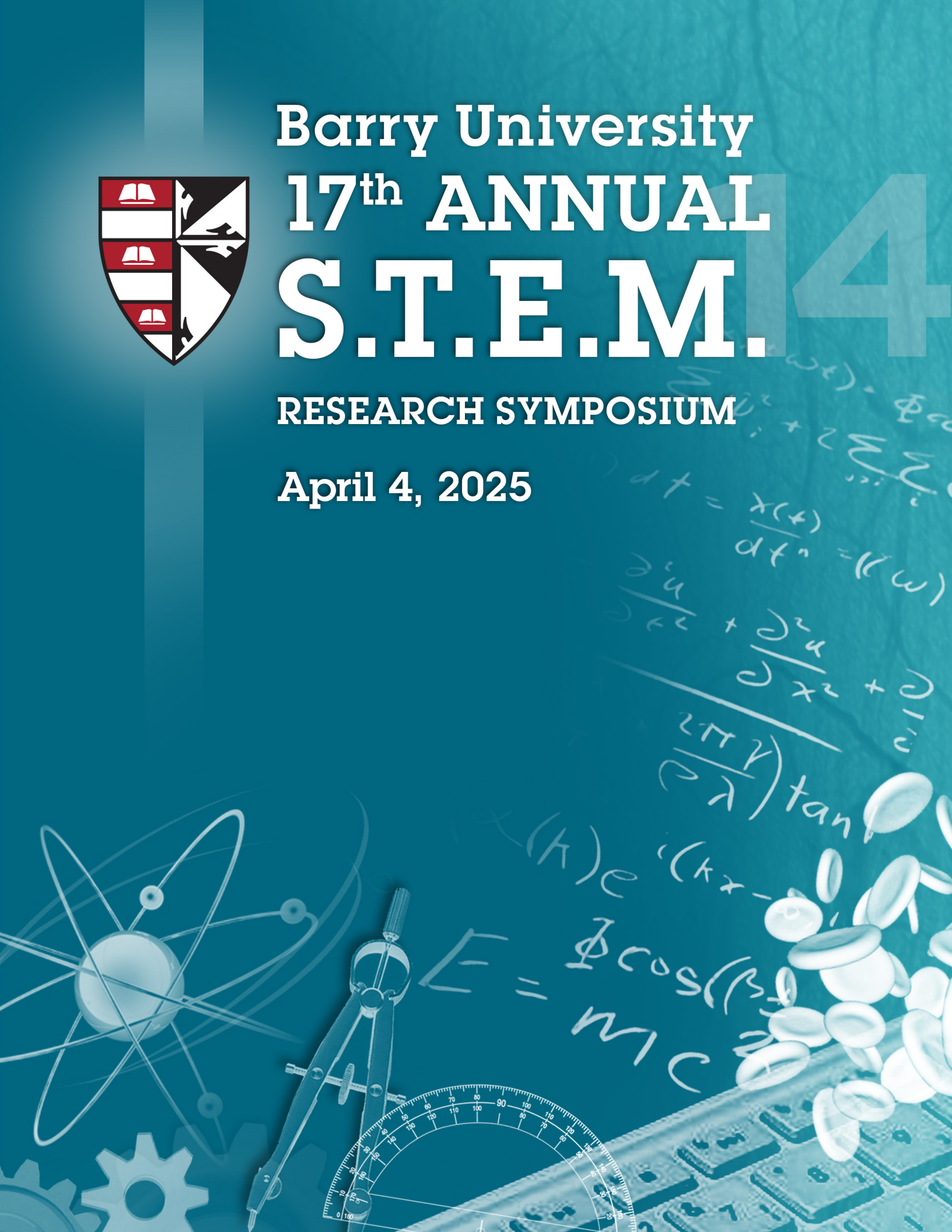
Barry University

17th ANNUAL S.T.E.M. 14

RESEARCH SYMPOSIUM

April 4, 2025



17th Annual S.T.E.M. Research Symposium

This research symposium is aimed at engaging the Barry community in learning about and sharing in the excitement of ongoing discoveries and research within the Science, Technology, Engineering, and Math disciplines (S.T.E.M.), Medicine, Humanities and Social Sciences. Undergraduate, graduate and high school students will present posters related to their past and current research in biology, chemistry, computer science, sports and exercise science, health science, humanities, mathematics, music, medicine, social sciences, psychology, and physics.

Friday, April 4, 2025

9:00 - 11:45 am	***Poster Presentations***
10:00 -10:30 am	***Opening Ceremony***
Noon - 1:00 pm	***Keynote Seminar***
1:00 - 2:00 pm	***Award Ceremony***

We gratefully acknowledge:

The dedication of research mentors, support staff, undergraduate, graduate and high school student researchers.

Sigma Xi, The Scientific Research Honor Society for sponsoring
Dr. Teresa Petrino-Lin Memorial Award for Outstanding Student Presentation

Sponsors from Barry University: Department of Biology, Department of Math and Computer Sciences, Department of Chemistry and Physics, Department of Psychology, and College of Health and Wellness

Special thanks for assisting with the Symposium to:
Department of Marketing and Communications

Organized by Members of Barry University's STEM Committee:
Sabrina Des Rosiers PhD, Christoph Hengartner PhD, Ricardo Jimenez PhD, Zacharias Papadakis PhD, Michael Robinson PhD, Zuzana Zajickova PhD, and Anita Zavodska PhD

Title: Finding your niche, changing the world.

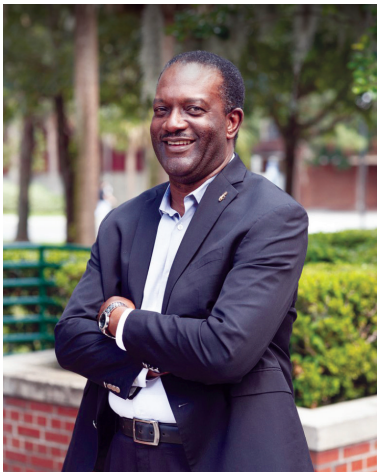
Speaker: Dr. Adegbola Adesogan

Abstract

Nutritional stunting reduces the physical and neurocognitive development of children thus condemning them to a lifetime of underachievement. It makes children more susceptible to noncommunicable diseases, reduces the gross domestic product of nations and is intergenerational. This talk will highlight how the speaker and his colleagues at University of Florida and around the world have identified their niches working to address childhood malnutrition across the world. It will also highlight how everyone in the audience has a unique role to play in reducing global food insecurity and making the world a better place.

Keynote Speaker

Dr. Adegbola Adesogan



Dr. Adesogan received his B.S. in 1988 at the University of Ibadan, Nigeria, and his M.S. and Ph.D. at the University of Reading, UK.

He was Faculty at the University of Wales, UK from 1995 to 2001, and is currently an Associate Vice President, E. T. and V. C. York Professor of International Agriculture, Director, Global Food Systems Institute, Professor of Animal Nutrition, and Founding Director and PI of the Feed the Future Livestock Systems Innovation Lab (LSIL; he currently serves as the LSIL Director of Strategic Partnerships).

The LSIL aims to sustainably intensify animal source-food production, marketing and consumption in 8 countries to improve the nutrition, health and incomes of the poor. He taught Principles of Forage Evaluation, Advanced Methods in Nutrition Technology, Animal Nutrition, and Biochemistry courses. He has served on the Editorial boards of the Journal of Animal Science, ANIMAL, and other journals. He has authored or coauthored over 780 publications including 185 that were in peer-reviewed journals, received over 80 million dollars in research grants, given over 150 international seminars in over 25 countries, and received awards from the American Dairy Science Association, the American Society of Animal Science, the American Forage and Grassland Council, Faculty Commons, Alachua County African & African American Historical Society, and UF President, Provost, College of Agriculture and Life Sciences, Florida Agricultural Experiment Station and Department of Animal Sciences.

