotherapeutic agents by combining hydrogels' sustained drug release capabilities with exosomes' improved tumor localization. The objective of this work is to develop pH-sensitive hydrogel-exosome hybrids loaded with P4, a pyrazolone compound that has demonstrated antiproliferative activity against non-small cell lung cancer cells (A549 and H522) but also exhibits high cytotoxicity toward noncancerous human lung fibroblasts (HLF). An initial prototype of a P4-loaded hydrogel without exosomes was fabricated using chitosan, a polymer chosen for its biocompatibility and biodegradability. A solid, deep-blue gel formed after 48 hours of crosslinking, and the structure became visibly porous after freeze-drying. The chitosan underwent a dual ionic and covalent crosslinking process with sodium tripolyphosphate (TPP) and genipin; TPP forms reversible ionic bonds that weaken at low pH, whereas genipin forms irreversible covalent bonds that maintain structural integrity. This dual crosslinking is expected to yield a pH-responsive hydrogel that is stable at neutral to high pH and swells at low pH, accelerating drug release once in the mildly acidic tumor environment. The freeze-dried hydrogel will undergo comprehensive characterization, including Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and Raman spectroscopy. Future research will include testing different chitosan concentrations and crosslinker ratios to optimize the hydrogel's properties. Later, yogurt-derived exosomes will be incorporated due to their low immunogenicity, stability in the body, and accessibility. The drug-release kinetics of this exosome-loaded gel will be evaluated across different pH levels. This work will generate a biologically compatible drug-delivery platform with the potential to improve lung cancer treatment outcomes by localizing drug release, providing a foundation for future translational research.

Battaglia, Aubree; Bonin, Emily

Describing Targets in Connected Speech Assessment for Louisiana English

Advances in speech assessment recommend strengths-based, ecological approaches and measures that holistically assess children's speech production across hierarchical levels of phonological representation (segments, clusters, syllables, whole words, etc.), different elicitation tasks (single-word & connected speech), an array of quantitative measures, and accounting for dialectal, within- and between-group differences, and individual variation (Babatsouli, 2023). To address this gap, Babatsouli et al. (2025) first introduced methodological procedures for a phonological assessment tool of English developmental speech in Louisiana that includes a single-word elicitation task (picture naming) and a connected speech task (narrative repetition). Previous work by Leal et al. (2026) investigated the hierarchical representations reflected in the picture-naming tool (Leal et al., 2026). The present work examines the phonotactic content of the connected speech test from a non-linear theoretical perspective (Bernhardt & Stemberger, 1998; Mohanan, 1992; Rice & Avery, 1995). Within nonlinear phonology, segments, syllables, and prosodic words are viewed as autonomous units with hierarchical underlying representations whose interactions occur across multiple tiers, extending from feature-level specifications to phrase-level organization. Our findings document the frequency distributions of singleton segments, consonant clusters, and syllable- and word-level structures included in the narrative repetition task. The task contains 82 unique word types (56 1-σ, 24 2-σ, two 3-σ), 23 distinct prosodic patterns, including 24 trochaic and 2 iambic forms. The stimulus set includes all singleton consonants, 7 WI, two WM, and 15 WF clusters. We compare our findings with results from the picture naming task and previously used assessment measures, highlighting the test features that uniquely represent segmental and structural complexity in the developing speech of English-speaking children in Louisiana.

Keywords: child; English; connected speech, assessment; nonlinearity; Louisiana

Boudreaux, Katelynn

The Price of Blue Blood

No abstract provided.

Bradley, Alarryal

Women of Color Career Paths to Congress

No abstract provided.

Brocato, Lilyana

Material Engagement Theory

In my research, I define, describe, and explore Lambros Malafouris' book How Things Shape the Mind: A Theory of Material Engagement about Material Engagement Theory. Material Engagement Theory (MET) is a mixture of cognitive science, archaeology, and philosophy. It's three principles include: 1) interaction between brains, bodies, and material forms is extended and enacted; 2) Material has agency because it can influence cognition and behavior; 3) Meaning arises with active engagement with materials. My research describes how theoretical frameworks like MET are important in archaeology, especially in those circumstances where a lack of documents or written sources make it difficult to discover how people thought and interacted in the world.

MET is one avenue to understand the development of the modern human mind. While we cannot go back in time to find these answers, we can use MET to try to understand our ancestors. I review two previous applications of MET: one concerning Oldowan toolmakers (2.9 – 1.7 mya) in Africa and another dealing with Upper Paleolithic (between 50 - 12 kya) cave art in Europe. The authors claim that MET can help to explain aspects of human cognition and material creation.

For the Oldowan toolmakers, the knappers' recognition of and adaptation to the constantly changing material (stone) signifies not only material agency (influencing cognition and behavior) but also the mind being enacted through the material world (mind to senses to material). By making changes in the world, the maker is able to build on it. The basis of the theory is that without these externalized forms, we would not have been able to move past precognition. For the Upper Paleolithic cave art, the author serializes cave art by time and draws connections between location and subject matter through the lens of MET. He claims that without the externalization of artistic forms, the artists would not have shifted from a signification of the self to others.

In both case studies, MET provides a framework through which we can conceive of ancient peoples' thoughts and the development of modern human cognition.

Broussard, Hannah

Why the Long Face? Gene Flow & Genetic Drift: The Evolution of the Human Face

The morphology of the human face shows differences both within and between populations. Despite the numerous developments in anthropological investigations regarding genetic mediation, there is no definitive answer to the significant craniofacial differentiation observed in the fossil record throughout human evolution. This research asks how gene flow and genetic drift contributed to these key phenotypic differences. Gene flow is the movement of genetic variants between populations; it tends to make connected groups more similar. Genetic drift is the random shift in how common a variant is between one generation and the next. Drift has the greatest effect in small or isolated populations and can produce differences between groups without any selective advantage; drift can cause change when natural selection, the primary mechanism of genetic adaptation, is absent. This presentation synthesizes recent research from anthropology, population genetics, and craniofacial biology to compare the effect these two evolutionary forces had on the shape of the human face. The comparison indicates when drift or gene flow better explains observed facial differences and when the two act together.

Brown, Ashleigh

Effects of Prenatal Cannabidiol Exposure on Anxiety-Like Behaviors and Adult Hippocampal Neurogenesis

Rates of cannabis use have risen in the U.S. following legalization. Maternal cannabis use is also rising, with adverse health outcomes for offspring. More mothers are turning towards cannabidiol (CBD) as a "healthier" alternative to THC. Rodent research shows alterations of neurological development in offspring from prenatal cannabis exposure (PCE), such as changes to inhibitory interneuron development from THC exposure in utero. While prenatal CBD has been shown to affect neurodevelopment, few studies have assessed effects on adult hippocampal neurogenesis (AHN). Adult THC and CBD affect AHN, yet there appears to be little research on the effects of prenatal cannabidiol exposure on AHN. This project addresses these gaps. The aims of the project were to assess the impact of prenatal CBD exposure on anxiety-like behaviors, the number of radial glia-like cells in the dentate gyrus (DG), and the number of immature neurons in the DG. The mice were exposed to 75 mg/kg of CBD from E-birth. After birth, the mice pups were raised to adulthood (P56). Behavioral testing occurred on these mice, including the open field test (OFT), the elevated plus maze (EPM), and the light-dark box (LDB). Perfusions were then performed on the mice, cryosectioning of the brain was performed, and antibody staining was done on the sections. The staining performed was Sox2+ and GFAP+ for the radial glia-like cells, and DCX+ staining was done for the immature neurons. The results for both the behavioral tests and the counts for neurons were quantified. The only behavioral tests that showed significance was the OFT. The distance traveled by the mice, the number of entries into the center, and the time spent in the center showed that CBD exposed mice had more anxious behaviors than the control mice. CBD exposed males also showed more anxious behavior than the exposed females. The next steps for the project is to quantify the number of immature neurons and radial glia-like cells in the DG of both the exposed group and the control group. From those results, the two groups will be compared to determine the effects of prenatal CBD exposure on neurogenesis.

Bullen, Amelie

Dance Beyond the Studio

Dance is a full-body experience. It is physical, artistic, and can be whatever you want it to be. At its core, dance is about moving your body to create something evocative. However, when you dig deeper, many factors of dance benefit the dancer. This study aims to determine the social and emotional outcomes of dance training for female long-term dancers as well as the implications of dance on career skills. Women who have attended university for a dance degree were surveyed utilizing self-report measures like the Big Five Inventory and the Social Provisions Scale. Recent literature suggests that dance has substantial effects on social and emotional skills, of which can lead to career success. This indicates a connection between the outcomes of dance and career success that must be further researched. This project intends to provide a greater understanding of the tangible effects of dance training in order to promote the use of the arts in education and career development.

Chaumont, Audry

AI-Assisted Scan-to-BIM for Sustainable Campus Retrofit Planning

Historical drawings often provide an incomplete record of current conditions in campus buildings, making it difficult to estimate renovation quantities and plan retrofits reliably. This research develops a transferable framework that combines artificial intelligence (AI), terrestrial laser scanning, building information modeling (BIM), and construction scheduling so that every quantity used to evaluate and schedule a sustainable retrofit can be traced to its evidence. Rougeou Hall at the University of Louisiana at Lafayette serves as the case study. The first floor was captured with a Trimble X7 in 58 stations registered as one set (mean error 0.6 mm, overlap 52%, consistency 99%). Claude AI worked directly on photographs of the 1986 as-built drawings and on the gridded E57 data: it streamed the 52 first-floor stations (about 3.0 billion points) on a standard laptop, registered the point cloud to the drawing grid, and fitted walls, columns, openings, floors, and ceilings, tagging every element as scan-measured, scan-confirmed, or drawing-based. The registered scan matched the drawing datum within 1 mm at the south wall and placed columns on their grid lines within about 0.3 m. Of 715 m of first-floor walls, 417 m (58%) are now scan-measured; their median offset from the drawings is 94 mm, and 89% lie within the 0.3 m tolerance of the drawing trace. The comparison revealed a north-south clear width 0.24 m smaller than drawn, three columns and one full-height partition absent from the drawings, and suspended ceilings at 2.48 to 2.68 m against the 2.59 m specified. Reviewers check geometry, properties, and completeness before release. The outputs are an Industry Foundation Classes (IFC) model, a CSI-coded bill of quantities that records the evidence basis of each item, and a native Autodesk Revit build script, structured so the remaining floors follow the same steps. Scanning of the upper floors is underway. Reviewed quantities will be combined with production rates, crews, and calendars in Primavera P6, and with equipment ratings, operating hours, and utility data to compare lighting, HVAC, and envelope retrofits by energy use, carbon, life-cycle cost, and disruption to campus operations.

Keywords: Artificial intelligence; Scan-to-BIM; terrestrial laser scanning; as-built drawings; evidence-tagged BIM; sustainable retrofit planning; human-in-the-loop verification.

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Chotto, Jacey

Microbial Water Quality Monitoring of Bayou Folse Watershed

Bayou Folse is a local waterway in Thibodaux, Louisiana, which is heavily impaired due to pollution that varies across different parts of the watershed. Along Bayou Folse, bacteria are exposed to pollutants from cattle farms, faulty septic tanks, and agriculture run-off that promotes microbial resistance to many chemicals in the water such as antibiotics. The objective of this study was to monitor different water samples across 4 sites from Bayou Folse for fecal coliform bacteria, antibiotic concentrations in the water, and antibiotics-resistant bacteria. Water samples were collected in triplicates across the 4 sites from December 2025 to August 2026 along Bayou Folse at Nicholls Campus (Site 1), the Nicholls Farm (Site 2), LeFort Bypass Road (Site 3), and Bayou Blue Bypass Road (Site 4). Fecal coliform (FC) was analyzed by the most probable number method. Pure cultures of Escherichia coli and Staphylococcus aureus were isolated, and the antibiotic resistance of the pure cultures was measured (mm) using Kirby-Baur assays. The concentration of various antibiotics across the sites was analyzed using the Ultra High-Performance liquid Chromatograph (UHPLC). The results showed a consistent presence of FC in all sites along with E. coli and S. aureus bacteria. The antibiotic concentration was the highest in Site 3, where a cattle farm is located. The highest antibiotics concentration observed was tetracycline in Site 3 with an average concentration of 11.73 ng/L, followed by penicillin (9.46 ng/L), and sulfamethoxazole (9.4 mg/L). Antibiotic resistant bacteria were found across all 4 sites. These results showed that a mixture of human activity, such as run-off and improper discharge of sewage, along with endogenous occurrences, helped influence these antibiotic-resistant bacterial findings. Furthermore, monitoring the water quality of watersheds like Bayou Folse is paramount to public safety and public health.

