FAU

FLORIDA ATLANTIC UNIVERSITY

Broward Campuses

13th Annual FAU Broward Student Research Symposium

Friday, November 17, 2023
9:00am – 1:00pm
University/College Library
First Floor
Davie Campus

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Program Overview

13 Years of Student Research Celebrated!

When the Broward Student Research Symposium began in 2010, the event organizers saw this event as a way to prepare students to pursue research professionally, teach them invaluable skills like academic perseverance, critical thinking and creative problem-solving, and inspire interdisciplinary projects and this endures today. The symposium provides an excellent opportunity for undergraduate and graduate students to showcase their research and creative endeavors to an audience of faculty, staff, community members, and student peers. The student presenters over the years including this one state that conducting research and this symposium is a valuable part of their student experience.

This event features research activities of Florida Atlantic University, Miami Dade College, Broward College, and Nova Southeastern University students and provides a forum for student interaction with faculty, peers and attendees while showcasing their work.

Students have selected one of the following three presentation formats:

- Narrated poster presentation
- 8-minute performance art piece
- 8-minute oral presentation

Thank you to the faculty mentors for going above and beyond the call of duty to support student research and creative scholarship at your institutions.

To our student presenters, thank you for sharing your in-depth understanding of the knowledge-making process and to better understand the world. Your research, active learning, and intellectual fitness and preparedness is apparent through your scholarship.

A special vote of thanks to the University/College Library administration and staff for hosting the symposium and supporting the event at every turn. Thank you to the all the FAU departments and staff who volunteered their time to prepare for and ensure the event was a success. Your efforts contributed substantially to the quality of the symposium and the effectiveness of the interchange was enhanced by your expertise, knowledge, support, and logistics.

Agenda

8:30 AM -12:30 PM	On-going Registration
9:00 AM	Opening Remarks - Linda Johnson, Associate Vice President for Academic Affairs, Broward Campuses
9:15 AM – 12:45 PM	Oral Presentations
9:15 AM – 11:00 AM	Poster Presentations – Session 1
10:30 AM – 12:15 PM	Poster Presentations – Session 2

Each submission is assigned a code based on the Presenter status:

D1-D5: DOCTORAL Submissions

M1-M8: MASTER'S Submissions

U1-U36: UNDERGRADUATE Submissions

Oral Presentations 9:15 AM – 12:45 PM

D2: 9:15 AM Babbling Bachman's: Documenting Song Learning in the Bachman's Sparrow

Heather Wolverton, Hwolverton2013@fau.edu, Doctoral student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Rindy Anderson

Birdsong has been the subject of much research due to its similarities to human language, specifically during development. Young birds and human infants rely on learning and auditory feedback to produce vocalizations and experience a sensorimotor phase early in life where they start mimicking the sounds of adults. Studying song learning in songbirds can deepen our understanding of both animal communication and human language formation. However, most of what we know about learning in songbirds comes from studies of only a few species. I aim to document the stages of song development in Bachmanan's sparrow, a species of songbird with large repertoires and simple syntax patterns, in order to better understand how these features develop during early life stages. To do this, I will record wild juveniles and conduct a hand-rearing experiment. Hand-reared nestlings will be monitored for one year to document all song-learning stages in this species.

M3: 9:30 AM Trauma Training for Foster Caregivers and Child Welfare Workers in Florida

Alexandru Pasararіu, apasararіu2014@health.fau.edu, Masters student, School of Accounting, Florida Atlantic University/College of Business, Mentor: Dr. Morgan Cooley

Given the potential impact of trauma and the likelihood that youth in foster care have experienced trauma, foster parents and child welfare workers must be trained and aware of trauma. Foster parents and child welfare workers are the primary individuals who care for and monitor a child after they've experienced trauma. Thus, these frontline responders must learn about trauma and receive training on trauma-informed care to help children during a vulnerable time in their lives effectively. The purpose of this study was to utilize administrative data to examine and compare the perceived occurrence of trauma training among foster parents and child welfare workers in Florida.

M6: 9:45 AM Characteristic Differences Between Astrocytes and Microglia in their Immune Response to Amyloid Beta

Rudolf Hall, rhall2017@fau.edu, Masters student, Department of Biomedical Science, Florida Atlantic University/Charles E. Schmidt College of Medicine, Mentor: Dr. Rui Tao

Neuroinflammation is one of the key features of Alzheimer's disease (AD). Anti-inflammatory drugs were suggested to treat patients with AD. However, clinical trials were disappointing. They showed that anti-inflammatory drugs were not beneficial for slowing the progression of symptoms. Therefore, investigators carefully reassessed the relationship between AD and neuroinflammation. They suggest that this relationship is based on at least two possibilities. Neuroinflammation is likely primarily an immune response to neurodegeneration or cell death. Alternatively, amyloid beta (AÎ²) can act as a stimulant that initiates local neuroinflammation as a part of pathogenic mechanisms underlying AD progression. Astrocytes and microglial cells are known to be involved in the immunoreactivity of the CNS. In the present investigation, we characterized the immune response to AÎ² in microglial cells compared to astrocytes. Our data support the suggestion that microglial cells are likely distinctly different from astrocytes in their immune response to AÎ².

U4: 10:00 AM How Sure Are You? Investigating the Mechanisms of Confidence in Memory Decision-Making

Isabella Klopukh, iklopukh2021@fau.edu, Undergraduate student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Kevin Darby

How do we determine confidence in our memories? The purpose of this project is to better understand how confidence and memory processes unfold over time. Undergraduate adults (n = 34) studied pairs of images and were later tested on their memory to discriminate between intact and recombined image pairs. Participants rated their confidence either before, after, or at the same time as the memory decision. Preliminary analyses of the results suggest that (1) while the timing of confidence judgements did not significantly impact memory accuracy, it did impact the metacognitive accuracy of confidence judgements; (2) confidence was lower for recombined compared to intact memory pair decisions; and (3) reaction times were comparable for memory decisions made before or at the same time as confidence judgments. The implications of these results and plans to implement mechanistic models of confidence and memory decision-making will be discussed.

D5: 10:15 AM The Impact of COVID-19 on Dual Enrollment Including Access, Equity, and Learning Environment: Lessons Learned from the Secondary and Post-Secondary School Staff and Administrators Who Facilitate These Programs

Adam DeRosa, aderosa@fau.edu, Doctoral student, Department of Educational Leadership and Research Methodology, Florida Atlantic University/College of Education

While students are the center of dual enrollment programs, high school guidance counselors and college/university administrators are vital to the success of these programs. COVID-19 has impacted both secondary and post-secondary school systems. Since dual enrollment is a formal bridge program between these systems, the pandemic may have long-term effects on access, equity, and learning environment. This study focused on the perspectives of educational leaders in Broward County, Florida who oversee dual enrollment programs. This study found out what worked, what did not work, and the lessons learned. The findings included access to internet and equipment was a challenge; navigating web tools and services wasn't intuitive to all; quality of instruction dwindled; communication barriers presented a challenge, and many rose to that challenge; the dual enrollment application process presented challenges to staff and students; and everyone had to adapt and overcome placement testing changes at the onset of the pandemic.