DEPARTMENT OF BIOLOGY

1. Exploring the inhibition of Staphylococcus epidermidis biofilm formation by lauric acid from coconut oil

Yalena Anderson , Xyan Henry, Jeffernique Victor, Leticia Vega, Christoph Hengartner (Department of Biology, Barry University, Miami Shores, FL)

Bacteria can exist as planktonic cells or within biofilms, which are bacterial communities attached to surfaces and encased in an extracellular matrix. The extracellular matrix is a protective and supportive structure composed of polysaccharides, proteins, and extracellular DNA. This matrix helps bacteria adhere to surfaces and to each other while also acting as a shield. Biofilms are particularly problematic in clinical settings because they are resistant to antibiotics. Staphylococcus epidermidis, a common human skin bacterium, is a leading cause of medical device-related infections, with its ability to form biofilms complicating treatment. In this study, we use two strains of S. epidermidis: 1) RP62A, a strain that was isolated from the catheter of a septic patient and that forms robust biofilm; 2) PCI 1200, a strain used in food testing that does not form biofilms. Coconut oil contains various medium-chain fatty acids, with lauric acid as its primary component. Coconut oil has been traditionally used in practices like oil pulling and cleaning teeth for its antibacterial properties. Previous studies have shown that coconut oil reduces bacterial load, which makes it an ideal candidate for studying its effect on biofilm formation. We found that coconut oil inhibits biofilm growth in the RP62A strain. We are now investigating which component of coconut oil contributes to its inhibition of S. epidermidis biofilm, with a focus on lauric acid. Our experiments will test varying concentrations of lauric acid to determine its role in disrupting biofilm formation by RP62A, offering insights into potential therapeutic applications for biofilm-associated infections.

2. Learning about urban farming at Cerasee farm

Sachemie Archelus [1], Hannah Fox [1], D'Marion Ivey [2], Shanaya Jean-Pierre [3], Miliah Johnson [4], Romina O'Brien [1], Jenny Yu [1], Chanda Bwalya [1], Celine Hernandez [1], Neissa Rousseau [1], Theirry Taylor [1], Roger Horne [5] ([1]Department of Biology, Barry University, Miami Shores, FL, [2]Department of Math & Computer Science, Barry University, Miami Shores, FL, [3]Department of Chemistry & Physics, Barry University, Miami Shores, FL, [4]Department of Sociology & Criminology, Barry University, Miami Shores, FL, [5]Urban GreenWorks, Miami, FL)

Urban GreenWorks is a not for profit established to help provide south Floridians with improved access to healthy local foods, environmental education, horticulture therapy,

and volunteer opportunities. Barry University recently was awarded a grant to fund the CRAFT Scholars program by the USDA's National Institute of Food and Agriculture (NIFA). The aim of the CRAFT program at Barry is to cultivate the next generation of Food and Agricultural professions from urban students that typically go into health-related professions. As CRAFT scholarship recipients in Chemistry, Biology, Criminology and Computer Science majors, we worked under the direction of Mr. Roger Horne in a semester long project during Spring 2024 to assist in building Cerasee farm, located in Liberty City, into an asset for the community. Students were educated and trained in beginning urban farm principles and concepts, using hands-on and train-the-trainer activities to drive the experience and knowledge home. Students learned about farming practices such as pruning, beekeeping, planting, weeding, and medicinal plants through hands-on experiences and a Planetary Health App. Here we describe some of the activities and lessons that we learned during this hands-on experience.

This work is supported by the USDA NATIONAL INSTITUTE OF FOOD AND AGRICULTURE, NEXTGENPROGRAM, AWARD 2023-70440-40161

3. Effects of ethanol exposure on Mauthner cell development and escape behavior in zebrafish

Bianca Delgado and Stephanie Bingham (Department of Biology, Barry University, Miami Shores, FL)

This study investigates the effects of ethanol exposure during early embryogenesis on escape behaviors, a critical survival response in Danio rerio (zebrafish) and other species. This escape behavior is characterized by a "C-start response" which is a rapid escape reflex exhibited by fish, during which the body curves into a C-shape in response to a sudden stimulus. Mauthner neurons (M-cells), large reticulospinal neurons, mediate this rapid escape response, and may be disrupted by alcohol exposure, contributing to neurodevelopmental abnormalities similar to those observed in fetal alcohol spectrum disorders (FASD). Embryos of the AB wild-type strain were exposed to varying concentrations of ethanol (0%, 0.5%, 1.0%, 2.5%) at 24 hours post-fertilization, the period of M-cell neurogenesis. We hypothesize that ethanol exposure impairs M-cell development, resulting in structural deficits and altered escape behavior in a dose-dependent manner. M-cell morphology will be assessed using standard fluorescence microscopy following immunocytochemistry to measure soma size, axon length, dendritic complexity, and neuronal apoptosis. Furthermore, escape behavior will be evaluated using acoustic and tactile startle tests, as well as ImageJ to measure response latency, turn angle, swim velocity, and distance traveled. Expected results include reduced soma size, shortened axons, and decreased dendritic complexity in

ethanol-exposed groups, correlated with delayed escape responses and impaired locomotion. This research will enhance understanding of the neurodevelopmental effects of ethanol exposure.

This research was supported by the Department of Biology, Barry University.

4. **Ocean acidification negatively affects survival, growth, and root development of turtlegrass, Thalassia testudinum, seedlings**

Sabrina Gomez, Ainsley Vanderhyde, Silvia Maciá (Department of Biology, Barry University, Miami Shores, FL)

Due to ongoing climate change, the oceans are absorbing excess carbon dioxide from the atmosphere, thereby decreasing ocean pH and threatening many marine ecosystems such as turtlegrass (Thalassia testudinum) beds. Turtlegrass is common in shallow, tropical seas and provides habitat and nutrients to many organisms. We investigated the possible effects of climate change on turtlegrass by tracking growth and survival of seedlings in decreased pH. Turtlegrass seeds were collected along the shoreline of Key Biscayne, Florida. Once germinated, the seedlings were divided into 6 hydroponic tanks with 95 seeds in each. Three tanks were maintained at 8.0 pH and three were maintained at 7.6 pH. The length of the longest leaf of 20 random seedlings and survival of all seedlings were measured bi-weekly for 11 weeks. Initially, both treatments caused similar leaf growth but after 6 weeks the length of seedlings in 7.6 pH was lower than in 8.0 pH. Seedling survival was similar in both treatments throughout the first 9 weeks, but eventually declined in the 7.6 pH treatment. At the conclusion of the experiment the number and length of the longest root was measured in 20 random seedlings per tank. Both the number and length of the roots were significantly higher in the 8.0 pH treatment. Overall, our research suggests that acidic growing conditions have a greater negative effect on seedlings than current ocean conditions. If ocean waters continue to become more acidic due to excess carbon dioxide, there is a possibility that turtlegrass will have difficulty reproducing.

5. **Bridging psychology and biology in physical therapy: enhancing recovery through communication and compassion**

Sophia Jauquet and Ana Lichtenberger (Department of Biology, Barry University, Miami Shores, FL)

During my internship at Quality Physical Therapy in West River, FL, I have discovered the critical role of both psychological and biological factors in the rehabilitation process. Working primarily with an older, working-class demographic involved in worker's compensation, I have learned how important it is to approach patient care with empathy, clear communication, and an understanding of the mind-body connection. Simplifying complex terms and ensuring patients feel heard - whether through a smile, a kind word, or checking in on their well-being - has proven essential in fostering trust and motivating them to follow through with their treatment plans. By blending psychological insights with biological principles of recovery, I am gaining a deeper understanding of how compassionate care can improve patient outcomes, ultimately supporting physical healing and overall well-being. As I continue my internship, I am gaining deeper insights into the intersection of physical health and psychological well-being, preparing me for a holistic approach in future healthcare practice.

6. **The impact of temperature changes on sex ratios, growth, and development in Caenorhabditis elegans: Implications for global warming**

Verna Liburd and Stephanie Bingham (Department of Biology, Barry University, Miami Shores, FL)

This study investigates the effects of multigenerational exposure to varying temperatures on sex ratios, growth, and nervous system structure of Caenorhabditis elegans. The research examines how environmental stress, specifically temperature fluctuations, impacts gene expression and developmental processes over successive generations. Two experimental groups were established: Group 1, in which adult nematodes were raised at a normal temperature of 25°C and their offspring were exposed to 15°C and 30°C to simulate significant decreases or increases in temperature, respectively, and Group 2, in which adult nematodes were maintained at an elevated temperature of 30°C, while their offspring experienced 25°C, to replicate the reversal of warming trends. The goal is to monitor the development of the nematodes over a 48-hour period, assessing developmental progress at 4-hour intervals. Data collected in this study will be analyzed to assess the long-term implications of temperature stress on C. elegans physiology, providing insights into how environmental factors could impact evolutionary processes and the health of future generations.

This research was supported by the Department of Biology, Barry University.