Climo, Connor

Liquid Metal That Stays Put

Sustained mobile gaming performance depends not only on silicon capability but also on the transfer of heat across the materials between the system-on-chip and the final heat-rejection hardware. This proposal investigates a gallium-indium-bismuth (Ga-In-Bi) liquid-metal thermal interface material (TIM) designed for a phone that changes orientation during use and may charge vertically. The target is a material-property window: the alloy must be liquid at the measured operating temperature under a repeatable stock sustained load, yet resist gravity-driven migration toward adjacent components when held in portrait orientation. Two candidate formulations, 70/23/7 and 72/23/5 Ga/In/Bi by weight (wt.%), will be screened to test bismuth content as a flow-resistance tuning variable. The proposed interface stack places an ultra-thin Ga-In-Bi layer above the SoC shielding, followed by a defect-free nickel-plated copper shim and a heat sink coupled to a dielectric-fluid loop. Adjacent surface-mount devices will be isolated with Kapton tape and conformal coating. Validation will combine baseline thermal and performance logging, controlled temperature and portrait-orientation migration tests, comparative sustained-load trials, and optical or electron-microscopy examination of the interface. The goal is to establish whether an orientation-stable liquid-metal interface can enable thermally designed mobile gaming hardware.

Comeaux, Brooklyn

Is the Rabies Vaccination in Dogs and Cats Effective at Preventing the Spread of Rabies Virus?

Rabies is a viral zoonotic disease that can affect all mammals. Once the rabies virus enters the nervous system and clinical symptoms are exhibited, the disease is fatal due to no effective treatment available. There are preventative options for humans and domestic animals such as dogs and cats. Many households in the United States own at least one dog or cat, making rabies vaccinating these pets an important way to prevent rabies spread. It is required by law in some states to vaccinate dogs and cats that are older than 12 weeks of age. I am researching rabies in domesticated animals, specifically dogs and cats, and asking, is the rabies vaccination in dogs and cats effective in preventing the spread of the rabies virus? I believe that vaccinating against rabies in domestic dogs and cats will play a vital role in the efforts to prevent the spread of the rabies virus. Vaccinating domestic cats and dogs can decrease the average number of rabies incidences such as with humans in a given location, and with this, we can work on better measures to prevent the spread of rabies virus in other mammals. I used The Web of Science Core Collection through the UL Lafayette Dupre Library website and the American Veterinary Medical Association Journals Publications database to find reputable primary peer-reviewed articles to support the topic that I am reviewing. I reviewed different aspects of rabies such as vaccine status and rabies incidences. Then, I synthesized my findings from the articles to determine the effectiveness of rabies vaccination. A study in New York over the course of 12 years found that out of more than 13,000 cats sent for testing, only about 10% were up to date on the vaccination, making about 90% being unvaccinated individuals or of unknown status. Dogs, on the other hand, are 61% more likely to be vaccinated than cats. Of the cats that tested positive, almost 90% had either bitten and/or scratched a human. Of the 8 dogs that tested positive, all had either bitten and/or scratched a human, and some had exposure to other domesticated animals. Another study evaluating vaccination effectiveness and rabies trends in dogs and cats across the U.S over the course of 20 years found that there was a significant decrease in the incidence rate number in dogs, but an increase in the incidence rate in cats possibly due to an increase of unvaccinated owned cats and/or an increase in the unvaccinated feral cat population. The incidence rate of having a positive case in an unvaccinated dog is 131 times higher than in vaccinated dogs. This work is important for public safety. We need to understand rabies, how vaccinating can be an important aspect in preventing the spread, and that vaccination efforts may need to be different for different species such as between dog and cat populations, especially feral cats.

Coronel, Carlos Rodriguez

Triangular Consistency as a Universal Constraint for Learning Optical Flow

The presentation will introduce “Triangular Consistency”, a method to improve the estimation of optical flow which is a dense displacement field between image frames. Triangular Consistency is a universal constraint based on the principle of composition and is therefore agnostic to the architecture used to estimate optical flow as well as the supervision type used. More specifically, our work proposes that certain constraints that have been used in the past can be used for improving optical flow estimation precisely because they are cases of Triangular Consistency. These constraints are reformulated as cases of consistency under composition, where the method underlying these constraints is the composition of two flows to create a third and enforce that the coordinates described with the composed flows approximately equal those described with the third flow.

The first contribution of our work is to establish the principle underlying these different constraints. The second is to propose a new constraint that allows us to perform data augmentation in order to improve generalization to unseen datasets. The third is to show experimental results in supervised, self-supervised and unsupervised learning settings.

Our results show that in the self-supervised setting using only Triangular Consistency significantly improves performance over just one epoch. The supervised experiments using only the original loss function and the new augmentation consistency loss shows a large improvement in the generalization to the HD1K and Middlebury datasets which were not used during training. We present similar results for the unsupervised learning experiments using ARFlow as the base model together with the three consistency losses proposed.

This work is important for a few reasons, first it generalizes different loss functions under the same principle by drawing from previous work proving that optical flow can be safely composed. Second, it proposes a new way to apply controlled transformations for data augmentation which prevents overfitting. The third is to show improved performance across three different supervision types and two optical flow models: RAFT and ARFlow, each using a different neural network architecture.

Couvillon, Sarah-Grace

Effects of Colored ALAN on Memory in Adult Zebrafish

The lifestyle of the modern human is pervaded by unavoidable artificial light exposure. With the growth of technology, humans have been increasingly exposed to artificial light at night by means of mobile phones and their presence in daily/nightly routine. Prior research has provided significant findings regarding the effects of the presence of artificial light, its color, and its brightness on memory (Hasan et al., 2021; & Kim et al., 2024). Blue light exposure has been found to enhance working memory (Alkozei et al., 2016). Additionally, long-term memory (LTM) performance is enhanced by bright blue light exposure (Kim et al., 2024). However, a large gap in the literature remains regarding the presence of artificial light at night, and its long-term, ongoing effects on LTM. The proposed study will use the zebrafish model (*Danio rerio*) to examine the long-term effects of artificial light at night (ALAN) on learning and long-term memory. Three experimental groups will be exposed to ALAN for 2 hours per night (Tähkämö et al., 2019) for a period of 14 days (Zhang et al., 2026). The groups will consist of those exposed to red artificial light at night (628 nm, 350 lx), those exposed to blue artificial light at night (465 nm, 350 lx), those exposed to white artificial light at night (350 lx), and a control. Behavioral outcomes will be assessed using a validated assay, the novel-object preference (NOP) test, wherein the fish will be presented with novel or familiar lego minifigures as a measure of object recognition memory (May et al., 2016). Zebrafish exposed to chronic artificial light at night are expected to exhibit impaired learning and memory capacity compared to those not exposed to chronic artificial light at night. Additionally, zebrafish exposed to blue artificial light at night are expected to exhibit greater impairment of learning and memory capacity compared to zebrafish exposed to red artificial light at night.

Credeur, Breanna

Perceptions of Hypersexuality: Pilot Study

This research will assess the attributions that UL Lafayette students place on an individual displaying hypersexual behaviors when gender is not specified. Hypersexuality, or compulsive sexual behavior, is primarily tested among men, although men and women do not significantly differ in their levels of hypersexuality (Walton et al., 2017). Some previous research has shown higher levels of shame in women than men (Reid, 2010), but little is known of how observers judge those with hypersexual behaviors. The purpose of this study is to understand how students react to a person who displays hypersexual behavior and if those effects change depending on the assumed gender. The information is gathered by providing a short fictitious story to participants, followed by a modified version of the Attribution Questionnaire Short Form (AQ-27) (Corrigan et al., 2003) through an online platform, Qualtrics. This research is a pilot study, helping us develop our follow-up study in the future. Responses are still being collected; preliminary data will be available for the presentation.

Davenport, Marissa

Jewelry, Identity, and Power in Colonial New Orleans

This project examines jewelry as a form of material culture in New Orleans during the colonial and early statehood periods. During the French and Spanish colonial eras, jewelry served not only as decoration but also as a marker of wealth, status, and religious affiliation. Jewelry also hinted at relative access to global trade networks. This research uses a combination of material culture, archival research, and historical portraiture to examine jewelry and adornment practices across these periods, showing how seemingly innocuous material objects can reveal broader changes in economy, political power, and identity. The assessment uses an anthropological technopolitical approach that treats jewelry as a technology whose production, trade, and wear were shaped by political decisions that included control over the resources needed to create them. Investigating who could obtain, make, and display specific pieces shows how colonial governments and city residents used adornment to build and contest social hierarchy. Archival records document which pieces people owned and how they acquired them, while portraits show how those pieces were worn and displayed. Read together, these sources allow a comparison of who had access to restricted materials in the French colonial, Spanish colonial, and early statehood periods. Jewelry shows how New Orleans's multicultural population negotiated power, belonging, and social status during periods of significant political transformation.

DeRouen, Heaven

Political Economy and Consumer Choice in the Historic Ceramics of Poverty Point

This project examines how political and economic change in early nineteenth-century Louisiana may be reflected in ceramics recovered from Poverty Point during the Dempsey and Guire occupations, which date between 1812 and 1829. Following the Louisiana Purchase in 1803 and Louisiana's transition to statehood in 1812, the expansion of commercial networks and the growth of river transportation created new opportunities for the changing patterns of trade and imported goods throughout the region. A Jeffersonian preference for limited government interference in trade left these networks to develop largely through private investment. Infrastructure affected market access, and market access shaped what households could obtain. This project asks how these conditions influenced which ceramics reached the site and how residents used them.

The research involves macroscopic examination of ceramic fragments to document decoration and color, along with composition. The assemblage will be compared with ceramics recovered during a previous excavation in the mid-1970s. This comparative approach will help assess similarities and differences in observable attributes and determine whether the artifacts may provide evidence of changing trade networks, manufacturing, or access to imported goods. By treating ceramics as material evidence of consumption and exchange, the study explores the relationship between political and economic transformation and material culture in early nineteenth-century Louisiana. It contributes to understanding market access and consumer choice during a critical period in Louisiana history. The results will inform how the historic site is presented to the public and preserved for future study.

Deshotels, Grant

A Comparative Review of Epoxy Resin Additive Manufacturing Techniques

Epoxy resin is a critical material for manufacturing aerospace composites, industrial coatings, electronic components, and other advanced applications due to its structural strength and chemical resistance. Traditionally, manufacturing epoxy components relies on molds and casting. However, this conventional approach is inefficient and limits the ability to produce complex or customized shapes. 3D printing is an option to bypass these limitations, but printing epoxy presents a significant engineering challenge. If printed without modification, the uncured resin is too liquid and simply puddles on the build plate. This poster reviews three strategies used to make 3D printing epoxy resin possible and effective. The first method focuses on rheological modification through nanofillers. By incorporating additives such as silica, liquid epoxy is transformed into a structurally stable composite, allowing it to be extruded during the print and hold its shape. The second method relies on UV light in a two-step curing process. Standard epoxy is mixed with light-sensitive resins so that UV exposure instantly freezes the printed part into a temporary shape. Afterward, a standard oven bake permanently hardens the epoxy. The third method uses direct heat to drive a thermally-activated cure facilitated by frontal polymerization effects. Heating the printer nozzle forces the epoxy to cure instantly in mid-air as it is extruded, allowing for the creation of complex, free-standing shapes without needing support structures. While categorized distinctly, these techniques are not mutually exclusive and can be combined to balance the required detail and material performance for a specific application. This review provides an overview of three well-documented 3D printing techniques for epoxy resins, discussing their respective advantages and limitations to help engineers unlock the structural potential of 3D-printed epoxy composites.

Falgout, Peter

Examining Ceramic Variation During the Late Woodland Period in Central Louisiana

No abstract provided.

Fox-Hunt, Spencer; Dugal, Garett; Hammett, Daniel; Roberts, Gerius; Shelton, Blake

VSM Grid Support

Increasing integration of inverter-based renewable generation along with growing pressures to implement large-scale electric vehicle (EV) infrastructure presents both challenges and opportunities for the stability of Louisiana's power grid. Unlike traditional synchronous generators, classic grid-following inverter-based power generation (often implemented alongside solar and wind assets) doesn't provide inherent electromechanical rotational inertia. This inertia helps to limit the rate of grid-frequency changes following disturbances and accelerates the power quality recovery process after adverse grid events. As Louisiana continues to expand its adoption of renewables and EV infrastructure along with data centers and other industry partnerships, maintaining grid stability through sudden shifts in generation and demand becomes increasingly important. This research investigates the application of grid-forming virtual synchronous machine (VSM) inverter control as a method to improve grid response to heavy load disturbances compared with conventional grid-following inverter control, with a focus on potential applications in Louisiana's industrial and public-sector EV charging infrastructure.