M7: 10:30 AM Comparative studies of algorithms to analyze FDG-PET in patients with AD

Roberto Estevez, Vishala Ramdin, Alexandra To, Giselle Shim, Rudolf Hall, Ahjanae Jones, Mary Adam, Ibrahim M. Shokry, Rui Tao, Restevez2013@fau.edu, Masters student, Department of Biomedical Science, Florida Atlantic University/Charles E. Schmidt College of Medicine, Mentor: Dr. Rui Tao

18F-fluorodeoxyglucose (FDG) is a promising radiotracer used in positron emission topography (PET) for estimating a degree of hypometabolism in the brain of patients with Alzheimer's disease (AD). Theoretically, the metabolic degree is proportional to the image intensity of FDG-6-phosphate (FDG6P) accumulated in the regions. Compared to cognitive unimpaired subjects (CU), AD brain has ~20% (15-25%) of reduction in metabolic activity as revealed by a pharmacokinetic test. Thus, the pharmacokinetic analysis is a gold standard test. In clinical practice, pharmacokinetic analysis is not applicable, and thus alternatives are urgently needed. Recently, a standardized uptake value ratio (SUVr) is proposed as an image processing algorithm to estimate changes in FDG6P. However, the use of SUVr is not without problem. In the present study, SUVr was compared with an algorithm developed in our lab. Cerebellum and medulla were used as reference regions for metabolic changes in the respective subcortical (midbrain, diencephalon), and cortical (occipital, and parietal) nuclei. We demonstrated that neither cerebellar nor medullary SUVr could meet the expectation of hypometabolic criteria obtained with the pharmacokinetic data. In contrast, our algorithm could consistently reveal ~20% of the reduction in metabolic activity in both subcortical and cortical nuclei in the AD brain. In conclusion, our algorithm likely paves a new way to substitute the pharmacokinetic analysis for estimating metabolic activity in the AD brain.

M8: 10:45 AM Glucose transporters act as a probable primary target of amyloid beta in initiating nutrition issues during early stage Alzheimer's disease

Giselle Shim, gshim2017@fau.edu, Masters student, Department of Biomedical Science, Florida Atlantic University/Charles E. Schmidt College of Medicine, Mentor: Dr. Rui Tao

Alzheimer's disease (AD) is considered one of the most common neurodegenerative diseases with hallmark characteristics being memory loss and progressive cognitive impairment. An initial cause is ascribed to amyloid beta (AÎ²) congestion followed by AÎ² plaques in the interstitial space. Regarding cellular, AÎ² is found to cause a broad spectrum of pathological changes, therefore, the understanding of primary pathological change is essential for identifying a therapeutic target. However, the primary pathological response to AÎ² remains to be elusive. In the present study, we propose to test the following

hypothesis: AÎ² blocks glucose transportation across cell membranes causing cell starvation, which associates with AD progression. We found that AÎ² dose-dependently inhibits intracellular glucose uptake into astrocytes. Additionally, AÎ² causes dose-dependent changes in IL-6, but this effect is not inhibited via 2-deoxyglucose. In conclusion, cell starvation via glucose transporter inhibition by AÎ² is likely responsible for neurodegenerative progression in AD patients.

U18: 11:00 AM Bioreactors for the Study of Vasculitis

Izza Khan, Pamella Morello, Annabella Polyakova, ik160@mynsu.nova.edu, pm1229@mynsu.nova.edu, anniepolyakova123@gmail.com, Undergraduate students, Department of Engineering, Osteopathic Medicine, Nova Southeastern University/Dr. Kiran Patel College of Osteopathic Medicine, Mentor: Dr. Manuel Salinas

Vasculitis is an inflammatory process of blood vessel walls, leading to swelling, thickening and diminished blood flow. This process can lead to the development of ischemia, aneurysms and blood clots compromising specific organs and systems. Among the diverse vasculitis-related diseases, notable examples include Kawasaki disease, Polyarteritis nodosa, giant cell arteritis, and Buerger's disease. Treatment modalities encompass corticosteroids and immunomodulators amongst other therapeutic approaches. To investigate vasculitis progression and occurrence, external models such as bioreactors can be used to replicate environments that occur within blood vessels. A pump will be used to replicate the flow in an artery-like pipe. We will construct the pipe using a biocompatible material such as polylactic acid (PLA). The geometry of this pipe will be generated using commercially available CAD software such as SolidWorks. Computational fluid dynamics (CFD) will be used to simulate the pulsatile flow in the artery.

U36: 11:15 AM Delving into Neuron Structure: Unveiling the Intricate Architecture of the Brain's Essential Building Blocks. Understand the Components and Functions that Shape Neuronal Communication.

Gabriela Tatiana Medolla, gmedolla2020@fau.edu, Undergraduate student, Department of Neuroscience and Behavior, Florida Atlantic University/Charles E. Schmidt College of Science

Embark on a journey into the microcosm of the brain's foundation. This presentation will delve deep into the intricacies of neurons, meticulously dissecting their fundamental components: the cell body, dendrites, axons, and synapses. Through this exploration, we will unravel the profound mechanisms that underlie neural communication and gain insight into the remarkable phenomenon of action potentials, from the orchestrated dance of neurotransmitters to the indispensable role of glial cells in providing structural support. Together, we will dissect the complexities that govern our thoughts, emotions, and actions, demystifying the enigmatic workings of our most vital organ. Uncover the scientific journey through the brain's architecture, where each element plays a vital role in the tapestry of complex cognition, forming the essence of neural communication, and gain a newfound appreciation of our cognitive machinery.

U29: 11:30 AM Psychosocial Impacts of Celiac Disease: Insights into Quality of Life, Social Challenges, and Coping Mechanisms of Celiac Disease Patients

Mit Patel, mp3042@mynsu.nova.edu, Undergraduate student, Department of Public Health, Nova Southeastern University/Kiran C. Patel College of Osteopathic Medicine, Mentor: Dr. Mayur Parmar

Celiac disease is an autoimmune disorder triggered by gluten ingestion, leading to intestinal damage and other diverse systemic problems. Celiac patients often report facing psychological and social burdens, significantly impacting their overall quality of life. The purpose of this review is to investigate the multifaceted impact of celiac disease on psychological and social well-being across diverse groups and settings, while considering additional influencing factors. Primary research articles were systematically searched from peer-reviewed sources on PubMed and Google Scholar. Celiac patients exhibit pronounced psychological turmoil, linked to symptomatic presentation, diagnostic delay, and gender. Quality of life diminishes with adherence challenges, social ostracization, and food inaccessibility, impacting both adults and youth across varied settings. Factors like educational level, diet compliance, and supportive partnerships mitigate psychological distress. Thus, celiac disease profoundly influences psychological and social well-being across various groups; addressing accessibility to gluten-free options and enhancing societal understanding can mitigate these burdens significantly.