7. **Impact of microplastics on embryogenesis and physiological development in zebrafish: Implications for human health**

Faiyaz Mahmud Nairob and Stephanie Bingham (Department of Biology, Barry University, Miami Shores, FL)

Microplastics (MPs) are microscale plastic particles (1mm - 5mm) that originate from the degradation of larger plastic waste or are intentionally manufactured for industrial and consumer products. Key oceanic sources include coastal cities, ports, shipping activities, coastal landfills, and dumping sites. MPs directly impact aquatic organisms such as microalgae, mollusks, and fish, while also posing indirect risks to humans. Human exposure primarily occurs through ingestion, leading to MP accumulation in organs like the small and large intestines, lungs, and tonsils. By varying MP concentrations, polymer types, and exposure durations across different developmental stages, this study examines MP-induced developmental toxicity in zebrafish and aims to identify the most vulnerable periods of embryogenesis and the physiological systems most susceptible to MP toxicity. Findings will offer translational insights into prenatal exposure risks and fetal development, with zebrafish serving as a comparative model for human biological processes. Zebrafish are an ideal model for studying microplastic toxicity due to their 70% genetic similarity to humans, rapid development, transparent embryos, and well-characterized physiological systems. Additionally, integrating standardized detection methods, such as fluorescent labeling, will enhance MP identification and quantification, ensuring accuracy and reproducibility. This research underscores the urgency of addressing MP contamination and its broader implications for environmental and public health.

This research was supported by the Department of Biology, Barry University.

8. **Evaluating the growth of collagen with the presence of aloe on murine fibroblast nih3t3 cells**

Genesis Michel, Laura Mudd, Ana Lichtenberger (Department of Biology, Barry University, Miami Shores, FL)

Healing is the process of removing and replacing damaged tissue. The process is generalized in three phases (Inflammatory, Proliferative, and Remodeling). The duration of each phase varies depending on the amount, quantity, and scope of the trauma inflicted. Furthermore, an infection can be a great medical problem that, if left untreated, could lead to death (Sen, 2021). In this study we used cultured murine fibroblast (NIH3T3) to study the effects of Aloe Vera (Aloe barbadensis miller), a succulent plant that produces a gel like substance which possesses properties that may

decrease scaring (Surjushe et al, 2008). The objective of this study is to observe the effect of Aloe on the production of collagen in cultures. Data was obtained by analyzing the amount of collagen production using a scratch assay, observed 24-hours post scratch. Collagen content was measured by a spectrophotometer reading of picrosirius red at 490 nm, since picrosirius red is a collagen specific dye. This is a preliminary study that can be used to determine time points of observation post-scratch.

9. **Investigating how alcohol exposure influences associative learning behaviors in zebrafish**

Genesis Michel, Ramone Pugh, Stephanie Bingham (Department of Biology, Barry University, Miami Shores, FL)

This study examines the effects of alcohol on associative learning and memory retention in zebrafish (Danio rerio). The study utilizes a visual stimulus (yellow color) which is paired consistently with food to condition fish to associate the cue with a reward, followed by examination of whether the reward overrides a stimulus that typically elicits fear or anxiety, and whether alcohol consumption impairs memory of the conditioned responses. The key objective is to determine whether the fish retain this learned associative memory after exposure to different concentrations of alcohol ranging from acute to chronic. The study will be conducted on zebrafish at 35 days post-fertilization, an age consistent with human adolescence in terms of neurodevelopment. Given the structural and functional similarities between zebrafish and the human brain, analyzing the effects of alcohol on learning and memory in this model may provide insights applicable to human populations. Findings from this study have the potential to contribute to a deeper understanding of how alcohol consumption impacts cognitive processes, particularly in environments where learning and memory are critical, such as among college students.

This research was supported by the Department of Biology, Barry University.

10. **Investigating the potential of Hericium erinaceus to promote myocardial regeneration in zebrafish with ethanol-induced myocardial damage**

Leah Thompson-Barrow and Stephanie Bingham (Department of Biology, Barry University, Miami Shores, FL)

Hericium erinaceus, commonly known as Lion's Mane Mushroom, has been used in traditional Chinese medicine for centuries as a holistic remedy to relieve anxiety, depression, and promote digestive health. Recently, it has grown in popularity in the Western world for its culinary versatility, especially for plant-based individuals. To date, scientific research on Lion's Mane has been limited despite knowledge that it is high in bioactive compounds such as beta-glucans, a soluble fiber that comes from the cell walls of bacteria, fungi, yeasts and some plants, as well as antioxidants such as hericenones and erinacines, which combat oxidative stress, a key contributor to cell damage. Although research is limited, evidence suggests that extracts of Lion's Mane Mushroom stimulate the production of nerve growth factor (NGF), which aids in neuroprotection and hepatoprotection by reducing oxidative stress and inflammation, as well as wound-healing properties by enhancing collagen synthesis and reducing inflammation. This study aims to expand the scope of studies on its regenerative properties to myocardial cells. Using zebrafish as a model system, we plan to investigate whether dual-extracted Lion's Mane Mushroom can promote the regeneration of myocardial cells damaged by ethanol exposure during embryogenesis. If this proves successful, the hope is to examine these regenerative properties on myocardial cells damaged due to ischemia.

This research was supported by the Department of Biology, Barry University.

DEPARTMENT OF CHEMISTRY & PHYSICS

11. Designing organo-silica hybrid monoliths using thiol-ene click chemistry for potential applications in high performance liquid chromatography

Calla Marco, and Zuzana Zajickova (Department of Chemistry & Physics, Barry University, Miami Shores, FL)

High performance liquid chromatography is one of the most important tools in the chemical industry for separation of analytes in a mixture. A column packed with a stationary phase is the heart of this technique. This study investigates monolithic columns as an alternative to traditional, particle-packed columns as monoliths allow for faster separations without the expense of increased backpressure. Specifically, the focus is on designing a hybrid monolith using 3-(methacryloyloxy) propyltrimethoxysilane as the starting monomer containing both inorganic and organic functionality. So far, our data has shown that using ethylene dimethacrylate as the cross-linker has produced a monolith of long-term mechanical stability. In this study, four additional thiol-based cross-linkers are being tested to evaluate the feasibility of thiol-ene click chemistry and suitability of prepared monoliths in chromatographic separations. Initially, monoliths were studied in bulk, observing key features such as

ensuring they were sturdy and have a white opaque appearance. They were further analyzed using an infrared spectroscopy to determine the presence of major functional groups. The future work will focus on evaluating their chromatographic performance. This research can produce hybrid monoliths of enhanced long-term stability and lead to savings within the industry.

Funding provided by the Department of Chemistry and Physics at Barry University.

12. Quantitative analysis of active ingredients in commercial analgesic tablets using LC-UV-MS

Nick Toms, and Zuzana Zajickova (Department of Chemistry & Physics, Barry University, Miami Shores, FL)

The research aims to study the rigorous standards that pharmaceutical manufacturers adhere to when ensuring their products remain safe and effective. The primary goal of this research project is to conduct quantitative analysis of multiple analgesic brands to verify the amount of active ingredients such as caffeine, acetaminophen, and acetylsalicylic acid match the quantities stated on their labels. The project will apply a quality control protocol for verifying that all analgesics fulfill the established dosage requirements. The study will utilize high performance liquid chromatography equipped with a photodiode array detector and an electrospray mass spectrometer (LC-UV-MS) to meet its objectives. Through these analytical methods we will achieve precise measurement of active components and assess proper dosage compliance. The research will investigate how incorrect dosages of medications affect human health to emphasize the essential requirement for precision in drug production. The research focuses on the importance of strict quality control processes to support current initiatives toward maintaining pharmaceutical product safety and effectiveness.

13. Synthesis of morpholinium salts as M1-selective muscarinic agonists for chizophrenia pharmaceutical applications

Cianna Williams, Chiara Brambilla, John Boulos (Department of Chemistry & Physics, Barry University, Miami Shores, FL)

A series of Thiophene-morpholinyl salts is being synthesized for muscarinic activity and subtype selectivity. Those compounds are intended as M1 selective muscarinic agonists for Schizophrenia applications. M1 muscarinic agonists have been shown

to be of therapeutic value for the symptomatic treatment of several neurological and psychiatric diseases. Synthesis starts with the reduction of 5-methyl thiophene carboxaldehyde with sodium borohydride, chlorination of the corresponding alcohol, followed by coupling with morpholine. Subsequent reaction with hydrogen chloride gas or iodomethane produces the corresponding morpholinium hydrochloride or iodine salt, respectively. The alcohol intermediate was successfully synthesized (75% yield) and characterized by FT-IR to confirm that the aldehyde group was removed. Proton NMR analysis was also done to confirm the structure of the intermediate. This new series of Thiophene-morpholinyl salts may have therapeutic values for treating symptoms in patients suffering from Schizophrenia with reduced adverse effects.