Using Simulink, our project models a weak power grid (one with a high degree of renewable penetration) subjected to switched-load disturbances under two control configurations. The baseline uses a grid-following inverter synchronized to the existing grid through a phaselocked loop (PLL). The alternative solution uses a VSM-based grid-forming controller to emulate the dynamics of a synchronous generator and provide both active and reactive power support with very low latency during disturbances. The two methods will be compared regarding the magnitude of voltage sag, maximum deviation from nominal grid frequency, and rate of change of grid frequency. In both cases, the inverters are connected to a bank of DC battery energy storage systems, representing our proposal to utilize idle EV batteries connected to charging infrastructure as prop-up support for grid stability.

A complementary socioeconomic assessment will examine the potential costs, benefits, and barriers to adoption of our proposed grid solution. Considerations include charging infrastructure investment, electricity costs, projected growth in renewable generation in Louisiana, and proposed tax incentives that could be used in a real-world project proposal. By integrating simulation-based evaluation of our solution with regional infrastructure and economic factors, we aim to accurately present the potential for grid-forming inverter technology with VSM control to improve grid resilience in Louisiana while supporting the integration of renewable generation and flexible EV charging loads.

Fuentas, Daniel

The CRT: Building a Multistage High Power Rocket

UL Lafayette has a long tradition of space physics and engineering with its Cajun Advanced Picosatellite Experiment (CAPE) program. Students have always been interested in space, especially now with the future arrival of SpaceX to Acadiana. The Cajun Rocket Team (CRT) was formed to nurture and grow this interest with participation in NASA's Space Grant MidWest High Powered Rocketry Competition, "The Strap on Booster Challenge" in late spring 2027. Our team of CRT students will design and successfully fly a multistage air start high powered rocket, while logging data and collecting video footage of booster separation. This will push the limits of our physical understanding while advancing our knowledge in various fields including but not limited to design, production planning, and electrical/aerospace engineering. Through this competition, we hope to inspire not just our peers, but also the younger generation of physicists by raising awareness of science, technology, and space exploration. We hope to use this competition as a spring board for future rocketry/space projects including building hybrid rocket motors, flying experiments into low Earth orbit, and eventually building our own sounding rocket for high-altitude experiments.

Garcia Valencia, Odette

Same Water, Different Discussions

Effective communication can determine success. Across many communities, a persistent communication gap exists within local residents and the organizations that work to reduce their hazard risk. Research teams often have technical knowledge and resources to support mitigation. However, information does not consistently reach the people who are affected the most. Residents may not know where to find assistance, how to be involved, or how mitigation programs relate to their daily lives. This lack of shared information is a recurring tendency in hazard mitigation discussions that lead to confusion, mistrust, and low participation. This project examines the communication gap between community members and government leaders in the context of water related hazards in the Lafayette, Jackson, and Mobile regions. Its purpose is to identify factors that contribute to the gap and understand them. It asks what barriers in organizations are preventing information from reaching the audience and how does each group experiences and understands communication. The research draws on data collected as part of HydroRise, and NSF EPSCoR project. WE use qualitative data from semi structured interviews with planners and from History Harvest interviews (rapidly collected, in-person interviews) with community members. Responses are coded and analyzed to recognize common themes, including the difference between understanding risks in groups. Comparing these perspectives shows where expectations and priorities diverge. As a result of the analysis, we make recommendations for improving communication between the two groups using strategies from participants descriptions. The recommendations include options for clearer messaging and consistent outreach. These options aim to reduce confusion for community members and provide organizations a starting point for engaging their communities more effectively while building a stronger dialogue between the groups. By focusing on communication, this research contributes to broader efforts to build community resilience. Understanding why the information gap persists is a necessary step toward closing it. The results will be useful to local officials, emergency managers, and researchers who work to connect communities. Better communication is a way to build the trust required for effective hazard mitigation.

Garza, Gabriella

The Dangers of Mental Health Stigma

The purpose of this research is to examine how previous studies related to the dangers of mental health stigma in people of all ages. Of the U.S. adults surveyed, 56 percent agreed that stigma against people with mental illness has decreased over the last ten years. Research from Statista shows the percentage of U.S. adults who agreed or disagreed with the statement "there is less stigma against people with mental illness than there was 10 years ago" as of 2021. Common signs of mental health stigma include using derogatory language, dismissing or trivializing someone's condition, and viewing individuals as weak or attention-seeking for seeking help. It also appears in social situations like gossip, avoidance, and family or friends making unhelpful judgments, as well as in structural discrimination in areas like employment. In conclusion, mental health stigma is not only dangerous for the person going through the illness(es) but also the person experiencing the stigma. Having stigma towards a friend, family member, co-worker, or even yourself can worsen your illness and potentially end a life. It’s not hard or expensive to be kind and understanding. This research seeks to further explore how to reduce mental health stigma.

Gautreaux, Jacob

What Predicts Reported Campus Sexual Assault? Institutional Scale, Residentiality, and Administrative Capacity

Reported campus sexual assault varies enormously across American colleges and universities, and that variation is routinely read as a safety signal by prospective students, rankings, and journalists. This study asks what institutional and county characteristics actually predict the number of sexual assaults an institution reports under the Clery Act. Clery disclosures for 2022-2024 were pooled into three-year totals and merged with IPEDS institutional characteristics, enrollment, and finance data, Bureau of Alcohol, Tobacco, Firearms and Explosives Federal Firearms Licensee counts, Centers for Disease Control and Prevention PLACES county bingedrinking prevalence, Census population estimates, and Equity in Athletics Disclosure Act data for 385 of the 436 four-year, degree-granting institutions in frame. A single fifteen-predictor ordinary least squares model of ln(reported sexual assault + 0.5) explains 61.9% of the variance (adjusted R-squared = 0.603; $F(15, 369) = 39.90$, $p < 0.001$). Six predictors carry the model. Enrollment is the dominant term: reported assaults scale approximately in proportion to institutional size (elasticity 0.883, not distinguishable from 1; 0.96 in a negative binomial model). Residentiality is nearly as strong: a one-unit increase in residence hall capacity per undergraduate is associated with 1.842 more log points of reported assault. Public institutions report 0.620 log points more than private institutions of comparable size, and conduct-enforcement activity, measured as logged liquor law violations, adds 0.171. Socioeconomic and instructional-intensity measures run the other way, with Pell share at −1.399 and student-faculty ratio at −0.038. In the pre-specified model, neither county firearm availability nor campus-carry policy predicts reported sexual assault; the campus-carry null is robust across specifications, but the firearm-density null depends on how locality is controlled. In an exploratory twenty-predictor specification with finer locality controls, student-support expenditure per undergraduate predicts higher reported assault (+0.249, $p = 0.010$), consistent with an administrative-capacity mechanism. The central finding concerns what Clery counts measure: reported sexual assault tracks exposure (scale and residentiality) and reporting and enforcement infrastructure (public control, conduct enforcement, and, in exploratory models, support spending) more than it tracks danger, so rankings and safety comparisons built on raw counts are misleading.

[1] A companion manuscript (Gautreaux and Foreman, campus carry across fifteen Clery outcomes, under review) uses the same sample, outcome definition and pre-specified predictor set; this paper reports the pre-specified original campus-carry coding and the companion the corrected exposure coding, so campus-carry-related estimates (and the housing and public-control coefficients at the third decimal) differ slightly.

Gautreaux, Jacob

Campus Carry and Fifteen Clery Outcomes: No Evidence of Increased Violent or Sexual Offenses, Higher Drug-Law Arrests

A growing number of U.S. states require public universities to permit licensed concealed carry on campus; eight were effectively treated during the 2022–2024 observation window. Advocates predict deterrence and opponents predict escalation, but both predictions concern the level of campus crime, and neither has been tested against the full range of outcomes that institutions are required to disclose. This study tests campus-carry status against fifteen separate Clery Act outcome categories using a single specification rather than one outcome selected after the fact; the fifteen-predictor specification and four focal outcomes were fixed in a dated pre-analysis plan, and the extension to fifteen outcomes, with Benjamini–Hochberg (BH) correction across all fifteen, was exploratory. Clery Act disclosures for 2022–2024 were pooled into three-year institutional totals and merged with IPEDS institutional characteristics and finance data, Bureau of Alcohol, Tobacco, Firearms and Explosives Federal Firearms Licensee counts, Centers for Disease Control and Prevention PLACES county binge-drinking prevalence, Census population estimates, and Equity in Athletics Disclosure Act data for 385 of the 436 in-frame four-year, degree-granting institutions with at least 5,000 undergraduates. Each outcome was modeled by ordinary least squares as ln(three-year count + 0.5) on an identical fifteen-predictor right-hand side, with BH false discovery rate correction applied across all fifteen tests. Campus carry was null for every violent, sexual, and weapons offense category: sexual assault (+0.063, p = 0.539; wild cluster bootstrap p = 0.589 with Rademacher and 0.585 with Webb weights; negative binomial IRR = 1.10, clustered p = 0.459), rape, Violence Against Women Act offenses, robbery, aggravated assault, murder, hate crimes, and weapons law violations. The sexual-assault null is unchanged after the exposure coding was re-verified against statutory effective dates and re-estimated under two outcome definitions, all sex offenses and rape alone. Two outcomes survived correction. Drug law arrests, an enforcement-generated count, were +0.653 log points higher, approximately 92% more arrests at institutions where carry binds (BH-adjusted p = 0.018; state-clustered SE = 0.215, p = 0.004; wild cluster restricted bootstrap p = 0.059 with Rademacher and 0.051 with Webb weights, eight treated states; negative binomial with enrollment offset IRR = 1.59, clustered p = 0.006). Reported arson was −0.410 log points lower, approximately 34% fewer arsons (adjusted p = 0.030; bootstrap p = 0.036 and 0.031). Motor vehicle theft (−0.409, raw p = 0.033; bootstrap p = 0.083 and 0.082) was nominally negative but did not survive correction. County firearms-dealer density showed the same asymmetry in the opposite register, loading positively on arrest-generated counts and negatively on victim-reported ones. Because Clery figures count reports rather than incidents, these results provide no evidence that campus carry escalates victim-reported violent or sexual crime; its robust associations are consistent with differences in enforcement patterns rather than with increases in crime. Because campus carry is assigned at state level with only eight states effectively treated during the observation window, the drug-arrest result remains sensitive to the small number of treated clusters, and the wild cluster bootstrap, which was performed, leaves it at the margin of conventional significance (p = 0.059 and 0.051), so it should be treated as suggestive pending a new data year.

Gray, Gracey

Speak for Those Who Have No Voice: How Forensic Anthropology Assists in Animal Abuse Cases

Recent decades have produced an upward trend in the way society views companion animals. The phenomenon of relatively modern companion animals can be traced to the rise of “lap pets” as a trend and status symbol in the Victorian era, co-occurring with the rise of the middle class. Since the 1990s, companion animals have increasingly become viewed as proxy children, carrying designations like the term “fur baby.” As with children, companion animals in the United States face relatively high rates of violence when compared to nations of similar wealth. US laws against animal abuse operate through a dual system of state and federal regulation, with all 50 states having statutes against animal cruelty and every state having felony provisions for severe abuse. A key issue is the juxtaposition between companion animals classified as private property but sentenced as victims of violent crime; other wealthy nations recognize animals as sentient beings and provide more stringent legislative protections and proactive enforcement. This potent combination of changing attitudes toward companion animals and statutes of violent crime against personal property have led to an increase in forensic interest in osteological signatures of animal abuse. Collaborations with forensic anthropologists have become more common and include the development of osteological assessments to distinguish companion animal accidental injuries from non-accidental injuries (NAI). Like many child abuse cases, injuries sustained from abusers often can go unnoticed. Too, the animal companion may continue to be reliant on its abuser for basic housing and other necessities, making it difficult to provide crime victims with the aid or support they need. This research presents a synthesis and review of recent literature and proposes optimizing collaboration between relevant applied fields, such as forensic anthropology and forensic veterinary practices, to better yield effective results in both assessments of abuse and successful convictions of abusers.