U32: 11:45 AM Lingering Effects of Consumer Debt and Interest Rates

Mateo Zapata, zapam13@mail.broward.edu, Undergraduate student, Department of Business, Broward College's Robert 'Bob' Elmore Honors College

This research synopsis dives into the lingering effects of consumer debt and interest rates on both individuals' financial health and the broader economy. Utilizing a combination of historical data, recent financial trends, and econometric models, we research the relationship between rising consumer debt levels and fluctuations of interest rates. Our research suggests that prolonged periods of high consumer debt, especially when paired with volatile or increasing interest rates, can lead to decreased consumer spending, and increased financial vulnerability. Our research will elaborate on the challenges of consumer debt and interest rate management, emphasizing the importance of financial education, regulation, and protective measures for the most vulnerable consumers.

U27: 12:00 PM Celiac Disease: Post-diagnosis Economic Impact on Patients

Michelle Milman, mm5577@mynsu.nova.edu, Undergraduate student, Department of Public Health, Nova Southeastern University/Kiran C. Patel College of Osteopathic Medicine, Mentor: Dr. Mayur Parmar

Celiac disease is an autoimmune disorder that damages the small intestine's lining when gluten is ingested, leading to malabsorption and other health complications. Treatment involves a strict gluten-free diet. Patients afflicted by celiac disease face elevated healthcare expenses compared to those without the condition. This review analyzes the economic effects of celiac disease post-diagnosis based on peer-reviewed primary research articles indexed in PubMed and Google Scholar. The economic impact on patients can arise from direct and indirect costs, including regular follow-up care, increased risk of comorbidities, and high costs of gluten-free foods. Also, individuals with celiac disease notably miss more work days before and after diagnosis. Our findings identify research gaps, which include lack of insurance coverage for gluten-free diets as a medical expense, the long-term economic impact of celiac disease on patients, and the effectiveness of different interventions to help patients manage the costs of their diet.

Poster Presentations – Session 1 9:15 AM – 11:00 AM

D1: The Rise of Friend Selection Similarity Across the Transition into Adolescence

Molly Selover, mselover2023@fau.edu, Doctoral student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Brett Laursen

Similarity is central to friendships. Previous studies have identified age related trends in friend similarity, such that similarity rises across late childhood and early adolescence, peaking at mid-adolescence (Richmond et al., 2018). The origins of age-related increases in similarity can be traced to two (not mutually exclusive) possibilities (Laursen, 2017): Youth increasingly select similar others as friends and youth increasingly influence one another to become more similar. The present study examines the former, to test the hypothesis that future friend similarity increases as children get older, particularly during middle school, when the pool of similar others who could potentially serve as friends expands.

D4: Examining acoustic differences and similarities of complex song in a sub-tropical passerine.

Hans Gonzembach, hgonzembach2020@fau.edu, Doctoral student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Rindy Anderson

Songbirds use broadcast song to defend territory and attract mates. Some species of songbirds produce other categories of song for different social contexts. One category, complex song, is highly variable among individuals, distinctly different from whisper and broadcast song, and is frequently observed during aggressive interactions. However, the social function of complex song remains unknown. To get a better understanding of the social function of complex song and the drivers that influence its complexity, we need to understand how complex song varies among and within individuals. We estimated repeatability from acoustic traits to statistically assess how different complex song renditions were among and within individuals. We also plotted complex songs in a 2-dimensional acoustic space to visualize similarity. We demonstrate that complex song renditions vary within and among males. While element diversity was highly similar, song rate contributed the most to differences in complex song renditions.

M1: MITOCHONDRIAL GENETIC DIVERSITY OF THE RED-TAILED MONKEY, CERCOPITHECUS ASCANIUS, IN AFRICAN RAINFORESTS

Vitor Dutra, vdutra2018@fau.edu, Masters student, Department of Anthropology, Florida Atlantic University/Dorothy F. Schmidt College of Arts and Letters

Cercopithecus ascanius is an African primate guenon species encompassing five geographic types with unresolved taxonomy. Recent publications have analyzed C. ascanius genetic diversity and taxonomy; however, few publications have addressed the genetic diversity and phylogenetic relationships of C. ascanius within Lomami National Park in the Democratic Republic of the Congo. My objectives for this thesis were to determine mtDNA diversity within the C. ascanius species and clarify the taxonomic relationships between C. ascanius subspecies. Results from this thesis corroborated with previous publications wherein C. ascanius subspecies diversified into two monophyletic clades. Analyzing additional samples of C. ascanius monkeys will strengthen molecular diversity estimation and clarify taxonomic relationships within the C. ascanius lineage.

M2: A Longitudinal Examination of Friendship Stability Patterns and their Impact on Adjustment

Laury-Ann Leclerc Bedard, lleclercbeda2023@fau.edu, Masters student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Brett Laursen

Friendships matter, but the consequences of friendship turnover remains unclear. The study aims to understand numerous adjustment outcomes in a diverse sample of students (N=427; grades 3-7) as they experience changes in friendship.

Participants nominated friends twice in one school year, selecting up to seven from a list of classmates each time. Adjustment outcomes included caring, fun, likeability, popularity, loneliness, and victimization. Participants were categorized into one of three groups: friend gain (N=196), friend loss (N=130), stable friends (N=101).

Repeated-measures ANOVAs revealed that there were no main effects for group, but there were statistically significant time x group interactions on all variables except victimization. Follow up paired-sample T-tests revealed that caring, fun, and likeability decreased for the friend loss group and increased for the friend gain group (d=0.163-0.356). Popularity increased for the friend gain and stable group and loneliness decreased for the friend gain group (d=0.162-0.243).

M5: Uncovering the Population Structure of Florida's Threatened Pine-Pink (Bletia purpurea) Orchid

Bethany Simpson, bsimps16@fau.edu, Masters student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentors: Dr. John D. Baldwin and Dr. Lauren A. Eserman

Orchids are facing global threats and extinctions at an alarming rate. Florida is a hotspot for native orchid biodiversity; making up at least half of the species diversity found in continental United States and are mainly distributed in the Everglades and Fakahatchee Strand. Anthropogenic activity has had significant negative impacts on orchid biodiversity in the state such as; habitat loss, climate change, and illegal collection. The Pine-Pink orchid, Bletia purpurea is a state-threatened terrestrial species that was historically abundant throughout South Florida. Urbanization and development of the Greater Everglades ecosystem over the last 200 years have left populations of B. purpurea reduced and fragmented overtime. Dispersal may be restricted due to natural factors or anthropogenic activities, and may be reproductively isolated. It is becoming increasingly clear that genetic information is critical for forming conservation strategies to help mitigate the disappearance of threatened species from the wild. To date, there is nothing known about the historic or current population structures of Bletia purpurea or its intraspecific genetic diversity among the known distribution areas in Florida. This study aims to focus on their distribution throughout Palm Beach, Miami-Dade, and Collier County. Due to the cleistogamous nature of this species in Florida and the large physical distances from each area (>100km), it is hypothesized that each region will be genetically distinct with high variation between populations.