DEPARTMENT OF MATH & COMPUTER SCIENCE

14. Object detection utilizing color histograms

Sean Chin Loy, Marcus Dahl, Lola Umarova, James Haralambides (Department of Math & Computer Science, Barry University, Miami Shores, FL)

This project aims to develop a robust software application to improve the accuracy and efficiency of object recognition techniques with a direct application to security systems. The significance of this project lies in its potential to enhance real-time object identification in security systems, improve autonomous vehicle responses, assist in accurate medical diagnoses, and enhance customer experiences in retail through visual search and inventory management. By effective use of advanced algorithms for color comparison and machine learning, we aim to deliver a reliable, scalable software solution for diverse technological environments. Our methodology involves capturing images on various surfaces and in different locations to simulate challenging situations for object recognition (e.g., shadows, rotated objects, and moved objects). Techniques leveraging image processing, computational geometry, statistics, and machine learning were developed, which utilized color histograms and a sliding window approach with varying window sizes to detect image segments that closely match the color signature of target objects. Additionally, the polygon inclusion algorithm and alternative histogram distance computation methods, including chi-square distance, were implemented to improve reliability and robustness. A method implementing variable histogram bin sizing was also implemented, however, yielded a decrease in accuracy, hence its omission from our current revision. Key findings and hypotheses include the effective use of color histograms to recognize objects in pictures and identifying the most efficient histogram difference formulae for the “closest” match. Plans for this research include refining the machine learning component, adding result clustering, and expanding the software’s capabilities to recognize 3D objects and movement.

15. Leveraging blockchain and zero-knowledge proofs for secure sensitive data transmission

Rickson Costa, Wilyn St-Armand, Snowbird Rubio, James Haralambides (Department of Math & Computer Science, Barry University, Miami Shores, FL)

In the digital age, protecting sensitive data during transmission is paramount. Traditional encryption methods can be vulnerable to various attacks, and centralization can lead to single points of failure. Blockchain technology offers a decentralized ledger that ensures data integrity and transparency, while zero-knowledge proofs provide a way to verify information without revealing the data itself. Combining these technologies can lead to innovative solutions that maintain confidentiality while ensuring authenticity and trustworthiness. This research proposal explores the integration of blockchain technology and zero-knowledge proofs (ZKPs) to enhance the secure transmission of sensitive data. As digital transformation accelerates, secure data handling has become critical, particularly in finance, healthcare, and personal data management. The proposed study seeks to identify the strengths of blockchain's decentralized architecture and ZKP's privacy-preserving capabilities to create a robust framework for sensitive data transmission. The theoretical component includes a review of existing methods for sensitive data transmission, focusing on their limitations in security, privacy, and efficiency and the development of a conceptual framework that integrates blockchain and ZKPs to enhance data transmission security and privacy. A prototype system that demonstrates the feasibility of the proposed framework in real-world applications is created. The integrated system is evaluated for performance, scalability, and security, compared to existing methods. This research contributes to the fields of cybersecurity and data privacy by providing a novel approach to sensitive data transmission. It aims to enhance trust in digital systems, promote data ownership, and address the growing concerns regarding data breaches and privacy violations.

16. Solving the Basel Problem via L'Hospital's Rule

Arnau Duran Polo, Lakecia Hall, Melanie Ramirez, Faiyaz Nirob, Lubomir Markov (Department of Math & Computer Science, Barry University, Miami Shores, FL)

A solution to the Basel problem with a utilization of L'Hospital's Rule is presented. The famous Basel problem asks for the exact value of the infinite series summing the reciprocals of the squares of the natural numbers. That infinite series is easily proven to be convergent, but finding its exact sum (in terms of known constants) was a problem of exceptional difficulty in the 18th century. Following Euler's original idea, a solution to the Basel Problem is given which avoids the use of complex numbers and in which a careful treatment of the limiting processes involved is performed.

DEPARTMENT OF PSYCHOLOGY

17. The effect of episodic specificity induction on false memory

Michelle Lozada, and Justin Lauro (Department of Psychology, Barry University, Miami Shores, FL)

This study investigates the efficacy of Episodic Specificity Induction (ESI) in reducing false memory formation within the Deese-Roediger-McDermott (DRM) paradigm. Employing a within-subjects design, participants undergo both ESI and control conditions, followed by recall and recognition tasks to assess false memory susceptibility. The order of conditions was counterbalanced across participants. It was hypothesized that ESI, by enhancing episodic retrieval, reduces false recall rates compared to the control condition. This research aims to contribute to the understanding of memory manipulation and its implications, particularly in forensic contexts where accurate recall is crucial.

18. Does emotion regulation predict life satisfaction above and beyond personality?

Bathesheba Auguste, Fredrika Saint Louis, Sabrina Des Rosiers, Guillermo Wated (Department of Psychology, Barry University, Miami Shores, FL)

Emerging adulthood, a developmental stage encompassing individuals aged 18 to 29 years is marked by significant life transitions and increased self-sufficiency (Arnett, 2000, 2021). During this formative period, the ability to effectively employ emotion regulation strategies has been shown to predict successful transitions that are salient for emerging adults (Waizman et al., 2023). Emotion regulation (ER) involves the cognitive and behavioral strategies including cognitive reappraisal and expressive suppression employed to manage emotional responses to situational demands (Gross, 1998; Gross & John, 2003; Purnamaningsih, 2017; Jiang et al., 2022). Evidence indicates that effective ER predicts overall well-being and has been shown to be associated to subjective well-being (SWB) which has been indexed by life satisfaction (LS). Diener's theory of subjective well-being (1984) posits that LS is a self-reported assessment characterized by positive affect and a lack of negative affect and reflects the cognitive evaluation of one's overall quality of life (i.e., subjective well-being). A vast landscape of research has shown individual differences in personality shape the way individuals experience life events and cope with challenges (Eldesouky & English, 2019; Hughes et al., 2020; Mammadov et al., 2024). For example, studies that employed Costa and McCrae (1985, 1992) Big Five model have found extraversion is positively associated with higher levels of positive affect and life satisfaction, while neuroticism is negatively

associated with well-being. Furthermore, studies have shown narcissism is also related to SWB and LS, such that there is a negative relationship between the two (Rohmann et al., 2019; Parma, 2024). Some research suggests emotion regulation may play a role in the association between personality and life satisfaction. In effect, successful ER has been defined as the person by situation and strategy interaction, and the utility of any ER strategy relies on individual characteristics (i.e. personality) of the person using it and the context-dependent situation (Doré et al. 2016, Wickett et al., 2023). Although there is growing evidence supporting the relationship between personality, emotion regulation and subjective well-being, continued investigation is needed to identify patterns of association between personality characteristics, emotion regulation, and life satisfaction. This study is based on Diener's perspective (1984) of subjective well-being to investigate whether emotion regulation is associated with variability in life satisfaction above and beyond personality characteristics. An archival survey design will be implemented. Participants will be emerging adults 18-29. They will complete assessments focused on personality traits, emotion regulation strategies and life satisfaction. The findings of the present study have the potential to identify association between personality traits, emotion regulation and life satisfaction. This can be informative for interventions that seeks to improve emerging adults' subjective well-being through effective emotion regulation practices.

19. The Impact of Cognitive Training and Moderate Exercise on Attentional Processing in Collegiate Athletes

Viviana Corbisiero, Zacharias Papadakis, Justin Lauro (Department of Psychology, Barry University, Miami Shores, FL)

Cognitive Training (CT) is an emerging area of interest for improving sports performance by targeting core cognitive processes, such as attentional control, that fundamentally underlie performance. One CT technique, Episodic Specificity Induction (ESI), has been shown to improve cognitive functioning in the general population, though its effect on real-time attentional processing in athletes remains unknown. Moderate exercise (ME) is known to boost cognitive performance, suggesting a potential combined effect with CT. PURPOSE: This study examines how ESI and ME impact two real-time attention measures—selective attention and sustained attention—in collegiate athletes. METHODS: Fifty-seven Division II student-athletes participated in a mixed-subjects design with partial counterbalancing, in which each athlete completed two of four conditions, with a break in between: no ESI + no exercise, ESI + ME, ESI + no exercise, and no ESI + ME. Selective attention was assessed using response times (RTs) in a visual search task with varying numbers of distractors. Sustained attention was measured via accuracy rates on a sustained attention to response (SART) task. Data were analyzed using linear and logistics mixed-effects regressions to account for

random effects of participants and trials, with fixed effects for CT (ESI vs Control) and ME (ME vs rest). The models were fit using restricted maximum likelihood estimation. RESULTS: Participants' RTs on the visual search task were significantly faster after ME, $\beta = -64.92$, SE = 22.76, $t = -2.85$, $p = .006$. There was no effect of ESI on RTs. However, the interaction revealed faster RTs for participants in the ESI and ME, but only at lower levels of distractors. Moderate exercise alone was more beneficial as the number of distractors increased, $\beta = 18.34$, SE = 15.05, $t = 4.45$, $p < .001$. On the SART, ESI significantly increased accuracy rates, $\beta = 0.22$, SE = 0.10, $z = 2.09$, $p = .04$, increasing the odds of a correct response by 23.8%. No effect of ME or significant interaction was observed. CONCLUSIONS: These findings suggest that ME improves selective attention, particularly in more demanding conditions, ESI as a CT improves sustained attention. Moderate exercise and ESI may target distinct attentional processes, potentially offering complementary benefits for sports performance.