Guevara, Francisco

Drone Based Hyperspectral and Lidar Sensing for Mapping Flotant Marsh in the Barataria Terrebonne Estuary System

The main objective of this project is to monitor the health and condition of Louisiana's coastal flotant marshes using drone-based remote sensing. The study focuses on three locations: Lake De Cade, Lac Des Allemands, and Lake Boeuf in the Barataria Terrebonne estuary. The first study area is brackish water lake and the remaining two study sites areas are freshwater lake. Flotant makes up a large portion of the freshwater and intermediate marsh habitat found in Barataria and Terrebonne basins. The main goal is to identify changes in marsh vegetation, elevation, and sediment over time. Hyperspectral data helps researchers examine the distribution of plant species, marsh breakup and sediment accumulation, while lidar data provides information about changes in the elevation and biomass structure of the landscape. Drones are used to collect hyperspectral and lidar data at the three study locations. At each study area two sites one healthy and another on the verge of degradation was chosen. Field missions were carried out at each study area to match the Fall, Spring and Summer seasons for two years. This allowed us to compare the same habitats during different phase of growth, allowing a comparison between different seasons across different habitats. We have conducted four types of surveys simultaneously. First a field vegetation sampling plot was performed by our biological sciences graduate and undergraduate students. This was followed by multiple missions using our MicroDrone MD3000LR quadcopter with Riegl Lidar VUX-1UAV sensor to capture the digital surface model (DSM) of the flotant marsh. On the same day several missions were flown using

our DJI Pro M600 hexacopter with RESONON Pika-L Hyperspectral sensor (spectral wavelength range 400NM-1000NM with individual band sensitivity of 2.1NM) to collect data on floral and faunal cover class. This was followed by a low altitude flight along random transects using a DJI Mavic Pro for ground truthing and quality control. The hyperspectral data was pre-processed and analyzed using Spectronon Pro and NV5 ENVI software and Lidar data was processed using a combination of ESRI’s ArcGIS pro and Global Mapper. The preliminary results show various vegetation species and marsh water interface can be identified accurately. Similarly Lidar data has allowed to resolve elevation changes between the flotant marsh structure and marsh breakups. By combining hyperspectral and lidar data, researchers can examine changes in vegetation and landscape structure over time. This project uses remote sensing technology to better understand changes in Louisiana's coastal marshes. The results may help improve marsh monitoring and support future efforts to protect Louisiana's coastal wetlands.

Guillory, Riley

Fabrication Strategies for Conductive Hydrogel-Based Wearable Sensors

This project proposes a literature-driven design for a non-invasive wearable sensor that uses a dual-network conductive hydrogel as its active sensing material. The goal of this work is to outline a fabrication strategy informed by current research on conductive polymers and hydrogel-based sensors. The proposed sensor design incorporates a chitosan-based hydrogel matrix for structural stability and biocompatibility, combined with a conductive polymer such as poly(3,4-ethylenedioxythiophene) (PEDOT) or poly(vinyl alcohol) (PVA) to enable electrical responsiveness. Conductive MXene nanoparticles are incorporated to enhance mechanical strength, electroconductivity, and long-term stability. To fabricate the hydrogel component, digital light processing (DLP) 3D printing and electrospinning will be used to achieve precise geometry and fibrous reinforcement within the sensor. The literature review supporting this proposal highlights how these techniques have been applied in recent scaffold and hydrogel systems to control structure, porosity, and conductivity. The outcome is a conceptual roadmap detailing materials selection, fabrication steps, and testing plans for future experimental validation. Future work will focus on evaluating mechanical robustness, conductivity, and self-healing properties once prototypes are produced. This design proposal represents an early-stage framework for developing flexible, conductive hydrogel-based wearable sensors guided by current literature and fabrication experience.

Harris, Cady

El Niño- The Weather Event and Chemical Process

Did you know that in the year 2026, our oceans experienced what is called an El Niño weather event? Did you also know that these events happen roughly every two to seven years of our lives? Right now, you are most likely asking yourself what it means to experience an El Niño year, or what that entails in the first place. Scientifically, an El Niño weather phenomenon occurs when the level wind pressure from an original direction, in our case blowing east to west, is then weakened or even reversed upon itself. Causing the winds that would normally blow across the Pacific Ocean, which are responsible for holding the warmer waters on the west side of the Pacific, to then accumulate and move backwards towards the east and central parts of the Ocean. Now this then causes a multitude of effects; among those are the atmosphere shifting in correspondence and pressure patterns on both sides of the globe. Altering the weather, ocean flow, nutrient rising and falling inside of the ocean currents across the world and forming a domino effect that impacts human life significantly. I first started getting into the research of this topic during the divided time of my sophomore year in college at the University of Louisiana at Lafayette. The previous experiences I have had with the El Niño occurrence are due to many hours of mini-documentaries and series in the background of my office whilst I was busy with tedious schoolwork. As we often do as humans, to constantly keep our brains entertained, it is best to put some noise on, have a friend, some music, or, in my case, a show. For me, the most frequently watched docuseries in my collection feature the world's oceans, ocean animals, and the behavior of sharks and whales. Previously, I have only relied on Google; Now my research is curated from scientific websites, blogs from scientists, scholar-used and approved search engines, and famously vetted sites open to the public to ensure proper research channel usage and to provide differing views for my topic. Through these avenues, I discovered that the irregular occurrence of El Niño not only directly changes human proficiency in catching and growing food but changes the levels of danger or abundance of the globe's oceans, local and global economies, and affects public health as well. In my research regarding this extreme weather, I will dive deeper into the process of an El Niño year and what this means for those locally and around the world. We will also discuss the chemical and physical changes during an El Niño year to better understand the atomic and microscopic level. Lastly, we will discuss how we can act accordingly to the changes, to better the interest of our daily lives.

Heneghan, Elizabeth

Investigating Environmental Contaminants' (Benzophone-1) Effects on Reproduction and Development in Marine Crustaceans (*Tigriopus californicus*)

Benzophenone compounds (BPs) have frequently been used as a protective agent against harmful UV radiation. While BPs are common components of sunscreens, they are found in insecticides, paints and packing materials. Through human activities and wastewater discharge, BPs are released into aquatic environments. Although different species have shown varying sensitivity to BPs, the overall findings suggest that BPs generally have toxic effects (e.g. decreased survival rates and development). Attentive to how organic environmental pollutants affect *Tigriopus californicus*, this study examines how exposure to different BP1 concentrations affects the developmental progression of T. californicus larvae compared to control treatments. Most studies on BP chemicals focus heavily on larger model organisms while smaller organisms are underrepresented in environmental research (Martinez et al., 2025). Representing 70% of the ocean's biomass, copepods make up a large part of fish larval diets in species that are of economic importance to humans. If copepod populations were to decline due to BP1 chemicals, then this could directly impact commercial fish populations and the fishing industry. This project used quantitative data collection and analysis; we recorded the time it took for a generation of copepods in five treatment groups (control, solvent control, Low BP-1, Medium BP-1 and High BP-1) to develop, form mating pairs, become gravid and hatch eggs. We ran statistical tests in R studio to find significant trends in the data. Given the ecological importance of *Tigriopus californicus* in marine food webs, the paucity of studies using small model organisms and the possible negative effects of BP chemicals, the findings from this study bridge the data gaps between this niche model organism and emerging environmental contaminants. In our experiment, the High and Medium BP-1 concentrations significantly delayed the time females took to first become pregnant. Our data subset of 10 females did not show any significant change in offspring production (both larvae and juveniles). There was not a significant effect of BP-1 on the reproductive speed of females across the treatments. Our next steps for this study would be to run statistical tests using the full data set (33 females) to determine if BP-1 has an effect on development and reproduction. We will select the treatment group that shows the most differences and run a qPCR on marker genes. We hypothesize that changes in gene expression in the Estrogen-Related and Ecdysone Receptors compared to the eukaryotic ribosomal subunit gene might explain the effects of BP-1 exposure on development and reproduction.

Hernandez, Andrea; Kidder, Alysa; Chrisman, Brooke

Associations Between Childhood Adversity and Resilience in College Students

Purpose: The concept of resilience can be defined as the personal qualities that enable one to adapt in the face of adversity (Connor and Davidson, 2003). Childhood adversity refers to experiences such as violence, abuse, and neglect during a child's development (McLaughlin et al., 2019). While childhood adversity has been associated with lower resilience in adulthood (Beutel et al., 2017), less research has examined whether specific forms of childhood adversity relate differently to resilience among college students. Understanding these associations is critical for addressing student well-being. Therefore, the purpose of this study is to examine the associations between each type of childhood adversity (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect) and resilience.

Method: A sample of 1562 college students (M_{age} = 19.1, SD_{age} = 1.8) from UL Lafayette responded to an online survey that included measures of sociodemographic information, the Childhood Trauma Questionnaire-Short Form (CTQ; Bernstein et al., 1994), the Brief Resilience Scale (Smith et al., 2008), and the Connor-Davidson Resilience Scale-2 (Vaishnavi et al., 2007).

Results: Pearson correlation analyses demonstrated that all five types of childhood adversity were negatively associated with resilience (all ps < .001). On the Brief Resilience Scale (BRS; n = 1,550), correlations ranged from r = −.14 for physical abuse (95% CI [−.18, −.09]) to r = −.33 for emotional abuse (95% CI [−.37, −.28]), with emotional neglect at r = −.27 (95% CI [−.32, −.23]). A similar pattern emerged on the Connor-Davidson Resilience Scale-2 (CD-RISC-2; n = 1,549), with correlations ranging from r = −.09 for physical abuse (95% CI [−.14, −.04]) to r = −.27 for emotional neglect (95% CI [−.31, −.22]), with emotional abuse at r = −.23 (95% CI [−.28, −.18]). The BRS and CD-RISC-2 scores were moderately to strongly correlated with each other (r = .60, p < .001). Chi-square analyses showed that the severity of all five types of childhood adversity was significantly associated with BRS resilience categories (ps ≤ .001). However, across adversity types, 36%–43% of participants reporting severe-to-extreme adversity were still classified as having normal or high resilience.

Conclusion: These findings suggest that childhood adversity, particularly emotional abuse and neglect, is associated with lower self-reported resilience among college students, but only modestly. Many participants who reported severe adversity still reported typical or high resilience, indicating that adversity history alone does not determine resilience. Understanding these associations may help identify students who could benefit from supports aimed at strengthening resilience. Future research should explore the mechanisms underlying this relation and whether resilience buffers the association between childhood adversity and well-being.

Hill, Kaitlyn

Allelic Trends of Plague Resistance in Black-Tailed Prairie Dog Populations

Novel pathogens lead to emerging infectious diseases that can cause immense spreading and outbreaks amongst various populations along different taxa. This has detrimental effects on biodiversity, genetic variance, and survival in many natural populations. Furthermore, some of these newly emerging illnesses can be characterized as zoonotic meaning the disease is caused by a pathogen that can spread between animals and humans, which creates major health risks globally by transport of the pathogens through vectors. The sylvatic plague is an emerging infectious disease caused by the pathogen *Yersinia pestis*, which is transmitted by a flea and commonly infects rodents such as prairie dogs. The rapid outbreaks of Y. pestis dramatically reduced prairie dog populations (>95% mortality). However, in Boulder, Colorado, there are 7 black-tailed prairie dogs (*Cynomys ludovicanus*) that exhibited resistance to the plague and survived. I prepared 14 DNA libraries for whole-genome sequencing, from populations displaying variation in survivorship. Using whole genomes from these populations, we can explore the genomes of black-tailed prairie dog colonies, both survivors and fatalities, from various time points before and after a plague epizootic. After performing high-throughput sequencing, we will execute genome-wide association tests to determine plague resistance associated alleles. This enables us to determine the allele frequency over time in those natural populations. By calculating and analyzing neutral and candidate allele fluctuations before, during, and after plague in the chosen populations, a null model will be created to determine whether fluctuations we recognize in plague-survival alleles are different from what we expect by chance. This research will also lay the groundwork needed to determine the location and frequencies of plaque resistance. Additionally, locating plague-resistance alleles will allow for us to compare resistance alleles amongst various taxa to compare survivorship candidate genes in other populations to help determine the genomic basis for plague. With this research, we aim for the findings to give us an insight into the rapid evolution of emerging infectious diseases and how natural populations respond on a genomic level. This can aid in wildlife conservation efforts to increase biodiversity and survivorship in prairie dog populations.

Johanson, Grace

Fruit Fly Avatars: Advancing Precision Medicine Through Patient-Specific Cancer Models

Developing cancer treatments remains one of the greatest challenges in modern medicine due to the genetic complexity and heterogeneity of the disease. Even when cancers share the same classification and stage at diagnosis, each patient's distinct genetic profile makes their cancer unique. Differences in the underlying genetic mutations among individuals can lead to substantial variability in treatment response and disease progression. Although conventional cancer treatments have improved clinical outcomes, the growing field of precision oncology seeks to develop methods of individualized care. *Drosophila melanogaster*, a widely established model organism used in genetic research has recently shown promise in its usage as a platform for investigating cancer-associated mutations and identifying potential anticancer drugs. Its comparable genetic conservation to humans, short lifespan, and ease of genetic manipulation make it a valuable tool for studying complex oncogenic pathways.