U1: The Effects of Targeted Memory Reactivation on the Consolidation of Episodic Memories

Paige DeForest, pdeforest2021@fau.edu, Undergraduate student, Department of Psychology, Florida Atlantic University/Harriet L. Wilkes Honors College, Mentor: Dr. Carmen Varela

Target memory reactivation (TMR) is an experimental technique researchers can use to enhance memory consolidation. It has been shown to significantly improve memory consolidation, the process in which

short-term memory is converted to long-term memory. Episodic memories are a type of memory that stores events and experiences. In this experiment, we use a small burst of white noise to try to stimulate the cortico-hippocampal-cortical loop that has been previously correlated with memory consolidation. This loop involves two oscillatory patterns of interest: slow oscillations (SOs) and sharp-wave ripples (SWRs). Using Long-Evans rats as a model, we examined the effects of targeting auditory stimulation to specific periods of SOs to examine its effects on long-term episodic memory consolidation. Our results could pave the way for a better understanding of the exact mechanisms of memory consolidation and serve as a technique to improve the symptoms of memory disorders.

U2: PEAK IONOSPHERIC HEIGHT AS A PROXY FOR GLOBAL WARMING. Confirmation of trends.

Rafael Fernandez, r.fernandezsokoli001@mymdc.net, Undergraduate student, Department of Electrical Engineering, The Honors College at Miami Dade College, Mentor: Dr. Araujo Pradere

Global warming, termed the long-term rise of surface temperature, yields observable impacts like heightened sea levels and intensified natural disasters. Rising temperature prompts thermal expansion in matter, as atoms gain kinetic energy, vibrating faster with increased spacing. This phenomenon, subtle in solids, becomes more pronounced in liquids and gases. An assessment of Earth's warming causes suggests eventual direct expansion in the lower atmosphere, while the middle and upper atmosphere may cool and contract due to higher greenhouse gas concentration. This study extends our prior effort, employing ionospheric density's peak height as a global warming indicator. Prior research at Pt. Arguello identified hmF2's descending trend, tied to ionospheric seasonal and solar cycle shifts. Ongoing analysis at Rome station reaffirms these findings, indicating a consistent hmF2 decrease post solar trend removal.

U3: Size and sex distribution of blacktip sharks in southeast Florida

Savannah Arvin, sarvin2020@fau.edu, Undergraduate student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Stephen Kajiura

The Blacktip Shark (Carcharhinus limbatus) is a common species of large coastal shark found throughout the United States eastern seaboard from Florida to New York. This species has a well-established migratory pattern and overwinters in Southeast Florida from about January to March. During these months the sharks form large aggregations in the nearshore environment where they are targeted in a shore-based recreational fishery. Since 2014, researchers at Florida Atlantic University have undertaken targeted fishing for blacktips within 200m of the beach in Palm Beach County, Florida. Significantly greater fishing effort was expended during the winter months (January to March) when sharks are in greatest abundance, with only sporadic fishing at other times of the year. From these efforts, a total of 201 blacktip sharks were caught, of which 190 (94.5%) were male and 11 (5.5%) were female. Females ranged from 146 cm to 186 cm, with a mean of 167.6cm. Males ranged from 145 cm to 188 cm TL, with a mean of 171.0 cm. Clasper length and calcification indicated that all males caught were sexually mature. Sharks were captured from 26°24’09.6” latitude to 26°85’41.8” latitude with greater fishing effort north of the Palm Beach Inlet. These data help to inform us about the size and sex distribution of the blacktip shark aggregations at the southern terminus of their migration. It appears that the males migrate farther south and dominate the sex distribution with females remaining at higher latitudes and only rarely occurring in the large aggregations. This information is important for the recreational fishery that targets the aggregated sharks and may be selectively catching adult males. This may contribute to a healthy shark population which supports both a recreational and commercial fishery for this species

U5: Exploring Heat Transfer Mechanisms on Oriented Surfaces for Microelectronic Cooling

Cristian Pena and Abel Abraham, cpena2020@fau.edu, abelabraham2018@fau.edu, Undergraduate students, Department of Ocean and Mechanical Engineering, Florida Atlantic University/College of Engineering and Computer Science, Mentor: Dr. Myeongsub Kim

Efficient cooling systems are increasingly important in various industries, optimizing performance in microelectronic devices. This research focuses on nucleate boiling, one of the most effective cooling strategies. This study examines the impact of surface orientation on cooling efficiency during bubble growth. High-speed imaging and laser-induced thermometry measure bubble dynamics and liquid temperature around single bubbles on surfaces oriented from 0 to 90 degrees. Results show surface orientation affects bubble deformation, departure diameter, and generation frequency, all of which control cooling efficiency. Higher orientations result in elongated bubbles with larger bases and longer attachment times. Also, temperature analysis reveals higher average liquid temperatures near bubbles at higher orientations due to enhanced convection. In conclusion, heat transfer coefficients and fluxes generally increase with orientation with the 90-degree orientation, displaying the highest cooling capacity. This work provides new insights into how surface orientation influences important heat transfer characteristics during nucleate boiling.

U6: PEAK IONOSPHERIC HEIGHT AS A PROXY FOR GLOBAL WARMING. Confirmation of trends.

Nicolle Pino, nicolle.pino001@mymdc.net, Undergraduate student, School of Science, Miami Dade College Homestead Campus, Mentor: Dr. Eduardo Araujo-Pradere

Global warming, the gradual increase in surface temperature, has various observable effects, including rising sea levels and more intense natural disasters. When temperatures rise, all forms of matter expand due to increased atomic kinetic energy, resulting in faster vibrations and larger atomic gaps. This expansion is most significant in liquids and gases. A preliminary analysis suggests that global warming may cause the lower atmosphere to expand, leading to cooling and contraction in the middle and upper atmosphere due to increased greenhouse gases.

Ongoing research, building on previous findings from Pt. Arguello, indicates a clear decline in the ionospheric peak height (hmF2), which serves as a proxy for global warming effects. Data from the Rome station also demonstrates a consistent downward trend in hmF2, even after accounting for solar cycle variations. The MDC Space Weather Research Team will continue refining this analysis to draw further conclusions.

U7: Identification of Novel Therapeutic Targets for Polyglutamine-Expansion Diseases

Carlos Ojeda and Kaylia Cooper, kayliacooper2021@fau.edu, cojeda2021@fau.edu, Undergraduate students, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Kailiang Jia

Polyglutamine (polyQ)-expansion diseases include nine neurodegenerative disorders. Disease alleles produce expanded polyQ tracts in the expressed protein. The aggregation of polyQ proteins leads to progressive loss of structure and function of neurons. A Caenorhabditis elegans model of polyQ disease has been established by expression of fluorescent-tagged proteins containing polyQ expansion tracts in the body wall muscle. The disease worms develop visible protein aggregation and locomotion defects. Aging is a risk factor for neurodegeneration. As a corollary, mutations that extend C. elegans life span

slow down the progression of neurodegenerative diseases. We recently discovered that mutations in dcar-1 gene extend C. elegans lifespan. Moreover, we found dcar-1 mutations significantly decrease the polyQ aggregation in body wall muscle, suggesting DCAR-1 is involved in the pathogenesis of polyglutamine-expansion diseases. Therefore, understanding DCAR-1's role in polyQ-expansion diseases sheds light on disease mechanisms and therapeutic strategies.