20. Gender Differences in Perceived Discrimination, Anxiety, and Depression Amongst in The Latinx Community

Anastasia Hedditch [1], Jayla Grayson [1], Kerline Michel [1], Pamela D. Hall [1], Latrisha Robinson [2] ([1]Department of Psychology, Barry University, Miami Shores, FL, [2]Department of Psychology, Florida International University, Miami, FL)

Gender differences between males and females can be based on biological gender differences, gender roles, and gender stereotypes (Worthy, Lavigne & Romero, 2021). Historically, Latinx individuals in the U.S. have faced racial, ethnic, and anti-immigrant prejudice, including discrimination in employment, housing, and education (Feagin & Cobas, 2014). Acts of violence and hate crimes have also caused injuries and deaths among the Latinx community in the U.S. (Langton & Masucci, 2017). Latinx people have also experienced discrimination and harm from systems meant to protect and improve health and well-being (CDC, 2022). Along with overt forms of discrimination, Latinx may report daily experiences of mistreatment that include subtle and relatively minor slights and insults (Cobb et al., 2017; Williams et al. 1997). Research has suggested that everyday slights and insults may not only confer more adverse psychological consequences than some overt forms of discrimination but also that individuals who experience daily discrimination often report poorer mental health outcomes than those who do not (Cobb et al., 2020). Therefore, the present study will examine potential sex differences and perceived discrimination in levels of anxiety and depression in the Latinx community. Particularly, we aim to determine if perceived discrimination impacts the well-being of Latinx males and females differently. We addressed the following research questions: RQ1: Will gender predict anxiety and depression? RQ2: Will perceived discrimination predict anxiety and depression? RQ3: Will the interaction between gender and perceived discrimination predict anxiety and depression?

Method: Participants were recruited during the third wave of the COVID-19 pandemic (November 2020 to January 2021). The sample consisted of 2,300 self-identified Latinx participants. Participants completed the Everyday Discrimination Scale (Williams, 2016). The EDS consisted of five items. Participants responded using a 5-point scale indicating the frequency of occurrence, ranging from "Almost every day" to "Never." Anxiety and depression were assessed using the Patient Health Questionnaire-4 (PHQ-4) where they rated the frequency of their anxiety and depression over the past two weeks using a scale ranging from 0 (not at all) to 3 (nearly every day). Results: There were significant main effects for gender and anxiety, $F(2,2267) = 18.00$, $p < .001$, and discrimination and anxiety $F(2,2267) = 5.54$, $p < .001$. Further, there were main effects for gender and depression $F(2,2267) = 10.071$, $p < .001$, and discrimination and depression $F(2,2267) = 6.50$, $p < .001$. The were no statistically significant interactions. Findings will be discussed using the Social Determinants of Health framework and the intersectionality of gender and discrimination. Future research needs to focus on developing interventions that can address the impact of structural inequities on the well-being of Latinx individuals. In addition, at the policy level, access to telehealth ought to become available and affordable for rural communities and low-income families that may not have access to therapy services due to insurance coverage.

21. The Effects of Perceived Discrimination on The Black and Latinx Communities' Well-Being During The COVID-19 Pandemic

Jayla Grayson [1], Anastasia Hedditch [1], Kerline Michel [1], Pamela D. Hall [1], Latrisha Robinson [2] ([1]Department of Psychology, Barry University, Miami Shores, FL, [2]Department of Psychology, Florida International University, Miami, FL)

At the peak of COVID-19, it became evident that the pandemic had a disproportionately adverse impact on tribally, racially, and ethnically diverse communities (hereafter referred to as communities of color (CoC—i.e., African American/Black/Africana; Latinx/Afro-Latinx; Asian American, Native Hawaiian, Pacific Islander; and American Indian and Alaska Native (Grills et al., 2021). Racial and ethnic discrimination has a significant effect on the development of overall functioning in African American and Latinx adults (Sibrava et al.,2019). Perceived discrimination is an individual's perception of a negative attitude, unfair treatment, or judgment due to specific characteristics such as social status, race, ethnicity, and gender (Pengpid et al., 2021). Being treated differently from others because of skin color can affect people in many ways, including the triggering of anxiety, depression, stress, and in some cases, PTSD (Chen et al., 2021). The following study hopes to shed light on the impact that perceived discrimination had on Latinx and Black communities during the COVID-19 pandemic. The present study tested the following research questions: RQ1: Does perceived discrimination correlate with anxiety and depression in the Black and Latinx communities? RQ2:

Would perceived discrimination be a predictor of depression in the Black and Latinx Communities? RQ3: Would perceived discrimination be a predictor of anxiety in the Black and Latinx Communities? Method: The current study's sample consisted of 2,480 self-identified Black/Africana participants and 2,300 self-identified Latinx participants. Participants completed the Everyday Discrimination Scale (Williams, 2016). The EDS consisted of five items. For each item, participants responded to each item using a five-point scale indicating the frequency of occurrence, ranging from "Almost everyday" to "Never." Anxiety and depression were assessed using the Patient Health Questionnaire-4 (PHQ-4) where they rated the frequency of their anxiety and depression over the past two weeks using a scale ranging from 0 (not at all) to 3 (nearly every day). Results: Perceived discrimination was correlated with anxiety ($r = .336$, $p < .001$) and depression ($r = .373$, $p < .001$) in the Latinx community. Perceived discrimination predicted anxiety ($\beta = .093$, $p < .001$), $F(1, 2298) = 288.41$, $p < .001$ and depression ($\beta = .104$, $p < .001$), $F(1, 2271) = 366.65$, $p < .001$ in the Latinx community. Perceived discrimination was correlated with anxiety ($r = .273$, $p < .001$) and depression ($r = .298$, $p < .001$) in the Black community. Perceived discrimination predicted anxiety ($\beta = .074$, $p < .001$), $F(1, 2478) = 199.66$, $p < .001$ and depression ($\beta = .083$, $p < .001$), $F(1, 2478) = 242.04$, $p < .001$ in the Black community. The findings show that both Black and Latinx communities' mental health is impacted by perceived discrimination. The factors contributing to discrimination and structural oppression in these two communities warrant psychologists and engaged scholars of color to use their lived experiences and expertise to address the unique mental health needs of their community.

22. Predictive Utility of Perceived Family Functioning in Emerging Adulthood: A Descriptive Analysis.

Leia Lacayo, Sabrina Des Rosiers, Guillermo Wated (Department of Psychology, Barry University, Miami Shores, FL)