This literature-based research examines the current application of genetically engineered *Drosophila* cancer models otherwise known as "fruit-fly avatars." Through an evaluation of published experimental and clinical studies, this project explores how genetic mutations identified in human tumors can be simulated in Drosophila to model cancer progression and then used for drug discovery.

Published research demonstrates the potential clinical applications of this model system. In one study, a patient-specific *Drosophila* model of KRAS-mutant metastatic colorectal cancer identified a combination of trametinib and zoledronate as a potential therapeutic strategy targeting the patient's tumor-associated molecular pathways. In another study involving adenoid cystic carcinoma, researchers developed a *Drosophila* avatar representing five major tumor-associated genetic alterations and identified a three-drug combination associated with disease stabilization over a 12-month period and a 49% reduction in tumor metabolic activity. Unlike conventional treatment approaches that often rely on therapies established for a particular cancer type, these models enable researchers to evaluate drug combinations based on the unique genetic characteristics of an individual patient's tumor. Together, these findings highlight the potential of *Drosophila* cancer avatars to identify targeted therapeutic strategies, address variability in treatment responses, and advance the development of personalized cancer care.

The findings discussed in this project highlight the potential of *Drosophila* cancer avatars to bridge genetic research and clinical oncology. Although further investigation is necessary to establish the broader clinical applicability, patient-specific fruit fly models represent a promising strategy for improving treatment selections, addressing interpatient tumor heterogeneity and advancing the developments of more precise and individualized cancer treatments.

Jones, Elijah

Greener Does Not Mean Better: Analyzing the Benefits and Risks of Grass vs. Turf in the NFL

This study analyzes the polarizing argument of artificial turf versus natural grass used for practices and games in the NFL, addressing the reasoning for the inception and continuing presence of the manufactured product. The purpose of this research is to determine which material is more optimal for the league, with the focus of advancing understanding within Sport Administration, especially risk management. The assessment of this investigation was approached through a literary review of quantitative metrics (i.e., injury statistics, expenses) coupled with qualitative interpretation (i.e., weather factors, player and executive statements, organizational policy, etc.) to garner essential context between objective data and subjective reasoning. Data was collected from websites affiliated and unaffiliated with the NFL using secondary research and explored through comparative analysis. This methodological framework enabled a rational examination of financial logistics concerning the use of either field material, relational context between the league's top management and the players, and the drive for increased marketability and profitability for the organization. Findings reveal that grass is the ideal field material for players and athletes in general, establishing a campaign for the natural green to be ubiquitous for athletes at least at the professional level. Additionally, results indicate there are some benefits to turf that warrant its use over grass, suggesting more investment in agricultural engineering is needed for natural sod to be more present in the NFL. These outcomes provide empirical support for grass to be the standard used across sport leagues, and challenge prior assumptions that turf is just as good if not better than its counterpart by evaluating their benefits and risks. Overall, this study contributes to the advancement of player health and safety optimization across sports and offers practical implications for sport managers – including but not limited to commissioners, athletic trainers, coaches, and athletic directors. The findings highlight the importance of prioritizing players over profit, while also highlighting areas for future research, particularly in legal issues in sports and activity.

Kibodeaux, Kylie

Effects of Drought on Insect Communities

Drought is a stressful condition in arid habitats worldwide. Under climate change, droughts are becoming more common and intense. Many species have evolved to withstand intermittent drought and are reliant on droughts to function optimally. Previous studies in grasslands have shown that severe droughts lower plant diversity within the affected area. This reduces the amount of food available for insects, creating a trophic cascade that affects organisms throughout the system. This is important because insects are among the most biodiverse taxa worldwide and provide crucial ecosystem services such as pollination and decomposition. In the present study we surveyed the Lower Rio Grande Valley located at the southernmost portion of Texas along the US-Mexico border. The system primarily consists of dense, semi-arid thorny forests referred to as *Tamaulipan Thornscrub*. The insect ecology of the system remains severely understudied, and our survey aims to address this gap by assessing how insect communities are shaped by drought through identification of species collected within our 9 sites both during and after an especially long drought season in 2026. We collected insects using a sweep net. At each site, 25 sweeps were done within a 200-meter transect along hiking trails and access roads within brush habitats. Sampling was conducted in August 2026 during the drought and immediately following rain in October 2026. We will use this data to compare community composition and diversity during and after drought and determine if there are indicator species for both drought and non-drought conditions. This information will provide baseline data for future surveys and conservation efforts in the region, especially in a changing world where droughts are expected to be more frequent and intense. Based on previous studies in different systems, we hypothesize that general insect diversity will be lower during the drought, but specialist presence will be higher.

Levesque, Allison

Can Regular Physical Activity Contribute to Healthier Skin?

Skin health has become an increasingly discussed topic among young adults, particularly as skincare trends, beauty standards, and wellness information continue to circulate across social media platforms. With platforms such as TikTok influencing how individuals approach skincare, many college-aged adults are exposed to products, routines, and recommendations that may not be appropriate or effective for everyone. Because skin health is influenced by individual differences, genetics, lifestyle, and environmental factors, skincare should not be viewed as a one-size-fits-all approach. While typical skincare products remain an important part of maintaining healthy skin, there is also an opportunity to explore how overall physical wellness, particularly regular exercise, may contribute to skin health.

The purpose of this proposed research is to investigate whether regular physical activity can contribute to healthier skin and examine the relationship between exercise habits, physiological factors, lifestyle behaviors, and perceived skin health among college-aged adults. The primary research question is: Can regular physical activity contribute to healthier skin?

Exercise influences skin health through several potential pathways, including increased circulation, improved stress management, better sleep quality, and hydration habits. However, physical activity may also introduce potential skin-related concerns, such as sweat accumulation, acne, folliculitis, and increased ultraviolet (UV) exposure associated with outdoor exercise. This study will explore both the potential benefits and limitations of physical activity rather than assuming that exercise directly improves skin health.

Additionally, the research will examine how social media, particularly TikTok, influences skincare decisions among college students. Areas of interest include the use of trending skincare products, reliance on online skincare recommendations, awareness of individual skin types, and whether students consider professional or evidence-based guidance when selecting skincare routines. Understanding these influences provides insight into how social media shapes perceptions of skin health and everyday skincare behaviors.

The proposed study will utilize a cross-sectional, survey-based research design involving undergraduate students at the University of Louisiana at Lafayette, preferably between the ages of 18 and 24. An anonymous online survey will collect information regarding exercise frequency, intensity, and type; indoor and outdoor activity; hydration; sleep; stress; skincare routines; sunscreen use; post-workout hygiene; acne and other perceived skin concerns; and social media influence. Responses will be evaluated using descriptive statistics and correlation analysis to identify potential relationships between physical activity, lifestyle factors, skincare behaviors, and perceived skin health. Visual charts and graphs will be used to present the results.

Ultimately, this research aims to encourage a more comprehensive understanding of skin health by connecting exercise science with everyday skincare and wellness. By exploring how movement, lifestyle habits, individualized skincare practices, and social media influence intersect, this study contributes to more informed health education among college-aged adults. The broader goal is to recognize that maintaining healthy skin involves more than the products applied externally; it also presents pathways to care for the body as a whole.

The central idea behind this research is that whole-body health includes the skin. Exercise is already recognized as an important component of physical wellness, and exploring its potential relationship with skin health may help expand how we educate individuals about caring for their bodies from the inside out.

Louque, Maci

Determining the Best Material for Artificial Reefs Based of Molly Miller Blennies' Ability to Grip onto Each Substrate

Artificial reefs are becoming more popular in various locations around the world, especially in Louisiana. Benthic fish play an important role in the stability and foundation of artificial reefs. Molly miller blennies are benthic fish that can be found in the Gulf of America. For artificial reefs to be the most successful at creating ecosystems, they must be able to give benthic fish a surface that they can grip onto to avoid being swept by waves and underwater currents. To test which materials would be the best at providing a grippy surface for benthic fish, a friction test was performed using molly miller blennies. The friction test that was chosen for this project was the tilt test. In this experiment, five different substrates were used. The substrates that were used consisted of an oyster shell substrate, smooth plastic, 2000 grit plastic, 600 grit plastic, and 60 grit plastic. The plastic substrates of different grits can be used to represent different common materials used to create artificial reefs such as steel, concrete, and a concrete and gravel mixture. Mature molly miller blennies that were caught from Grand Isle, Louisiana were anesthetized using MS222. After they were anesthetized, they were placed on the tilt test with different substrates, and it was recorded when each blenny started to slip off each substrate. We tested every fish on every substrate three times. It is expected that as the substrates decrease roughness, the fish will decrease friction. It is also expected that the oyster substrate will be the most effective at allowing the fish to grip onto because of the unique shapes, patterns of roughness, and because oysters are common in the areas that the molly miller blennies were found.

Martinez, Keegan

Estimation of the Germination Rate of *Nandina domestica* in the Grady Erwin Nature Reserve

Nandina domestica is an introduced shrub originating in China and India that disrupts ecosystem processes through allelopathy and competes for dominance with native Louisiana plants. Northwestern State University's Grady Erwin Nature Reserve in Natchitoches, LA contains a large population of 8.9 ha in extent. Previously, this wooded area was surveyed to assess the effectiveness of manual removal for controlling the spread of the species. Eleven of the 32 pseudorandom plots cleared by hand regrew adults from root fragments (5 of 11) or included new seedlings (11 of 11) by the next spring. Seedlings comprised 78% of the new plants, indicating their importance to population growth. Previous lab experiments in Asia and the United States have indicated a wide range of germination rates from 65% to 100%. To determine germination rates in the field, four transects (from 44m to 50m) encompassing different soil textures and topography were established within a 0.2 ha area cleared of a sparse population of *Nandina* (< 0.5 plants/m2 compared to 9.0 plants/m2 in the main population). Five 1m x 1m arrays have been randomly located along each transect to hold 25 pots which will be randomly assigned either berries or seeds for a total sample size of 500. The experiment will be conducted during a 90-day period, where individuals will be monitored every week until they present cotyledons, while data pertaining to growth rate will be collected once the individual reaches 15 cm in height. A two-proportion z-test will be used to determine whether the germination rate differs between seeds and berries.

Mashia, Ashley

Plantation Progress: The Collateral Consequences

This research examines the relationship of sociological conflict theory and Black and African Diaspora Studies. Specifically, how conflict theory relates to law, control, and punishment, while diaspora narrates a history surrounding displacement, hierarchy, and labor. Authoritative figures holding power and control of resources are able to create and enforce laws and means of conflict theory. This illusion of the criminal justice system having equality through means of investigating, adjudicating, and criminalizing is a deceptive portrayal displayed through actions of maintaining order and upholding the law by controlled variables. Communities that hold larger amounts of minority groups, specifically Black and African ethic groups, within the Louisiana, are prone to treatment disproportionate to that of their non-minority peers. Colonial governance restructured from institutions developed under bondage, segregation, and economic marginalization are seen in arrangements branched throughout the criminal justice system. Construction of the project is based on the model of history, alongside outcomes demonstrated by research relevant to demographic documentation, institutional investments, and systematic results. Examining historical and modern resources, this research aims to identify the overlap of corrections, income, race, and resources throughout Louisiana. This research aims to identify avenues for future policies and further research to assist in maintaining mutual applications of law-based justice. Calling to action information leading to a socially aware and conscious justice system, the advocation is to consider approaches by authority through power and resource equality while recognition of climate and behavior are concerns.

Mellado Suarez, Adolfo

Low-Cost Ground Robotic Vehicle for Smart Crop Monitoring

Precision agriculture offers opportunities to improve crop productivity while reducing labor and production costs, but conventional crop monitoring can be time-consuming and labor-intensive. This project focuses on developing an affordable autonomous ground robotic platform to support agricultural monitoring through onboard sensing, autonomous navigation, and real-time data collection. The robot was designed using computer-aided design (CAD) software and equipped with a four-wheel drive system, an NVIDIA Jetson Orin Nano, an Arduino Mega 2560, an RPLIDAR C1, and an Intel RealSense D435IF camera. A Robot Operating System 2 (ROS 2)-based architecture was developed to integrate the sensing, computing, and control systems. System development included mechanical design, hardware integration, sensor integration, software development, and system validation. The resulting platform successfully integrates its sensing, computing, power, and control hardware into a modular robotic system designed for autonomous navigation and agricultural data collection. The total estimated system cost is $1,937.47, demonstrating the potential for a relatively low-cost alternative to more expensive agricultural monitoring platforms. Future work will focus on implementing crop health and disease detection, weed identification, plant growth and yield assessment, and environmental sensing with field mapping. This platform establishes a foundation for accessible robotic technologies that could support precision agriculture research and improve agricultural data collection and decision-making.