U8: The Influence of Working Memory, Grit, and Personality on Resident In-Training Exam Performance

Alexis Crowder, acrowder2022@fau.edu, Undergraduate student, Department of Biochemistry, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Michael DeDonno

A better understanding of factors associated with academic performance is of value to institutions of higher education. By understanding these factors, mentors and advisors can better prepare students to achieve desired academic goals. Working memory is one of the executive functions of the brain which processes short-term storage of information. The influence of working memory on academic performance is of interest to cognitive psychologists and human performance researchers. Grit which can be defined as one's passion and perseverance towards long term goals, is also a predictor of academic performance. The factors of personality as offered by the big-five factors of personality have also been aligned with academic performance. A question arises as to how these factors collectively influence medical residents' performance on in-training exams. Our goal is to offer a model to medical resident programs that will enhance the training of physicians.

U9: Photodynamic Inactivation (PDI) of Microorganisms with Nitrogen Substituted Meso-Pyridyl Porphyrin Structures

Sanjana Sivaiah, Trisha Jaganathan, Andersen Cheong, and Amanda Leon, ss4959@mynsu.nova.edu, tj815@mynsu.nova.edu, ac4322@mynsu.nova.edu, al2296@mynsu.nova.edu, Undergraduate students, Department of Chemistry, Nova Southeastern University/Halmos College of Arts and Sciences, Mentor: Dr. Maria Ballester

Photodynamic Inactivation (PDI) is an antimicrobial approach targeting pathogens independent of antibiotic resistance. The growing international concern for the rise in drug-resistant microorganisms has driven research approaches that will keep these microbes from developing immunological adaptations. Photosensitizers are molecules activated by light that produce reactive oxygen species (ROS) lysing and causing cell death in structures of microbes and in diseased mammalian cells. The photosensitizers applied in this experiment are meso–Tetra(N–methyl–_–pyridyl)porphine tetrachloride isomers. These compounds were selected for their reactivity, allowing for multiple interactions to be observed between each porphyrin and the gram–negative E. coli. Minimum inhibitory concentration (MIC) tests were conducted to determine the concentration at which each porphyrin will work most efficiently in eliminating microorganisms. A computational analysis was performed using B3LYP/6-31G(d) and molecular orbital maps were created to correlate with the formation of singlet oxygen.

U10: Low-cost method for the detection of microplastics in water

Jesse Matthews and Kilveet Figueroa, mattjm1@mail.broward.edu; figuk17@mail.broward.edu, Undergraduate students, Department of Environmental Science, Broward College, Mentor: Rebecca Clark

Plastic deposition in waterways is a pervasive environmental problem at the local scale and beyond. Because plastics never fully biodegrade like organic matter, they remain in aquatic ecosystems for large periods of time, undergoing photodegradation and changing by the impacts of biological activity and wave pressure. Microplastics are plastic pieces that are less than 5mm in size. Microplastics research has been of increasing interest in recent years with the full effects of such particles, as well as distribution in the environment, being largely unknown. There is a need, however, for more accurate low-cost methods for testing water samples. The method developed can be used by lower-income communities, citizen scientists, schools, libraries, and more to accurately test for microplastics in various water sources.

U11: Efficacy of Baited Pitfall Traps

Alex Rodriguez, Ciera Pobuk, and Samantha Reid, pobucn@mail.broward.edu, Reids56@mail.broward.edu, Rodra368@mail.broward.edu, Undergraduate students, Department of Environmental Science, Broward College, Mentor: Rebecca Clark

A pitfall trap is a collection method used to catch small animals such as insects, amphibians and reptiles. Pitfall traps are sampling techniques mainly for ecological studies and pest control. The purpose of this research study was to determine potential differences in capture volume of insects common to South Florida using a variety of organic bait products in the research area of Fern Forest, located in Coconut Creek, Florida. The intent of our research was to determine whether citrus fruits or pome fruits yield higher collection volumes and to determine what type of ground dwelling species they would attract for future observations and research studies.

U12: Fossil identification in Florida

Garcy Momplaisir, Sara Latif, Janina Mulling, Megan Balbach, and Justeen Knight, Mompg9@mail.broward.edu, latiss@mail.broward.edu, mullj51@mail.broward.edu, balbm5@mail.broward.edu, Knigja1@mail.broward.edu, Undergraduate students, Department of Environmental Science, Broward College, Mentor: Rebecca Clark

The study of geologic history, with a focus on fossil classification, is an endeavor that has been driven by human curiosity. The identification of fossils is a crucial part of paleontology as it allows scientists to gather evidence regarding the organisms that once inhabited Earth. Broward College has an extensive collection of fossils, many of which have never been previously classified. Using fossil morphology (shape, structure, and surface texture) and comparative anatomy (comparing samples to previously identified fossils), a large collection of fossils, discovered and collected across four locations - Pompano Beach, Plantation Acres, Venice Beach and Indian River, FL have been identified. Furthermore, the intent of this research in addition to identification, is to determine how Geographic Information Systems (GIS) could be utilized to map common fossil collection sites across the state based on distributions of collected samples. The overall goal of the research is to gain a better understanding of past species that were common to Florida throughout geologic history.

U13: Genetic Comparison of invasive vs native termites (Coptotermes formosanus, Reticulitermes flavipes)

Aaron Ackenine and Michael Mauer, mauem@mail.broward.edu, ackea3@mail.broward.edu, Undergraduate students, Department of Environmental Science, Broward College, Mentor: Rebecca Clark

Comparative analysis between native and invasive species can give us insight into the environmental impacts species may make on the niche where they occupy. The genetic comparison between species reveals the differences in the phenotypic expression of their mitochondrial function or proteins involved with their adaptability. To study this further, we used a program known as BLAST (Basic Local Alignment Search Tool) which allowed us to compare the nucleotide sequences of a native vs an invasive termite species (Reticulitermes flavipes, Coptotermes formosanus). The intent of the project was to analyze differences in nucleotide sequences and to determine their evolutionary relationships as an exercise for using BLAST in genetic research in the future. Further research will also explain how the invasive species (Reticulitermes flavipes) may negatively impact South Florida in the future.