Emerging adulthood is a distinct stage of development between adolescence and adulthood, ranging from age 18 to 29 years old. During this stage emerging adults begin to establish one's own identity as they experience a transition into autonomy (Arnett, 2002; 2021) This is the first stage of development where one explores the self and one's role in society, separate from the family system. Age-specific decisions, such as navigating intimate relationships, discovering one's own beliefs and goals, pursuing a higher education, and committing to a career path, characterize this stage of development. The achievement of these tasks requires a healthy and adaptive state of emotional regulation. Eisenberg and Spinrad (2004) defined emotional regulation as one's ability to manage their emotions through "consciously initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of

internal feeling states, emotion-related physiological states, attentional processes, and motivational states of emotion" to achieve one's goals. Maladaptive emotional regulatory strategies leave emerging adults at risk for poor decision-making and psychological health (Olenik-Shemesh, Heiman, & Keshet, 2018). In the stages of childhood and adolescence, studies show emotion regulation is largely influenced by the family. Parents and the familial environment set the foundation for the functioning and development of a child and prepare the child for the demands of adulthood and greater society (Morris et al., 2007). Emotional regulation skills are formed as a result of direct and indirect family influence and guidance. Direct family influence pertains to parental control (psychological or behavioral control) and communication patterns within the family. Indirect influence relates to factors that contribute to the climate or emotional atmosphere within the family, such as nurturance and cohesion. The interaction between these four factors contributes to the formation of a child's emotional regulation skills and patterns of behavior that will remain with them as they transition into adulthood. Many studies have examined the role of familial influence on the development of a child's emotional regulation, however there are limited studies examining the relationship between family functioning and the state of emotional regulation in the stage of emerging adulthood. During this in-between phase bridging the gap from adolescence to adulthood, it is common for emerging adults, and particularly college students, to be navigating the challenges that come with this stage of life while still being supported and influenced by the parents, such as for housing or financial support. The influence of family may be lower due to the increased independence of young adults at this stage, however parental behaviors can still predict emerging adulthood psychological health (Goger et. al, 2020). Manzeske and Stright (2009) found that higher levels of psychological control from parents were negatively related to the emotional regulation of young adults. Another study examining maternal psychological control and emotional regulatory processes found that emerging adults that reported higher levels of parental psychological control also reported higher levels of anxiety symptoms and greater emotional regulatory difficulties (Goger et. al, 2020). It is of importance to contribute to the existing research on emotional regulation by focusing on emerging adults because there are aspects of family functioning that could foster maladjusted emotional regulation and potentially hinder the emerging adult from becoming independent and self-sufficient at a stage of life that requires these qualities. The present study will employ a survey design approach to assess participants' perceptions of aspects that represent family functioning, measuring control, nurturance, communication and cohesion. Participants' emotional regulation strategies will also be evaluated as well as demographics characteristics including their age, gender, ethnicity, and family history. Multiple regression analysis will be used to assess whether perception of family functioning including nurturance, control, cohesion, communication differentially predict emotion regulation in emerging adults. The findings of this study may help to clarify relationship between specific aspects of family functioning and the emotional regulation strategies adopted by emerging adults.

23. Grit and Life Achievement Factors in Immigrant Emerging Adults

Sofia Perez, Sabrina Des Rosiers, Guillermo Wated (Department of Psychology, Barry University, Miami Shores, FL)

Emerging adulthood is a developmental stage that encompasses the late teenage years through the twenties, specifically including individuals aged 18-29 (Arnett, 2000). Immigrant emerging adults within this age range often face unique academic, social, and career-related challenges as they navigate higher education. Grit, defined as the combination of passion and perseverance in pursuit of long-term objectives and overcoming difficulties (Duckworth, 2007), has garnered significant attention in research related to children, adolescents, and adults across various domains (Sutter et al., 2022). Overall, studies have indicated that higher levels of grit are predictive of favorable outcomes in academics, careers, and athletics (e.g., Sanguras, 2021). However, the connection between grit and life achievement factors in emerging immigrant adults remains largely unexplored. Understanding this relationship is important, particularly given that immigrant emerging adults face additional obstacles in higher education and the job market. While several studies have examined grit among emerging adults, there is a notable scarcity of research addressing grit in immigrant emerging adults and its correlation with life achievement factors, which includes personal, academic, and career experiences that predict well-being (e.g., Shama et al., 2021). Grit is influenced by various personal, social, and environmental factors that contribute to an individual's perseverance and passion for long-term goals. Although grit has been extensively studied within various populations, a significant gap exists regarding its association with life achievement factors among immigrant emerging adults in college, who may confront distinct challenges. This study is grounded in Duckworth's (2007) definition of grit to (1) identify differences in grit between native-born and foreign-born immigrant emerging adults aged 18-29 and (2) explore the relationship between grit and life achievement factors. It is hypothesized that higher grit scores will correlate positively with higher life achievement factors. Participants will complete an anonymous survey which include scales that assess life achievement factors, demographic characteristics including nativity status, age, educational attainment as well as the Grit-S Scale (Duckworth et al., 2007), to assess their perseverance and passion for long-term goals. The findings from this study could provide valuable insights for educational and professional institutions, as well as for immigrant emerging adults themselves.

24. Association between Acculturation Domains and Emotion Regulation in Hispanic Emerging Adults.

Zakiyya Shaw, Sabrina Des Rosiers, Guillermo Wated (Department of Psychology, Barry University, Miami Shores, FL)

Acculturation refers to the changes individuals experience across various domains when they engage with a new culture (Schwartz et al., 2010; Kreienkamp et al., 2023). This process is particularly challenging for emerging adult immigrants, including foreign-born individuals and first-generation Americans. These individuals often face contextual challenges, such as alienation, discrimination, and other stressors associated with acculturation. Research indicates that immigrants disproportionately encounter cultural stressors including ethnic discrimination, financial hardships, and acculturative stress (Cano et al., 2020). According to the United States Census (2020), Hispanic first-generation Americans represent approximately 18.7% of the population. Given the size and growth of this demographic, it is essential to investigate association between acculturation domains and other psychological processes. For example, Gross's theory of emotion regulation suggests that the type and timing of emotional strategies play a critical role in managing emotional responses (Gross, 2001). It is plausible that psychological changes across various domains—such as values, identification, and practices—contribute to differing emotion regulation strategies. Schwartz et al. (2010) conceptualize acculturation as a multidimensional process that involves integrating one's cultural background with a new culture, resulting in changes across three domains: values, practices, and identification. Furthermore, Weiss et al. (2021) have demonstrated that these domains can predict psychological processes, including emotion regulation, defined as the type and timing of strategies used during the emotion-generative process. Other literature suggests a connection between acculturation and various psychological factors, such as social integration, interpersonal relationships, environmental mastery, and life purpose (Archuleta, 2015). Following Schwartz et al. (2010), the primary purpose of this study is to describe the relationship between the acculturation domains of cultural values, identifications, and practices from both heritage and receiving cultures, and emotion regulation among Hispanic emerging adults aged 18 to 29. This study hypothesizes a correlation between the acculturation of cultural values, identifications, and practices and emotion regulation. The study will focus on first-generation Hispanic American college students. Participants will complete a survey assessing their acculturation domains and emotion regulation strategies. A demographic questionnaire will collect background information, including age, gender, ethnic identification, and number of years in the United States. A Pearson bivariate correlation will be employed to evaluate the relationship between acculturation domains and emotion regulation strategies. The findings may provide valuable information for programs aimed at supporting immigrant emerging adults in addressing the emotional and cultural challenges they face.

25. Association between cultural values and humility in immigrant and non-immigrant emerging adults

Elisa Valladares, Sabrina Des Rosiers, Guillermo Wated (Department of Psychology, Barry University, Miami Shores, FL)

The U.S. Census (2021) reported that foreign-born individuals accounted for approximately 19.8% of the total US population which is increasingly changing the demographic landscape of higher education in the United States. These changes highlight the growing importance of describing the experiences of immigrant emerging adults in college. This increasing diversity in educational setting warrants the examination of cultural values that shape the academic experiences of immigrant emerging adults. According to Triandis (1995), individualism emphasizes personal goals and autonomy, while collectivism prioritizes group harmony and interdependence. The preponderance of these values tends to vary by country. Studies have shown that these cultural orientations can significantly impact well-being and academic success (Porter et al., 2022). Current research also suggests association between these cultural values and the personality trait of humility. According to Lee and Ashton (2004), humility is a personality trait characterized by a modest view of one's own importance. It consists of several key components, including an appreciation for others, a willingness to acknowledge one's limitations and shortcomings, and a desire to learn from others. Several studies have reported higher levels of humility is associated with personal success and achievements in a number of domains (e.g. Porter et al., 2020). Specifically, humility facilitates positive social interactions and promotes cooperative behavior, as humble individuals are likely to prioritize group harmony over personal gain (Zawadzka, & Zalewska,2019). Some studies have suggested cultural values including individualism and collectivism may contribute to the experiences that help shape humility. According to Sun et al., (2024) shared understanding and greater importance placed on a value in a cultural context contribute to individual perceptions of behavioral outcomes. Following the Triandis model (1998) regarding the contribution of cultural values in shaping individual-level processes like traits and characteristics, the present study seeks to evaluate the relationships among individualism, collectivism, and humility in immigrant college students. College students who identify as immigrants will be asked to complete an anonymous survey that collects demographic background information and assesses cultural values. Individualism and collectivism which will be measured using the Triandis Individualism Collectivism Scale (TIC; Triandis, 1998). Humility will be evaluated using the HEXACO Personality Inventory-Revised (HEXACO-PI-R) (Lee & Ashton, 2004). It is expected an inverse relationship will be observed between individualism and humility whereas a positive relationship will be observed between collectivism and humility. The findings of this study may inform educational strategies and support systems tailored to enhance the academic experiences of immigrant emerging adults.