Menard, Ross

Genetic Analysis of cryptic hawker dragonflies: *Aeshna juncea* and *Aeshna subarctica*

The order Odonata, consisting of dragonflies and damselflies, has maintained a highly conserved ancestral XO sex-determination system for over 300 million years. However, *Aeshna juncea* has become a model organism for sex-chromosome evolution as it displays a polymorphic neo-sex chromosome system due to recent sex chromosome-autosome fusions. *A. juncea* shows intra-specific karyotypic variation across its geographic range; populations in southern Europe retain the ancestral state of 13 chromosome pairs while northern populations exhibit a karyotype of 12 pairs and a newly formed neo-XY pair. *A. juncea* has a sister species, *Aeshna subarctica*, as larvae these two species share nearly identical morphology, development, and habitat. Despite such similarity, *A. subarctica* does not display the newly formed neo-XY and instead, retains the ancestral state of 13 chromosome pairs. For the most confident method of differentiating between the two species, I extracted DNA from 30 samples obtained in Finland. I then used polymerase chain reaction to amplify the cytochrome c oxidase I gene region so that I could then use UGENE sequence alignment software that allowed me to align the forward and reverse sequences into a consensus. After getting the consensus for every sample I then uploaded and compared my generated sequences to a data base of known sequences for exact species identification. Future directions include reviewing literature of proposed morphological differences between the two species and then applying morphometrics to the newly identified samples in an attempt to find indicators that can be used in the field to avoid collecting *A. subarctica* and only collect A. juncea. This sample collection optimization would allow for our lab to save money and time in the field. The other goal is to do higher level sequencing and investigate if there is introgression between the two species or even discover if these are actually the same species, instead of being two separate species.

Morgan, Jahnexi

The Effects Prenatal CBD Exposure on Anxiety Behaviors and Adult Hippocampal Neurogenesis

Rates of cannabis use have risen in the U.S. following legalization. Maternal cannabis use is also rising, with adverse health outcomes for offspring. More mothers are turning towards cannabidiol (CBD) as a "healthier" alternative to THC. Rodent research shows alterations of neurological development in offspring from prenatal cannabis exposure (PCE) due to maternal cannabis use, such as inhibitory interneuron development resulting from THC exposure in utero. While CBD has been shown to affect neurodevelopment, few studies have assessed effects on adult hippocampal neurogenesis (AHN). Adult THC and CBD affect AHN, yet there appears to be little research on the effects of prenatal cannabinoid exposure on AHN. This project addresses these gaps.

Muguira, Dominic

Frogget-about-it! Invasive Cuban Treefrogs in the Audubon Zoo and adjacent Riverside Park

The Cuban treefrog, is a damaging invasive species, from Cuba. Previously invasive in Florida, it has established its first population, outside the state of Florida, in New Orleans. Furthermore, the frogs in Louisiana come from Florida, not Cuba, making Louisiana a secondary invasion. Using low coverage whole genome data, we will determine if the New Orleans population is continually being re-seeded from source populations in Florida and identify more exact invasion routes. We will also test the New Orleans population for the potential to adapt to Louisiana's climate, which is colder than anywhere else in their current range. Our results will be published in scientific journals, featured in local outreach, and used to inform state agencies how to best manage amphibian populations. So far we have had two field days where we have captured large numbers of these invasive frogs in conjunction with the USGS. We will use samples taken from these frogs to construct the first chromosome-level genome assembly of the Cuban treefrog, which is an essential public resource that will serve as a base for the rest of our research. Then, we will continue to extensively sample the New Orleans population and potential source populations in Florida so that, using low-coverage whole-genome sequencing, we can obtain the rest of our goals. Using this data, we will combine demographic models, assignment tests, and population structure analyses to identify exact invasion routes from Florida to Louisiana. We will also use standard population genetic metrics (e.g. nucleotide diversity) on a genome-wide scale to compare the evolutionary potential of the New Orleans population to existing Florida populations. Finally, we will take advantage of the north-south environmental cline in Florida and determine if alleles associated with cooler temperatures in Florida are enriched in the New Orleans population, consistent with adaptation. This is important, because the main factor which has limited the spread of this species to Florida, and now also New Orleans, is there inability to tolerate temperatures further North. This is only the beginning of this project, so we have no data or results. This poster is to present a map of where we are going and how we will get there. This project is significant because it will help us to understand the invasion of Louisiana by the Cuban Treefrog, help to inform management on how to prevent the spread of the invasion, and contribute to resources to the field which will be valuable assets to anyone working on this species in the future.

Navarro, Nicolas; Cunningham, Collin; Reade, Morgan; Reinhardt, William

A Year Under the Canopy: Seasonal Patterns in Live Oak Microclimate, Soil, and Leaf Physiology

Variation in the environment can produce changes in the traits of native tree species, which has significant consequences for microclimate. Here, we studied trait variation and temporal changes in a microclimatic variable, soil temperature, in live oaks (Quercus virginiana) spanning a range of sizes. Over 11 months (11/25-9/26) we monitored changes in size and traits for 28 trees on the University of Louisiana at Lafayette campus, on a monthly basis. Concurrently, we measured soil temperature inside and outside the tree canopy every 2 weeks using a soil probe. The focal traits included stomatal conductance (g), leaf chlorophyll content, and leaf mass per area (LMA). Correlation analyses determined that tree height, canopy area, and trunk diameter at breast height were all positively correlated (rho = 0.437-0.782, $p < 0.05$). We used analysis of variance to test for differences in traits as a function of tree size, to test for effects of time and tree size (including their interaction) on traits and microclimate, and to test for effects of position (inside versus outside canopy) and tree size (including their interaction) on soil temperature. We determined that LMA, g, and chlorophyll changed over the sampling period ($p<0.05$) and the changes were consistent for trees of different sizes for chlorophyll ($p = 0.72$) and g ($p = 0.092$), but not for LMA ($p = 0.0004$), where larger trees had greater LMA in June and smaller LMA in March. Chlorophyll content and stomatal conductance also varied with tree size, where chlorophyll content was greatest in small trees ($p = 0.042$), and stomatal conductance was greatest in medium-sized trees ($p = 0.0025$). There was no effect of tree size on LMA ($p > 0.05$). It was significantly cooler (ca. 1°C) underneath the tree canopy than it was outside ($p < 0.001$), which was consistent for trees of different sizes ($p = 0.25$). There was no effect of plant size on soil temperature ($p = 0.316$). In sum, we found that live oak trees ameliorate their microclimate (soil temperature) regardless of tree size, and determined that leaf traits varied across the year in response to environmental change, suggesting feedbacks between canopy structure, traits, and microclimate.

Nwaezeapu, Onyeka

Establishment and Recovery of Cryopreserved Primary Mouse Cells from Explant Cultures

I used an explant culture approach to establish primary mouse cells for future laboratory research. Tissue was collected from two mice and placed directly into culture without enzymatic digestion during initial isolation. I monitored tissue attachment and cell outgrowth, transferred retained tissue fragments to fresh wells, and used trypsin to passage the growing cells. The first mouse culture showed more sustained outgrowth than the second and became the main source for continued expansion. The second collection contained more visible fatty material and developed crystalline deposits, although the cause of its poorer growth was not determined. Expanded cells were frozen in medium containing RPMI, fetal bovine serum, and dimethyl sulfoxide. On October 21, 2026, I thawed two passage 2 vials labeled A1 and A2 and returned them to separate T25 flasks. Both cultures showed attached cells approximately 24 hours later. By October 25, A1 had required another split, while A2 needed more time before passaging. These observations demonstrate recovery of viable cells after freezing and thawing, but do not provide a numerical survival rate. This project established and recovered primary cultures that may support future cell characterization and reprogramming work. Cell identity, culture purity, and suitability for generating induced pluripotent stem cells remain to be tested.

Omes, Ana; Stanley, Ella

Distance Matters: Determining the Maximum Sensing Distance for Optimal Growth of *Agroathelia rolfsii*

Chemotropism is an important chemical process in the environment for which the growth of organisms is influenced by chemical stimulus outside of the organism. Chemotropism can be positive or negative and aids the organism moving towards beneficial stimuli such as a source of nutrients, mating partners, or host organisms and away from sources of danger such as predators. The hyphae *Agroathelia rolfsii* is a necrotrophic, soilborne, fungal plant pathogen found in tropical and suburban regions that primarily attacks host plant stems for a means of sustenance. The range of fungal growth based on positive chemotropism is unknown and would be useful to know when planting and fighting against pathogens in crops, The purpose of the experiment is to determine the optimal distance at which the hyphae *Agroathelia rolfsii* exhibits positive chemotropism towards a source of nutrients. This was carried out through repetitious observations of distance plates. The distance plates were created by placing sterilized 2-3 cm long stem pieces of tomato plants at various distances ranging 5-10 cm away from a hyphae puck centered at the bottom of a water agar plate. The tomato stem pieces were compared to an empty section at the same distance from the hyphae puck. Through this experiment it is revealed the optimal distance for chemical sensing for the pathogen is a range of 5-6 centimeters for positive chemotaxis. From this experiment further experiments can be carried out to determine the compound attracting the hyphae and possibly the mechanism of chemotrophic sensing in *Agroathelia rolfsii.*

Perkins, Geremiah

Tracking Microplastics Across Lake Pontchartrain: Patterns in Abundance

Microplastics are increasingly prevalent in aquatic environments, yet their distribution and transport within interconnected coastal water systems remain poorly understood. Lake Pontchartrain, Louisiana, receives freshwater inputs from tributaries, urban drainage systems, and occasional Mississippi River diversions, creating complex hydrodynamic conditions that may influence microplastic movement and retention. This study investigates spatial variations in suspected microplastic abundance and potential transport pathways through field sampling and numerical particle-tracking simulations.

Water samples were collected from eight locations throughout Lake Pontchartrain, digested using hydrogen peroxide, and examined under a stereomicroscope to identify and quantify suspected microplastic particles. Suspected microplastics were observed at all eight sampling locations, with the highest count at T-12 (72 particles) and the lowest at C4 (12 particles). Separately, particle-tracking simulations using a Delft3D-based hydrodynamic model were conducted to investigate potential transport pathways and spatial variations in particle exposure times. Simulated exposure times were evaluated at the 50th, 75th, and 90th percentiles to characterize differences in particle movement and potential retention throughout the lake.

Field observations demonstrated spatial variability in suspected microplastic abundance, while numerical simulations revealed differences in particle transport and potential retention zones. Although a direct relationship between observed microplastic abundance and modeled particle retention has not yet been established, these complementary approaches provide a foundation for investigating how hydrodynamic circulation may influence microplastic distribution. Future analysis will compare observed particle abundance with modeled transport patterns to evaluate potential accumulation zones within Lake Pontchartrain.

Pitt, Lauren; Dunbar, Samuel

Bricks Along the Bayou: Costly Signaling at the Poverty Point Site

During the 2026 summer field school at the Poverty Point World Heritage Site (16WC5), the Poverty Point Historical Archaeology Program excavated an amorphous brick structure, Structure 1, along the Bayou Maçon. The historical archaeology program represents the first archaeological investigation into the historic component of site occupation. Preliminary investigations in December 2025 had revealed that the structure was decommissioned and abandoned after a significant fire. Early macroscopic assessments of construction materials recovered from the structure identified two primary types of box-pressed, fired brick. The first is locally made, untempered, and constructed from silt loam with an on-site kiln. The second type is tempered and made from a visibly and texturally different soil source. This second type may have been brought onto the Poverty Point landscape, not made there. This research examines bricks and brick fragments recovered from Structure 1 through a lens of costly signaling. Costly signaling is the idea that people communicate or perform status through choices that require real expense. In archaeological contexts, costly signaling treats material choices as expressions of status and understanding how expensive a structure was to build can assist in its analysis and interpretation. Another feature of the excavated landscape that may be indicative of costly signaling is the structure's position against the Bayou Maçon. This positioning, along with the use of materials that would likely have been interpreted as a sign of significant wealth, may have been employed to garner attention from individuals traveling along the Bayou. The likelihood of this interpretation increases due to the presence of non-native plants in the area, which may have been planted as a form of landscaping. This presentation provides preliminary results from ongoing laboratory analysis. This research contributes to ongoing discussions about the economic power and relative status of the historic property owners of Poverty Point.