U14: Inlet-Adjacent Beach and Shoreline Variability at Decadal Scales

Teagan Duenkel, tduenkel2020@fau.edu, Undergraduate student, Department of Geosciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Tiffany Roberts Briggs

Robust coastal ecosystems are vital for protecting beachfront communities, supporting the economy, and providing habitats for keystone species. Sea-level rise, coastal development, and increased storm severity are causing accelerated coastal erosion. Addressing this issue necessitates well-informed mitigation and management strategies. This study examines decadal-scale trends in morphology and shoreline variability at three inlet-adjacent beaches in Jupiter, Florida, over 30 years. Data was analyzed to determine volumetric and contour changes above the shoreline (0 m elevation) and across the entire profile. Notably, inlet contiguous beaches experienced the most significant morphological variations. Factors including storm events, nourishment practices, and sediment transport influenced these changes. Understanding historical shoreline variability and erosion/accretion patterns is essential for adapting to coastal change and developing effective beach-inlet management strategies. The results highlight the method's effectiveness in revealing long-term morphological patterns and driving forces. Future studies can use this methodology for broader spatio-temporal assessments of decadal beach patterns.

U30: Investigation Into Marine Debris Consumption of Juvenile Green Sea Turtles (Chelonia mydas)

Isabela Beneli Salina Fernandes, ifernandes2020@fau.edu, Undergraduate student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentors: Heather Seaman and Dr. Sarah L. Milton

This project aims shed light on the impact that debris and plastic pollution are having on marine environments and its inhabitants. Over the past decades, consumption and production of material goods has increased to enormous numbers. One of the biggest threats marine environments face is plastic pollution. Monomers made to make plastics cannot break down, meaning plastics that go into the ocean only break down into smaller pieces, called microplastics. Animals are facing pollution threats more and more every day, and with current policies in place, they are likely to continue being threatened. Sea turtles are animals that are very cared for and bring attention onto themselves, so by investigation plastic pollution and its effect on these animals it is likely to shed more light on the importance of awareness of plastic production and its threat to the environment and organisms.

Poster Presentations – Session 2 10:30 AM – 12:15 PM

D3: Predicting State Switches in Chaotic Dynamical Systems

Noah Corbett, ncorbett2014@fau.edu, Doctoral student, Department of Mathematical Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentors: Dr. Jason Mireles-James and Dr. Kevin Pilkiewicz

Making long-term predictions in chaotic dynamical systems is a difficult task, especially when one cannot measure all the variables influencing the system. In this work, we propose a general methodology to predict certain macroscopic features of chaotic dynamical systems, such as state switches, that does not require perfect measurements of all the phase variables or knowledge of the underlying equations of motion. We will then apply the method to well-studied chaotic systems, like the Lorenz System, and analyze its performance for both short- and long-term predictions. We conclude with a potential application of this method and discuss avenues for future work in this direction.

M4: Perceptions of Recruitment and Foster Parent Quality Among Child Welfare Workers

Alexandru Pasarariu, apasarariu2014@health.fau.edu, Masters student, School of Accounting, Florida Atlantic University/College of Business, Mentor: Dr. Morgan Cooley

Currently, many areas are experiencing foster parent shortages for youth who have been removed from their families and put into foster care. Prior research has identified different factors related to foster parent recruitment, such as barriers to recruitment and facilitators to successful recruitment, targeted recruitment strategies, and characteristics associated with high-quality foster parenting. However, there are a few recent studies that explore innovative recruitment strategies or state-specific strategies. This paper examines and compares child welfare workers' and foster parents' perceptions of foster parent recruitment and foster parent quality in Florida.

U4: How Sure Are You? Investigating the Mechanisms of Confidence in Memory Decision-Making

Isabella Klopukh, iklopukh2021@fau.edu, Undergraduate student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Kevin Darby

How do we determine confidence in our memories? The purpose of this project is to better understand how confidence and memory processes unfold over time. Undergraduate adults (n = 34) studied pairs of images and were later tested on their memory to discriminate between intact and recombined image pairs. Participants rated their confidence either before, after, or at the same time as the memory decision. Preliminary analyses of the results suggest that (1) while the timing of confidence judgements did not significantly impact memory accuracy, it did impact the metacognitive accuracy of confidence judgements; (2) confidence was lower for recombined compared to intact memory pair decisions; and (3) reaction times were comparable for memory decisions made before or at the same time as confidence judgments. The implications of these results and plans to implement mechanistic models of confidence and memory decision-making will be discussed.

U15: Effects of Salinity Stress on Wound Healing in the Coral Montastraea cavernosa: Implications for Coral Reef Resilience and Management

Eden Lewerke, elewerke2019@fau.edu, Undergraduate student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Joshua Voss

In the event of a storm, hyposaline events often coincide with coral tissue damage from high-intensity wave action. This experiment assessed the impacts of hyposalinity stress on the wound healing rates of reef-building corals. In this study, eight genetically distinct M. cavernosa colonies were fragmented, wounded using a drill press, and placed into aquaria treated with either hyposaline (25PSU) or ambient seawater (35PSU). We monitored wound recovery of each fragment through tissue growth observation, which was measured using image analysis software to trace the lesion area (cm2) over time. We found that M. cavernosa fragments that endured hyposaline environments experienced 3.5x slower regeneration rates than fragments in ambient seawater conditions. These observations offer valuable insights into coral healing potential during a large-scale tropical storm and subsequent freshwater inundation. Overall, this study will aid in bridging our understanding between coral wound recovery and hyposaline stress to better inform local watershed management and reef restoration groups.

U16: Mobile monitoring of air pollution using low cost sensors in Fort Lauderdale Beach

Laura Medina, Giulliana Tiravanti, and Yevgenia Tomlinson, medil23@mail.broward.edu, tirag2@mail.broward.edu, tomly@mail.broward.edu, Undergraduate students, Department of Environmental Science, Broward College, Mentor: Rebecca Clark

Vulnerable populations, including the elderly, young children, and those with pre-existing medical conditions may experience exacerbated respiratory symptoms due to the effects of air pollution. The purpose of this study was to collect air pollution data using low-cost passive sensor technology, to measure air quality across a 1000 m distance of a highly used portion of Fort Lauderdale Beach, FL. Measurements were collected during a variety of times and days across a 2-week period, as well as at three measured distances from A1A, a congested roadway with consistently high traffic volume. The data points include PM2.5, AQI, temperature, light intensity, humidity and CO2 (12,960 total data points approximately) collected on a predetermined route, assisted by GIS technology. The overall goal of the project is to identify whether passive sensor technology can be utilized to estimate air quality conditions in a targeted region, in an effort to determine areas where vulnerable populations may experience heightened symptoms due to the effects of air pollution.

U17: Deciding who lives, the connection between Utilitarianism and the COVID-19 pandemic.

Nicole Jimenez, jimen35@mail.broward.edu, Undergraduate student, Department of Chemistry, Broward College, Mentor: Joshua Kimber

In the midst of the global COVID-19 pandemic, healthcare practitioners found themselves confronted with the formidable responsibility of determining the allocation of life-saving treatments. This research analyzes the intricate ethical dilemmas associated with these decisions and spotlights the influential role of Utilitarianism in shaping their choices. It explores the repercussions of this ethical framework on medical protocols, patient welfare, and the emotional well-being of healthcare professionals. Throughout this crisis, the pursuit of the greatest benefit for the largest number of individuals remained an enduring priority, even when ideal solutions were absent.