26. Cognitive benefits of long-term physical activity: a comparative study of attentional processes in college athletes and non-athlete

Nyah Williams [1], Justin Lauro [2], Zacharias Papadakis [3] ([1]Department of Biomedical Sciences, Barry University, Miami Shores, FL, [2]Department of Psychology, Barry University, Miami Shores, FL, [3]Department of Sport & Exercise Sciences, Barry University, Miami Shores, FL)

Cognitive functioning includes a range of processes, including attentional processes, essential for acquiring knowledge and understanding. Selective and sustained attention, focusing on important details while ignoring distractions, is critical in both sports and daily life. Research suggests that regular physical activity enhances mental performance, with athletes often outperforming non-athletes on cognitive tasks, particularly tasks that involve attention and inhibitory control. However, the extent to which physical training impacts cognitive performance on non-sport related tasks, and the underlying mechanisms, remain unclear. It is also uncertain how skills like quick decision-making, selective attention, and sustained focus developed in sports transfer to non-sport related tasks. Purpose: This study investigates differences in cognitive performance (selective and sustained attention) between college athletes and non-athletes on non-sport related tasks to explore the long-term benefits of exercise. Methods: 30 college student-athletes and 31 non-athletes completed three attentional tasks: sustained attention, vigilance, and visual search. Sustained attention was assessed with a go/no-go task in which participants responded to an infrequent target. Vigilance was measured using a Mackworth clock task to detect atypical intervals. The dependent variables for the sustained attention and vigilance tasks were detection scores (d'). The visual search task measured response times (RTs) with varying levels of distractors. Independent samples t-tests were used to analyze differences in vigilance and sustained attention, while a 2x4 ANOVA was used to evaluate visual search performance at different levels of distractors (5, 10, 15, and 20). All data were screened for outliers and normality to minimize bias and type I errors. Results: Athletes (d' M = 3.69, SD = 0.16) performed significantly better at detecting the target signal than non-athletes (d' M = 3.03, SE = 0.16) in the sustained attention task, $t(58) = -2.863$, $p = .003$. In the vigilance task, athletes (d' M = 2.61, SD = 0.29) scored significantly higher than non-athletes (d' M = 0.82, SE = 0.19), $t(60) = -5.136$, $p < .001$. In the visual search task, athletes (M = 1619 ms, SD = 99.96 ms) had faster reaction times (RTs) than non-athletes (M = 2540 ms, SD = 99.96 ms), $F(1,59) = 40.756$, $p < .001$. Conclusion: These findings suggest that sustained physically activity associated with college athletes contributes to enhanced cognitive functions related to attention and inhibition, underscoring the potential transferability of skills developed through sports to non-sport domains.

DEPARTMENT OF FINANCE

27. Investment banking analyst internship Equiturn business solutions

Domenico Denaro and Michael Provitera (Andreas School of Business, Barry University, Miami Shores, FL)

During my internship at Equiturn, I gained hands-on experience in investment banking, focusing on business development and buy-side transactions. I analyzed over 20 acquisition targets for private equity clients, conducting valuation analysis and competitive research to support strategic investment decisions. A particularly rewarding aspect was collaborating with senior team members on financial modeling and preparing insights for client presentations. One challenge I encountered was managing tight deadlines while ensuring accuracy in valuation models, which helped me develop stronger time-management skills and attention to detail. Overall, the experience sharpened my analytical abilities and deepened my understanding of the process.

DEPARTMENT OF CLINICAL LABORATORY SCIENCES

28. Rapid detection of penicillin binding protein 2a in coagulase negative staphylococcus species.

Shade Parkes, Djyonah Pierre, Jose Galeazzi, Yasmin Marsh, Inshan Ali (Department of Clinical Laboratory Sciences, Barry University, Miami Shores, FL)

Coagulase negative Staphylococcus species (CoNS) have historically been considered to be non-pathogenic. However, due to the rising immunocompromised patient population and expanding repertoire of invasive procedures, CoNS are increasingly implicated in infections. Many species of CoNS harbor a MecA gene which codes for penicillin binding protein2a, that confers resistance to methicillin and multidrug resistant phenotypes. The ability to rapidly detect methicillin resistance can ensure appropriate antibiotic treatments are administered expeditiously, shortening both the disease courses and length of hospital stay. Currently there are no FDA approved rapid kits for detection of PBP2a in CoNS. In this study we evaluated the ability of two commercial test kits to detection of PBP2a in 11 different species of CoNS and compared it with Kirby Bauer disc diffusion and minimum inhibitory concentration (MIC) results for methicillin resistance. Results from both test kits correlated with each other and with MIC and KB results for all 20 clinical isolates tested. These results indicate that these two commercial test kits may be viable options for rapidly determining methicillin resistance in CoNS.

DEPARTMENT OF BIOMEDICAL SCIENCES

29. Does the human mitochondrial genome encode unidentified selenoproteins?

Mohammad Jafar, Shakira Khan, Porsha Adams, Cinthia Figueroa, Juliana Oshode , Carolina Perez, Rupinder Shihmar, Cornelius White, Ben Hitchinson (Department of Biomedical Sciences, Barry University, Miami Shores, FL)

Selenocysteine (Sec) is an essential but rare amino acid that is incorporated into proteins by the repurposing of an in-frame UGA codon during translation. In humans, translation of UGA to Sec results from the presence of an RNA hairpin called a Selenocysteine Insertion Sequence (SECIS) in the 3' untranslated region (UTR) of mRNA, the presence of which was the basis for initial identification of the twenty-five known human selenoproteins. Most of the human selenoproteins participate in redox reactions, where the Sec residue offers advantages over other redox-active amino acids like cysteine because of its lower redox potential. Yet despite being some of the most redox active proteins in human biology, electron transport chain (ETC) complexes are not currently known to contain selenocysteine because they lack a SECIS element in their 3' UTRs. However, unlike the twenty-five known selenoproteins, many ETC proteins are not encoded in the nuclear genome but are instead encoded in the mitochondrial genome, which closely resembles the genomes of alphaproteobacterial ancestors of the organelle. Bacterial selenoproteins typically do not contain SECIS elements in the 3' UTR but rather within the coding sequence itself. We therefore hypothesize that the mitochondrial genome contains unknown selenoproteins encoded by genes that contain SECIS elements in their coding regions and therefore resemble those found in bacteria. In this study, we will use gene prediction algorithms and sequence alignment tools to identify putative SECIS elements within the mitochondrial genome. By considering features of not only eukaryotic SECIS elements by bacterial and archaeal SECIS elements, we hypothesize that unidentified selenoproteins will be discovered owing to the evolutionary relationship between mitochondria and alphaproteobacteria.

DEPARTMENT OF HEALTH SCIENCES & CLINICAL PRACTICE

30. Influence of auditory input on mood states during a 30-minute self-paced walk

Maya Caon [1], Andreas Stamatis [2], Zacharias Papadakis [1], Ali Boolani [3] ([1]Department of Health Sciences & Clinical Practice, Barry University, Miami Shores, FL, [2]Sports Medicine Institute, University of Louisville, Louisville, KY, [3]Human Performance and Nutrition Research Institute, Oklahoma State University, Stillwater, OK)