Riggs, Emily

The Role of Religious Conservatism and Nationality in Sexual Assault Victim Blame and Perceived Similarity

No abstract provided.

Romero, Michael

Archaeological Survey of the Fordoche Bridge Battlefield in Pointe Coupee Parish, Louisiana

The Battle of Fordoche Bridge, also the Battle of Sterling's Plantation, was an American Civil War conflict on September 29th of 1863 along Bayou Fordoche in Pointe Coupee Parish. The battle was preceded by the Siege of Port Hudson, which ended with a Union victory less than 100 miles away. There has been comparatively little research on the Battle of Fordoche Bridge, and the battlefield has gone unrecorded. This research documents a portion of the battlefield defined by the National Park Service. Starting from the location of a cannonball recently discovered by a landowner, we utilized systematic metal detecting, shovel testing, and GPS mapping of the Battle of Fordoche Bridge to record the battlefield with the Louisiana Office of Cultural Development, Division of Archaeology. Metal artifacts datable to war will undergo the chemical process of electrolysis to ensure future preservation. The Battlefield, as marked within the parameters of the National Park Service map, shows signs of looting and signs of destruction by agriculture and industry. The purpose of recording the site with the Louisiana Office of Cultural Development Division of Archaeology is to provide opportunity to the government to counteract and combat the damage done to the battlefield. The recording of the site will provide advantage for the state government to attempt to preserve and better record Civil War history in the state of Louisiana.

Schexnider, Kylee

The Bloody Truth: An Exploration of Period Poverty through Visual Storytelling

Menstruation is a biological reality for nearly half the world's population, however it is still a taboo subject. Institutions and politicians alike, treat this as a private issue. The stigma around menstruation suggests that women’s bodies, or more importantly our sex, does not belong in the public eye. We can see this when menstrual products are inaccessible, or absent in public spaces. Through interviews with professors of sociology and political science, I found that economical issues such as period poverty can be traced back to lack of representation in political systems. The societal shame attached to menstruation can be traced back to the invalidation of women’s sexuality, while simultaneously marketing said sexuality globally through various media platforms. Through the lens of satirical screenwriting, there is potential for this taboo but common issue to be exposed in a way that challenges societal expectations and perceptions.

I am proposing an exploration of period poverty and other gender related issues through the language of film. Through screenwriting and horror, I will transform an everyday social issue into an absurd, unsettling media experience. Rather then portraying menstruation as a frightening inconvenience, the horror will emerge from systems of shame and the effects of misinformation. The project ultimately seeks to make visible what society has repeatedly taught people to keep invisible, demonstrating how something as ordinary and unavoidable as menstruation can become frightening when people are denied the knowledge, resources, and social acceptance necessary to understand it.

Smith, Jaimee

Determining Validity of Heat Shock Protein 70 in *Minuca longisignalis* as Biomarker of Environmental Health

Louisiana's leading manufactures include chemical and petroleum products, economically significant industries which can also severely impact the state's environment. Toxic products from industrial pollution found along Louisiana's coast are mostly composed of polycyclic aromatic hydrocarbons (PAHs), which are known to disrupt metabolic processes of coastal fauna. These biological impacts threaten Louisiana's $2.4 billion dollar annual seafood industry, and thus a diagnostic which can indicate early stress in coastal animals would be a useful tool to facilitate remediation. The longwave gulf fiddler crab, *Minuca longisignalis*, is a benthic species found along Louisiana's coast, and due to pollutant exposure via air, water, and soil, this crab can serve as a sentinel species for monitoring environmental health. We hypothesize that heat shock protein 70 (HSP70), a chaperone usually upregulated when other proteins have been damaged and unfolded, will be an early biomarker of stress that is informative of crab pathology and immune mechanisms. The presence of HSP70 in naphthalene-exposed and unexposed *M. longisignalis* were determined through direct ELISA assays. Local fiddler crabs from Chauvin, LA were collected and exposed to common contaminant naphthalene to optimize HSP70 assays, to determine HSP70 levels during stressed states, and to show that these markers remain distinctly evident to familiar pollutant compounds. Because the gills are often the intercept of PAHs in crustaceans, we have primarily focused on this tissue. Preliminary trials of HSP70 assay suggest differences between exposed and unexposed crab gill homogenates after short naphthalene exposure times including 48 and 72-hours post-exposure at minimal concentrations. The findings from this research will reinforce the actions needed to ensure the well-being of

Louisiana's coastal communities, and this data will serve as a foundation for a diagnostic that can be applied to surveys of coastal crustaceans.

Soileau, Taylor; Begnaud, Camden; Blue, Ashlee; Holliday, Takhya

The Association Between Abuse and Alcohol-Problem Screening in College Students

Background/Rationale: Traumatic childhood experiences have been connected to unhealthy behaviors (Sowder et al., 2018; Tong et al., 2024;). Specifically, childhood abuse has been linked to increased risk of problematic alcohol use in adolescence and adulthood (Zhu et al., 2023; Lown et al., 2011). While childhood abuse and alcohol consumption is well-supported within research, there is limited literature on specific types of childhood abuse (physical, emotional, and sexual) and its correlation with problematic drinking in southern Louisianan college students. Given the prevalence of alcohol use among college students and the cultural context of alcohol use in Louisiana, it is important to examine risk factors in alcohol-related problems among Louisiana college students (Colby et al., 2009; Patrick et al., 2022; Shipp et al., 2021). Purpose/Research Questions: The purpose of this research was to examine the correlation between three forms of childhood abuse – physical abuse, emotional abuse, and sexual abuse –and alcohol-related problems among college students. We hypothesize that exposure to each of the three forms of childhood abuse would be statistically significant correlation with problematic alcohol consumption (H1). We also hypothesize that, out of the three forms of childhood abuse, emotional abuse would be the most strongly correlated with problematic alcohol consumption(H2).

Method: A sample size of 1,562 college students (Mage = 19.1, SDage = 1.8) answered an online survey, including measures of sociodemographic information, Childhood Trauma Questionnaire-Short Form (Bernstein & Fink, 1998), and Patient Health Questionnaire-Eating and Alcohol Use (Spitzer et al., 1999). Point-biserial correlations examined the associations between the continuous CTQ abuse scores and the binary alcohol-problem screen.

Results: All three forms of childhood abuse (emotional, physical, and sexual) were significantly correlated with problematic alcohol use screening, supporting H1 although there was a small effect size. Childhood emotional abuse showed the largest observed correlation with alcohol problems ($r = .13$, $p < .001$), followed by sexual abuse ($r = .11$, $p < .001$), then physical abuse ($r=.09$, $p < .001$). Formal comparisons of the three correlations using Seiger/Williams-type tests showed that, while the descriptive ordering of the three correlations went in the predicted direction, H2 was not statistically supported.

Conclusion: Childhood emotional, physical, and sexual abuse were each positively associated with a positive alcohol-problem screen among college students, although the associations were small. Emotional abuse showed the largest observed correlation, but the differences among the three abuse correlations were modest. These findings suggest that childhood abuse may represent one of several factors associated with later alcohol-related problems and highlight the importance of examining specific forms of childhood adversity when studying health-risk behaviors.

Starnes, Meredith; Hooks, Jenna; Louviere, Lauren; Allen, Arianna

Mindfulness as a Multidimensional Construct: Associations with Emotional Well-Being and Psychological Distress in College Students

Introduction: Mindfulness has been associated with greater well-being and decreased psychological distress (Tomlinson et al., 2018; Stuart-Edwards, 2024; Webb et al., 2018). Brown and Ryan (2003) conceptualize mindfulness as a unidimensional structure. However, the Five-Facet Mindfulness Questionnaire (Baer et al., 2006) operationalizes mindfulness as a multidimensional construct composed of five facets: Observing, Describing, Acting with Awareness, Nonjudging, and Nonreactivity. Examining these facets individually may provide a nuanced understanding of how different components of mindfulness relate to psychological functioning. The purpose of this research was to examine whether different facets of mindfulness show different associations with positive emotional well-being, depression, anxiety, and stress.

Method: The present study was a secondary analysis of survey data from the completers-only dataset of 1,562 undergraduates (M_{Age}= 19.1, SD_{Age}= 1.8). Mindfulness was assessed using the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), which measures Observing, Describing, Acting with Awareness, Nonjudging, and Nonreactivity. Emotional well-being was assessed using the World Health Organization Five Well-Being Index (WHO-5; WHO, 1998), and depression, anxiety, and stress were assessed using the Depression Anxiety Stress Scale-21(DASS-21; Lovibond & Lovibond, 1995). Pearson correlations were used to examine the strength and direction of associations between each mindfulness facet and the four emotional outcomes.

Results: The five mindfulness facets showed distinct patterns of association with emotional well-being and psychological distress. Describing was associated with greater well-being (r = .36) and lower depression (r = -.35), anxiety (r =-.29), and stress (r = -.29). Nonjudging showed consistent associations with greater well-being (r = .41) and lower depression (r = -.50), anxiety (r = -.47), and stress (r = -.52). Nonreactivity was also associated with greater well-being (r = .32) and lower depression (r = -.27), anxiety (r = -.25), and stress (r = -.27). Acting with awareness was associated with greater well-being (r = .43) and lower depression (r = -.46), anxiety (r = -.44), and stress (r = -.48). Observing demonstrated a contrasting pattern, with higher scores associated with slightly lower well-being (r = -.08) and higher depression (r = .19), anxiety (r = .28), and stress (r = .26). All reported associations were statistically significant (ps ≤ .001).

Conclusion: These findings suggest the importance of examining mindfulness as a multidimensional construct, as individual facets demonstrate distinct associations with emotional functioning. Describing, Acting with Awareness, Nonjudging, and Nonreactivity were generally associated with greater well-being and lower psychological distress. In contrast, Observing showed a different pattern, being associated with lower well-being and higher psychological distress. This suggests that simply being attuned to one's experiences may not be as closely associated with positive psychological functioning compared with how individuals engage with and respond to those experiences. Future research should investigate whether mindfulness interventions emphasizing specific facets yield differential benefits for emotional functioning.

Thibodeaux, Aidan; Himel, Natalie; Wild, Lucy

Examining Multidimensional Differences of Perceived Social Support and Psychological Distress

Introduction: A negative relation between perceived social support and psychological distress has been frequently observed in past research (Al-Ghadban & Salman, 2026). Previous research tends to consider perceived social support as a whole rather than examining differing sources of social support. Certain multidimensional scales have been created that examine multiple different sources of these types of perceived social support (MSPSS; Zimet et al., 1985). It is important to better understand how different avenues of social support may be associated with psychological distress. The purpose of this research is to examine how social support from family, friends, and significant others may differ in the strengths of the association of psychological distress.

Method: A sample of 1,562 participants was recruited from UL Lafayette through the SONA platform. All participants were college students within the age range of 18-30 years old with a mean of 19.1 years (SD = 1.8). Perceived Social support was assessed by the 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1985) on a 7-point Likert scale. Depression, anxiety, and stress were measured by the 21-item Depression Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) on a 4-point Likert scale. Any missing items from the data set were left blank and excluded from final analysis. Sample demographics for gender and race/ethnicity were collected alongside the scales. A Pearson's correlations analysis was used to test the associations between perceived social support from family, friends, or significant others, and depression, anxiety, and stress symptoms.

Results: A correlational analysis revealed that total perceived social support was negatively associated with anxiety ($p < .001$, $r = -.26$), depression ($p < .001$, $r = -.41$), and stress ($p < .001$, $r = -.29$). Out of the three subscales for MSPSS, family had the strongest association with all DASS measures, with a strong association observed in depression ($p < .001$, $r = -.52$) and a moderate association observed with both anxiety ($p < .001$, $r = -.39$) and stress ($p < .001$, $r = -.42$). Both friends and significant other held overall weak associations with the DASS scores, with friends exhibiting a slightly stronger association with anxiety ($p < .001$, $r = -.16$), depression, ($p < .001$, $r = -.27$), and stress ($p < .001$, $r = -.19$). Significant other had slightly weaker associations with anxiety ($p < .001$, $r = -.09$), depression ($p < .001$, $r = -.23$, and stress ($p < .001$, $r = -.12$).

Discussion: Family support showed the strongest negative associations with psychological distress, while support from significant others showed the weakest associations with emotional well-being. These findings suggest that the relative importance of support sources may depend on developmental context. In this relatively young college sample, family support may remain especially salient, while peer and romantic support may play more modest roles. The findings may help inform efforts to address psychological well-being in college students.