The healthcare community's commitment to this principle reflects the dedication to collective welfare and the ethical complexities encountered during a global crisis. This showcases the admirable determination of healthcare professionals as they ventured into unfamiliar terrain, constantly adhering to Utilitarian principles while facing the formidable challenge of deciding how to allocate life-saving treatments.

U19: Bioreactors for the Study of Atherosclerosis

Solana Capalbo and Annabella Polyakova, sc2830@mynsu.nova.edu, anniepolyakova123@gmail.com, Undergraduate students, Department of Engineering, Nova Southeastern University, Mentor: Dr. Manuel Salinas

Atherosclerosis is the leading cause of morbidity in the United States and around the world. This disease is characterized by the accumulation of lipid deposits and inflammatory cells within the arterial walls, which leads to the formation of plaque. Specific diseases related to atherosclerosis include peripheral artery disease (PAD), coronary artery disease (CAD), renal artery stenosis, and carotid artery disease. To investigate the stages of atherosclerosis and its progression, external models like bioreactors have been developed to simulate in-vivo conditions in an in-vitro or ex-vivo set up. Bioreactors allow for the culturing of cells as well as the replication of flow, stretch and flexure modes. An artery-like pipe will be constructed using biocompatible material such as Polylactic acid (PLA). The geometry will be generated using CAD software like SolidWorks, and the flow will simulate pulsatile flow through computational fluid dynamics (CFD).

U20: Social Support from Family During COVID-19 Promotes Parent-Infant Synchrony Four Months Later

Devi Dhanekula, ddhanekula2019@fau.edu, Undergraduate student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentors: Dr. Teresa Wilcox and Lindsey Riera-Gomez

The purpose of this study is to investigate how familial social support during the COVID-19 pandemic impacts parent-infant relationships over time. Hypotheses: if high levels of perceived social support from family are observed in the initial appointment (time 1), then we predict high levels of parent-infant dyadic synchrony (goodness of fit between partners) at time 1 and at the 4-month follow-up (time 2). Sixteen parent-infant dyads participated in two 4-minute freeplay interactions on Zoom. Social support from family was measured with the Multidimensional Scale of Perceived Social Support questionnaire. Dyadic synchrony was coded using the CIB. The results demonstrate that perceived social support from family has a significant positive correlation with dyadic synchrony at time 1 and is predictive of dyadic synchrony at time 2, four months later. These findings suggest that parents' perception of social support is a strong factor in facilitating positive, lasting behaviors between mothers and infants.

U21: Advancing Artificial Psychophysics through Runtime Augmentation

Jessica Penel, Jpenel2021@fau.edu, Undergraduate student, Department of Psychology, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Jennifer Giordano

Humans excel in object recognition across varied conditions, a feat challenging for Artificial Intelligence (AI) models, especially Convolutional Neural Networks (CNNs). While proficient in image classification, CNNs falter when image attributes slightly change, underscoring a need for perceptual stability in critical

domains like autonomous vehicles. The intricacy of AI models, akin to the human brain, makes identifying these vulnerabilities challenging. This study proposes an empirical investigation, presenting a range of augmentations to computer vision models to identify modifications that hinder classification performance. By uncovering these vulnerabilities and delineating the disruptive aspects of image augmentation, this investigation aspires to advance perceptually stable AI systems for real-world visual recognition tasks. Insights garnered are anticipated to propel further research on enhancing CNN robustness against varied visual conditions, promoting safer and more effective AI integration in critical real-world applications.

U22: Analyzing Latin America's potential to become a key player in the world stage.

Liany Diaz, diazl161@mail.broward.edu, Undergraduate student, Department of Social Behavioral Sciences, Broward College, Mentor: Victoria Brower

In this research paper, I will study Latin America's capacity to position itself as a prominent global leader in the twenty-first century. The research will analyze the current economic, political, and cultural data to explore the current positions of Latin America countries. Many countries have reinvented their economic diversity by transitioning from their agriculture based economy to an industrial one. As well as the adoption of a new globalization approach compared to the region's long running isolationism regarding foreign policies. This economic expansion index is leading Latin America into a competitive world player. Transitions of power have also impacted the region's potential by incorporating democracy and capitalism into ex-socialist nations. This acts as a significant increase in quality of life and prosperity for the adapting nations. When one country in Latin America becomes a leader, it creates a chain reaction for the region's capacity of leadership through trade agreements and regional impacts. This study aims to provide a nuanced understanding of the region's evolving role on the global stage by comparing Latin America in the past and changes that lead to their leadership position today.

While undergoing political changes and global integration, Latin America will adapt its position on the world stage. Analyzing the past trends in Latin America will give us a better idea how foreign investments into the region will perform and provide a prediction in the region's potential leadership in the future. It is important to understand this shift in the world stage in order for innovative ideas, international investments and civil rights can succeed. I will use reliable, peer reviewed sources in order to analyze my hypothesis that Latin America will become a global leader. Using the methodology of a Literature review, I will reference and use ten or more scholarly research resources to provide a well rounded and informed analysis of this region's potential.

U23: What's in a song? Evaluating Vocal Performance in Bachman's Sparrow

Helene Nguyen, Hans Gonzembach, Heather Wolverton, Melanie Garmendia, Anabel Benitz, and Nicholas Atallah, helenenguyen2020@fau.edu, abenitez2020@fau.edu, natallah2021@fau.edu, melvni.garmendia@gmail.com, hgonzembach2020@fau.edu, hwolverton2013@fau.edu, Undergraduate student, Department of Biological Sciences, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Rindy Anderson

Vocal performance in songbirds is defined as the ability to perform physically challenging songs. For trilled songs, vocal performance is illustrated as a trade-off between trill rate and frequency bandwidth that results in a physical performance limit: it is challenging to open and close the beak rapidly (high trill rate) while also opening and closing the beak widely (large frequency bandwidth). Thus, vocal performance can

reveal a male's quality because only high-quality males are physically capable of singing songs at high vocal performance. As a result, females assess vocal performance when choosing a mate. Male Bachman's Sparrows sing multiple categories of song, including 'primary song' and 'complex song'. Our goal was to measure the vocal performance of both primary and complex songs to evaluate whether the performance of either type of song is constrained by a physiological tradeoff, and to determine whether individuals show greater variation in trill rate or frequency bandwidth. In addition, we will test for relationships between vocal performance and measures of male quality in Bachman's Sparrow. The results of our study will contribute to a growing understanding of the kinds of information contained in vocal communication signals, and thus how communication systems evolve.

U24: From Bracero to "Build the Wall": A Historical Analysis of the U.S. Immigration Policies

Maria Paula Vasini, vasim8@mail.broward.edu, Undergraduate student, Department of International Relations, Broward College's Robert 'Bob' Elmore Honors College

The changing and dynamic development of U.S. immigration policies from World War II to the present day demonstrates a complex interchange of historical, political, economic, and social factors. This research project aims to provide an analytical and comprehensive understanding of this evolution. This will be done by contrasting and evaluating past immigration initiatives from the 20th century, exemplified by the Bracero Program in 1942, all the way through modern-day efforts like the controversial "Build the Wall" campaign at the U.S. and Mexico border. While doing this, the project will demonstrate the sociopolitical motivations that have built these policies over time and evaluate the economic benefits and consequences that immigration has provided to the United States throughout history.

U25: A prospective study of early identification of atypical development of social cognition in infants at risk for Autism Spectrum Disorder

Maria Eduarda Citero Leitao Maia, Mciteroleita2021@fau.edu, Undergraduate student, Department of Science, Florida Atlantic University/Charles E. Schmidt College of Science, Mentor: Dr. Gizelle Anzures

Autism Spectrum Disorder (ASD) is a developmental deficit in social-emotional reciprocity, communication, and learning abilities. Much of the current research has investigated early biological or behavioral markers of ASD that can aid in early diagnosis and intervention. The prospective study will be examining two groups of infants between 3-12 months of age. One group of infants will have an older sibling with a diagnosis of ASD, and the other group will have no familial risk of ASD. The proposed project will examine potential group differences in face perception (i.e., identity recognition and emotion recognition) and speech perception within the first 12 months after birth.

U26: Baseline Daily Growth Rates in Captive Leatherback Sea Turtle Hatchlings

Jonathan Munoz, Jmunoz2019@fau.edu, Undergraduate student, Department of Biological Science, Florida Atlantic University/Charles E. Schmidt College of Science, Mentors: Dr. Jeanette Wyneken and Dr. Samantha G. Kuschke

All leatherback sea turtle (Dermochelys coriacea) populations are considered endangered, and some subpopulations are expected to go extinct within the next 80 years. Soon, captive care for individuals from these populations may be one of the major ways to replenish diminished populations. Our current ability to care for leatherback sea turtles in captivity is limited and often is unsuccessful. One of the major challenges encountered during captive rearing is a lack of baseline knowledge. Here we present average

daily rates of change for standard body morphometrics from leatherback hatchlings across the first 7 weeks of life. Our findings demonstrate that the average weekly growth rates are relatively stable across morphometric measures throughout the first 7 weeks of life. This research documents growth rates for seemingly healthy leatherback hatchlings and can serve as baselines for monitoring changes or improvements in care and the resulting health in captive leatherbacks.

U28: Remote sensing technology sheds light on primate associations in the new Lomami National Park, Democratic Republic of Congo

Angel Ellis, Rithika Mathew, Geraldine Cardoso Ruiz, and Larissa Guimaraes Bafile, aellis2021@fau.edu, rmathew2020@fau.edu, gcardosoruiz2020@fau.edu, lguimaraesba2020@fau.edu, Undergraduate students, Department of Anthropology, Florida Atlantic University/Dorothy F. Schmidt College of Arts and Letters, Mentor: Dr. Kate Detwiler

The Congo Basin is the world's second-largest rainforest, composed of high biodiversity yet significantly understudied. We analyzed 4042 camera trap videos captured in 2021 in the newest protected area of the Congo Basin, the Lomami National Park. Our research focused on studying the associations between seven primate species found in the southern sector of the park. We identified 1073 primate events, from which 823 were solitary (only one individual), 160 were conspecific (two or more individuals of the same species), and 44 were polyspecific (two or more individuals of different primate species). From the conspecific events, the most prevalent species were Cercopithecus ascanius with 87 social events, and C. wolfi with 25 social events. As more primate species dwindle in population due to causes like habitat loss and hunting, this study is crucial for the understanding of interspecies relationships and primate communities in valuable conservation areas.

U31: Universal Orientation's Role in Interpretations of Situations

Christina Cacoulidis, Cacoc2@mail.broward.edu, Undergraduate student, Department of Behavioral Sciences, Broward College's Robert 'Bob' Elmore Honors College, Mentor: Dr. Stephen Phillips

In order to broaden understanding of interpretations of situations, universal orientation's role in perceptions is assessed. Universal orientation is, in part, characterized by an individual's interpretation of similarities with others around them. Prior research establishes a link between universally orientated persons and a decrease in the fundamental attribution error. Studies have shown the universal orientation scale to be a reliable and valid scale. In the study, the Violent Behavior Vignette Questionnaire (VBVQ) was adapted into two vignettes, one pro-social (positive) and one anti-social (negative), with increased situational ambiguity. Vignette ratings were compared against universal orientation scores and their relation(s) examined. Results suggest that universally-oriented individuals' interpretations of anti-social (negative) situations are generally lighter (more forgiving) than those who scored low on the universal orientation scale. Such findings indicate universal orientation, or perceived similarity, does play, to some extent, a role in perceptions of situations.

U33: Closing the Gap: Tackling Health Disparities Within Marginalized Communities

Melissa Lucas, lucam31@mail.broward.edu, Undergraduate student, Department of Biology, Broward College's Robert 'Bob' Elmore Honors College

It's imperative to focus on targeting health disparities, specifically within marginalized communities, early on in people's lives to set the standard for health literacy and equity. By concentrating on enforcing these

standards in the early stages of life, we can lay a strong foundation for people to have access to the resources, knowledge, and aid necessary to lead healthy lives. To achieve these changes within our society, a comprehensive approach that includes implementing various strategies is essential. By adopting these strategies we can create a more equitable healthcare system, where everyone has equal access to quality care, resulting in a healthier future for the people in our country, regardless of predetermined factors, such as the environment one develops in, family income, or education level.

U34: The Migration of Loggerhead Turtles

Brendan Flores, Florb12@mail.broward.edu, Undergraduate student, Department of Geography, Broward College, Mentor: Dr. Julie Mura

Loggerhead turtles are one of the most common turtles found on Florida's beaches. They travel all over the world in the ocean, searching for the best environment for them to feed and thrive. Although, due to climate change, and its horrible effects on the ocean, many different, marine species are threatened with extinction. Using GIS spatial analysis we will track the movement of loggerhead turtles throughout the ocean and study the effects of climate change on this species. Using spatial analysis we will also find migration patterns throughout the time of the year and find the turtles, preferred environment and temperatures.

U35: A data analysis of the effect of global warming in floodings in Florida.

Ariana Lara, laraa37@mail.broward.edu, Dual Enrollment student, Broward College, Mentor: Dr. Julie Mura

The data analysis will highlight recent floodings, which are a response to global warming. Rising sea levels contribute to flooding. Florida is one of the most vulnerable states in the U.S to sea level rise and coastal storms. The added water from melting ice sheets and glaciers, and the expansion of seawater as it warms are the two main factors of rising sea levels. Sea level rise is impacting gravity-flow drainage infrastructure, which leads to frequent and severe high tide flooding. Higher sea levels can also lead to higher storm surge levels and greater coastal flooding during tropical cyclones. Through this data analysis, I hope to raise awareness about the effects of global warming in the local area of Florida.

Index of Presenters

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