Undergraduate Research Conference 2026 Program

Trahan, Kameron; Doucet, Ryley

Religiosity's Relation to Sexual Attitudes

This study focuses on the relationship between college students' left-right religiosity and their sexual attitudes. The relationship between religiosity and sexual attitudes has previously been conceptualized using reference group theory, which suggests that individuals will often use their religious beliefs as a source of reference when evaluating their sexual behaviors and attitudes. Young adults are often exploring and developing both their religious views and sexual attitudes in college. The findings of this study can help to conceptualize the nature of these relationships. Participants completed measures of demographics (age, gender, sexual orientation, race), religion, religious left-right ideology independent of political affiliation, and sexual attitudes. Two scales were examined in the current study: the Multidimensional Religious Ideology Scale and the Brief Sexual Attitudes Scale. The Brief Sexual Attitudes Scale was utilized to determine the sexual attitudes of participants, making use of four subscales: permissiveness, birth control, communion, and instrumentality. With reference group theory as a theoretical guide, we hypothesized a negative relationship between individuals who held more conservative religious ideologies and attitudes towards sexual behaviors involving the previously mentioned subscaleitems. Linear regression analysis was conducted using 271 undergraduate Psychology students from the University of Louisiana at Lafayette. We found that there was a strong internal consistency for religious conservatism ($\alpha = 0.86$). Religious conservatism was negatively associated with permissiveness ($b = -.40$, $\beta = -.43$, $t = -7.9$, $p < .0001$), birth control attitudes ($b = -.18$, $\beta = -.23$, $t = -3.77$, $p < .001$) and instrumentality ($b = -.31$, $\beta = -.32$, $t = -5.51$, $p < .0001$). We found no significant relationship between religious conservatism and items assessing communion. The data mostly support our hypothesis, as higher religious conservatism was associated with lower scores on permissiveness, birth control, and instrumentality, but not communion. Overall, the results suggest that college students' left-right religiosity is related to the positive or negative attitudes one may hold towards sexual behavior regarding casual sex, birth control practices, and the functions of sex – further clarifying the previous research indicating that individuals will follow the teachings of their religion when determining their own sexual attitudes. Religiosity's Relation to Sexual Attitudes

Tran, Lilian; Donnelly, Allison

Vibrio **Prevalence in Southwest Louisiana Waterways**

Vibrio infections in Louisiana have sparked concerns regarding the presence of these bacteria in local waterways, with 2026 reporting a 600% increase in mortality attributed to *Vibrio vulnificus* compared to the last ten years. This study focuses on monitoring Vibrio concentrations in water bodies in Southwest Louisiana with an emphasis on recreational areas and locations with a higher likelihood of human exposure to *Vibrio* species through contact with contaminated marine life or by entry via an open wound. The bodies of water that are being monitored include locations that are used extensively for fishing, swimming, and boating. Water samples are collected monthly from each site and plated on CHROMagar Vibrio medium to distinguish and quantify colonies of presumptive *Vibrio parahaemolyticus, Vibrio vulnificus/cholerae*, and *Vibrio alginolyticus* using plate count assays. In addition to monitoring the concentrations of these bacteria, the water temperature, salinity, and pH are monitored at each sampling location to examine whether changes in *Vibrio* abundance correlate with environmental conditions. Our initial results indicate that the concentrations of *V. parahaemolyticus, V. vulnificus/cholerae,* and *V. alginolyticus* ranged from 0-1.1 x 104 cfu/ml, 0-5.2 x 102 cfu/ml and 0-8.0 x 102 cfu/ml, respectively at our sampling sites. To date, microbial and chemical analyses have only been performed at our study sites over a period of two months. Therefore, additional sampling will be necessary to allow a full evaluation of the environmental factors that influence *Vibrio* concentrations at our study sites. However, have seen limited evidence that a decrease in water temperature results in the reduction of *Vibrio* concentrations. This longitudinal study allows for comparisons between locations and seasons to identify factors that impact *Vibrio* concentrations in local water bodies. The goal of this research is to gain insight on how *Vibrio* concentrations fluctuate across local waterways throughout the year and to identify the environmental factors that cause these fluctuations. This information will help improve our understanding of the distribution of *Vibrio* species in recreational water bodies and provide useful background for future environmental monitoring and public health awareness efforts in Southwest Louisiana.

Vidrine, Megan

Secrets in a Bottle: Interpreting 19th-Century Bottle Fragments from Poverty Point

The Poverty Point World Heritage Site (15WC5) is the largest landscape terraformed by fisher-hunter-gatherers in the world, and archaeological research at the site has exclusively focused on the precolonial occupation. Poverty Point was also a historic plantation, a satellite food farm owned by the Guier family for their larger cotton operation in East Carroll Parish. The Poverty Point Historical Archaeology Program, run through the ULL Louisiana Public Archaeology and Osteology Lab, is conducting the first historic research on the site. In June 2026, the ULL archaeological field school excavated a 1x5m trench to expose and understand an amorphous brick structure, Structure 1, along the Bayou Maçon. This research is focused on the inventory and analysis of glass recovered from the structure. The analysis combines the assemblage recovered during summer 2026 with materials unintentionally recovered in the same area by archaeologist Glen Green in 1983. This work uses a lens of political economy to better understand the role of infrastructure in consumer choice and applies an interpretative framework from medical anthropology to highlight the impact of political economy on both general health and types and levels of violence within a population. In a Jeffersonian laissez-faire free market economy built on and by enslaved labor while operating under a merchant-planter elite averse to taxation, health was seen as the responsibility of the individual and not the government. It is hypothesized that most utilitarian glass recovered from the building belongs to various “medicine” bottles common to the period that are coming into the area with steamboat traffic. Documented responses to political systems that treat health care as an individual responsibility offer lessons for protecting those most burdened by such systems today.

Watson, Ori

Determining an Effective Feeding Rate for Endangered Gopher Tortoises

Gopher tortoises (*Gopherus polyphemus*) are a keystone species native to the southeastern United States. Gopher tortoises are an essential member of the longleaf pine ecosystem with over 60 vertebrate and 300 invertebrate species who rely on them and their extensive burrows for survival. Without these tortoises, the longleaf pine ecosystem would begin to collapse, but they have begun to decline in population size due to predation and habitat fragmentation. Because of their status as an endangered species, they are federally protected and often a part of head-starting programs whose goal is to raise them in captivity until they are large enough to avoid predation in the wild. The Natchitoches National Fish Hatchery collects Mississippi gopher tortoises as eggs to hatch and then raise until they are ready to be released into the wild. In the current study, gopher tortoise specimens were fed specific amounts of food correlating to their body mass; amounts of spring mix salad blend equal to 8%, 9%, or 10% of their weight was fed to them to determine the ideal amount of food to maximize growth while in the head-starting program. Sixty-three tortoises were monitored for eight weeks, being weighed and having their carapace and plastrons measured at the end of each week to track their growth. Analysis of variance determined that over the course of eight weeks, the only statistically significant data found was the 9% treatment plan for the growth of the plastron. A longer study period and more subjects may have resulted in more significant data.

Wedeking, Josie; Burdsall, Cara; Nguyen, Lily

Childhood Adversity and Psychological Distress: Examining Abuse, Neglect, and Household Dysfunction

Introduction: Adverse Childhood Experiences (ACEs) are traumatic or stressful experiences that occur in a person's life before the age of 18 with the domains categorized as abuse, neglect, and household dysfunction (CDC, 1998; Dube et al., 2003). Exposure to ACEs has shown to positively correlate with poor psychological outcomes, such as depression, anxiety, and stress (Çiçek & Yildirim 2026; Karatekin & Hill, 2018). Research has shown a general association between cumulative ACEs on depression, anxiety, and stress (Byansi et al., 2025; Vu et al., 2025). However, additional research can be done to examine the unique associations regarding the separate domains of ACEs on depression, anxiety, and stress.

Method: Participants were 1,562 young adults (71.6% female, 25.6% male, 2.8% other; Mage = 19.08, SD = 1.80). The sample identified as White (63.2%), Black (24.0%), Hispanic (3.0%), Asian (2.4%), or another racial/ethnic identity (7.4%). Participants completed the Adverse Childhood Experiences Questionnaire (ACE-Q) and the Depression, Anxiety, and Stress Scales–21 (DASS-21). ACEs exposure was examined using a cumulative total score and three domains (abuse, neglect, and household dysfunction). Pearson correlations assessed the relation between ACEs exposure and psychological distress. Three multiple linear regressions examined the unique associations of abuse, neglect, and household dysfunction with depression, anxiety, and stress, with all three ACEs domains entered simultaneously in each model.

Results: Cumulative ACE exposure was positively associated with depression ($r = .564$), anxiety ($r = .540$), and stress ($r = .539$), all $p < .001$. Each ACE domain was also positively correlated with each DASS-21 outcome at $p < .001$ for all. Multiple regression models were significant for depression, $F(3, 1538) = 304.40$, $p < .001$, $R^2 = .373$; anxiety, $F(3, 1536) = 242.60$, $p < .001$, $R^2 = .321$; and stress, $F(3, 1538) = 242.40$, $p < .001$, $R^2 = .321$. All three ACEs domains demonstrated significant positive associations with each outcome at $p < .001$for all. Neglect had the largest standardized coefficient for depression ($\beta = .348$), and abuse had the largest coefficients for anxiety ($\beta = .288$) and stress ($\beta = .308$). Household dysfunction remained significantly associated with all three outcomes (βs = .117–.148).

Discussion: Findings suggest that abuse, neglect, and household dysfunction each demonstrate unique associations with depression, anxiety, and stress. Although all three domains were significantly associated with psychological distress, neglect exhibited the largest standardized coefficient for depression, whereas abuse exhibited the largest coefficients for anxiety and stress. These patterns highlight the importance of examining specific types of childhood adversity rather than relying solely on cumulative ACEs scores. Cumulative ACEs scores are useful for capturing overall adversity trends, but domain-level analyses may reveal nuances that cumulative scores conceal. Such domain-specific patterns may help identify which forms of childhood adversity are particularly relevant to different facets of psychological distress.

White, Ethan

The Effects of Pitch and Beat Frequency on Anxiety in Zebrafish

Receptive music therapy has been shown to significantly decrease anxiety in people experiencing high levels of stress. Despite this, there has not been much research on how musical elements interact and how they can produce this effect. This study will use the zebrafish model to examine how a key center's pitch frequency can interact with the frequency of a beat to produce anxiolytic effects. We hypothesize that if the key center's pitch frequency is more consonant with the beat frequency, then the anxiolytic effect of the music will be amplified. To do this, an excerpt will be taken from the Vivaldi piece, "Winter: II. Largo". The piece will be transposed into either A major or Eb major, and the tempo will be 51.5625 bpm. The relationship between the pitch and rhythm frequencies can be shown with the formula $\frac{R \cdot 2^{S/12} \cdot 2^{C}}{60}$. This formula derives ideas from the formula to find a pitch relative to 440Hz, the exponential growth of the octave, and the unit conversion from bpm to Hz. The reason the tempo is 51.5625 is because the mathematical frequency is consonant with the note A, while also being dissonant with the note Eb. There will be three experimental groups (n = 15): Group 1 will listen to the piece in A major, Group 2 will listen to the piece in Eb major, and Group 3 will be a control that receives no auditory stimulus. Using the light-dark test (LDT), we will measure the potential anxiolytic effects that the different forms of musical auditory enrichment have on the fish by coding for thigmotaxis and scototaxis. We will then analyze the data using a one-way independent measures ANOVA to determine if there was any significant difference between groups. Post-hoc analyses will be conducted if significance occurs.

Yarbrough, Tariq

Effects of Surface Texture and Water Velocity on the Gripping Performance of Seaweed Blennies

Seaweed blennies (*Parablennius marmoreus*) are small, bottom-dwelling fish commonly found on artificial reef structures, including offshore petroleum platforms. Their ability to grip surfaces helps them maintain position in moving water. However, the effects of surface texture and water velocity on their gripping performance remain poorly understood. This study aims to investigate how surface texture and increasing water velocity affect seaweed blennies' ability to maintain their grip. Five seaweed blennies will be tested in a swim tunnel across four surface conditions: smooth, 60-grit, 600-grit, and 2000-grit sandpaper. Each fish will be exposed to gradually increasing water velocities until it loses its grip. The time and water velocity at which grip is lost will be recorded, along with observations of swimming and gripping behaviors. It is hypothesized that blennies will maintain their grip longest on coarser surfaces, particularly 60-grit sandpaper, due to increased friction. Additionally, increasing water velocity is expected to reduce gripping duration, as stronger currents create greater drag. The findings of this study may provide insight into how surface characteristics influence the ability of small, bottom-dwelling fish to remain attached to structures in moving water. This research may also contribute to understanding habitat selection and the design of artificial reef structures.