The therapeutic effects of self-paced walking on mood enhancement are well-documented; yet, existing literature predominantly examines laboratory-based protocols that fail to incorporate auditory stimuli as a potential modulator of mood states. PURPOSE: To investigate the influence of various auditory inputs on mood states during a 30-minute bout of self-paced walking. METHODS: A randomized controlled crossover design was employed (n = 24; 9 males; Mage: 23.04). Participants performed four 30-minutewalking bouts around a track while wearing noise-cancelling headphones delivering one of four conditions: positive auditory input, negative auditory input, self-selected music, or silence. Mood states were assessed using the POMS-SF at baseline and in 5-minute increments throughout the duration of the walk. A 4 (condition) & times; 6 (time) repeated measures ANOVA was conducted to assess changes in mood states. RESULTS: A) POMS Vigor: Significant interaction between Time and Treatment, F(18,342) = 2.46, p = .001, partial eta2; = .012; B) POMS Fatigue: a) Significant main effects for Time, F(6, 114)= 2.94, p = .010, partial eta2; = .022, and for Treatment, F(3, 57) = 2.96, p = .040, partial eta2; = .051 and b)Significant Time & times; Treatment interaction, F(18, 342) = 1.94, p = .012, partial eta2; = .013; C) POMS Depression: Significant Time × Treatment interaction, F(18, 342) = 1.35, p = .015, partial eta2; = .017; D)POMS Anger: a) Significant main effect for Treatment, F(3, 57) = 4.13, p = .010, partial eta2; = .077 and b) Significant Time × Treatment interaction, F(18, 342) = 2.20, p = .004, partial eta2; = .040; E) POMS Tension: Significant Time × Treatment interaction, F(18, 342) = 1.86, p = .018, partial eta2; = .018; and F)POMS Confusion: Significant Time × Treatment interaction, F(18, 342) = 2.38, p = .001, partial eta2; =.018. CONCLUSION: Auditory stimuli significantly modulated mood responses during self-paced walking, with significant Time × Treatment interactions for vigor, fatigue, anger, tension, and confusion. The treatment condition had a notable main effect on anger and fatigue levels. Several results were counterintuitive to prevailing assumptions within the domain of sport psychology. Vigor improved during the negative input and silence conditions, yet decreased during music and positive input conditions. Anger was elevated in the music condition, while anxiety and confusion were heightened during both the positive input and music conditions. Conversely, anxiety decreased during the negative input and silence conditions. These findings challenge the widely accepted hypothesis that positive auditory stimuli should enhance mood states, while negative or absent stimuli should detract from them. Future research is warranted to investigate the underlying mechanisms responsible for these unexpected outcomes, with particular focus on individual variability, cognitive appraisal, and the context of self-paced exercise in non-laboratory settings.

31. Preseason training: a catalyst for body composition changes in NCAA DII women's basketball players

Hinata Sakamoto, Vivien Vardai, Jarad Ward, Maya Caon, Zacharias Papadakis (Department of Health Sciences & Clinical Practice, Barry University, Miami Shores, FL)

Preseason training is essential for preparing NCAA Division II women's collegiate basketball players for the demands of their season. Given the limited time and strict regulations imposed by NCAA Division II rules, teams must optimize their workouts. While strength and conditioning are prioritized, the impact on body composition during this short period remains uncertain. PURPOSE: This study evaluated the effectiveness of a four-week preseason training program in improving body composition among student athletes. METHODS: The impact of a structured training regimen on body composition in 16 female athletes (M=20.6 years, SD=1.79) was evaluated by a comprehensive assessment of lean body mass, bone mass, and body fat percentage using bioelectrical impedance analysis. The training protocol consisted of 180 minutes of strength training, 120 minutes of conditioning, and 180 minutes of skill-specific training per week. Paired samples t-tests were conducted to identify significant changes in lean body mass (LBM), bone mass (BM), and body fat percentage (BF%), with effect sizes calculated using Cohen's d. All statistical analyses were performed using Jamovi (version 2.6.2) at $p < 0.05$. RESULTS: On average, LBM increased significantly from 52.86 kg to 54.34 kg ($t15=6.52$, $p<.001$, $d=1.63$); BM also increased from 2.81 kg to2.88 kg ($t15= 2.24$, $p<.05$, $d=0.56$); and BF% decreased significantly from 25.26% to 23.99%($t15=-2.20$, $p<.05$, $d=0.55$). CONCLUSION: A four-week preseason training program, adhering to NCAA Division II regulations, can significantly improve body composition in women's basketball players. These findings support the effectiveness of this program in preparing athletes for the competitive season and potentially enhancing performance.

32. Enhancing mental toughness in medical students facing academic challenges: a pilot intervention

Roy Shohat [1], Roy Shohat [1], Zacharias Papadakis [1], Shorye Durrett [2], Andreas Stamatis [3] ([1]Department of Health Sciences & Clinical Practice, Barry University, Miami Shores, FL, [2]Ophthalmology and Visual Sciences, University of Louisville, Louisville, KY, [3]Sports Medicine Institute, University of Louisville, Louisville, KY)

Medical students who experience challenges in meeting course requirements often face significant academic pressures, which can include repeating the semester, repeating the academic year, or potential dismissal from the program. Mental Toughness (MT) is a performance psychology construct that equips individuals with the skills to

face adversity and persist towards their goals, whether in sports or academics. MT is crucial for managing stress and maintaining performance under high pressure, thereby supporting optimal human performance. Psychological Skills Training (PST) systematically develops mental skills, including MT, and is structured into three phases: education, acquisition, and practice. The education phase is the most crucial step, as it focuses on helping participants understand the skills, recognize their importance, and see how they affect performance. PURPOSE: To assess the educational workshop's impact on students' awareness of their initial MT knowledge, and to evaluate its effectiveness in increasing overall MT knowledge post-workshop. METHODS: Six medical school students participated in a 4-hour MT educational workshop introducing MT concepts, their importance, and key skills like attention regulation and maintaining an optimistic mindset. Students rated their MT knowledge on a 7-point scale at three points: before the workshop (initial knowledge), immediately after the workshop (post-workshop knowledge), and in a retrospective evaluation of their initial knowledge (re-evaluated initial knowledge). Paired t-tests were used to compare the data, with Cohen's d assessing practical significance, analyzed using Python (NumPy, SciPy, Matplotlib). RESULTS: The comparison between initial and re-evaluated initial knowledge scores yielded a non-significant result, $t(5) = 1.66$, $p = .16$, with a medium-to-large effect size, $d = 0.68$, 95% CI [-2.13, 3.48]. This suggests that the workshop increased students' awareness of their baseline MT knowledge. The comparison between re-evaluated initial and post-workshop knowledge scores also yielded a non-significant result, $t(5) = -1.78$, $p = .14$, with a medium-to-large effect size, $d = -0.73$, 95% CI [-3.54, 2.08]. This indicates practical improvement in MT knowledge following the workshop. CONCLUSION: This pilot MT intervention increased students' awareness of their initial MT knowledge and improved their understanding of MT concepts. Although statistical significance was limited by the small sample size, medium-to-large effect sizes highlight the practical benefits of the educational phase. The results suggest that MT education plays a crucial role in helping medical students under academic pressure identify knowledge gaps and recognize foundational skills for managing stress and adversity. These findings support continuing the program by expanding into the skill acquisition and application phases of PST as well as introducing MT training before students enter medical school.

33. The acute effects of a burst of jumping jacks on cognitive performance among college students

Linus Wirth, Roy Shohat, Zacharias Papadakis (Department of Health Sciences & Clinical Practice, Barry University, Miami Shores, FL)

Research on the acute effects of a bout of exercise (30s-60s) on cognitive performance is an active area of investigation. Cognitive performance is commonly used with Stroop Task. Previous studies have shown that acute exercise can enhance cognitive

performance, with a single session yielding small but significant cognitive benefits, which are moderated by factors such as exercise duration, exercise intensity, and type of cognitive performance assessed. However, limited research has focused on the specific impact of simple exercises, such as jumping jacks on cognitive performance, as measured by the Stroop test. Particularly in college students, it potentially offers a simple strategy to enhance cognitive function for test-takers. PURPOSE: To investigate how a brief session of jumping jacks acutely impacts college students' performance on the Stroop test. METHODS: Twenty-five college students (21females, 4 males; age: 21.1 ± 1.58 SD) participated in this study. Participants completed a pre-test Stroop task, followed by a 30-second burst of jumping jacks at a pace of 110 bpm using a metronome, and then a post-test Stroop task. The Stroop task was timed for one minute as it is a standard procedure, with performance measured by the number of correct responses. A paired t-test was used to compare pre and post-test Stroop scores, with Cohen's d calculated to assess effect size. Statistical analysis was performed using Jamovi for Windows version 2.3.28 with significance set at $p < 0.05$. RESULTS: On average, participants' post-test results (M = 27.6, SE = 0.387), were higher than participants' pre-test results (M = 26.2, SE = 0.379). This difference, -1.44, BCa 95% CI [-2.09, -0.786], was significant t(24) = -;4.55, p< .001, and represented a large-sized effect, d = 0.910. CONCLUSION: A short burst of jumping jacks enhanced cognitive performance on the Stroop task among college students, with a large effect size. These findings suggest that brief, high-intensity exercises like jumping jacks may acutely improve cognitive performance. This simple intervention could potentially benefit students before cognitively demanding tasks or exams. Future research should explore the duration of these effects and their applicability to various cognitive domains and populations.

34. Annotation of the unc-13 gene sequence from Drosophila willistoni's f element

Gabriela Jansen [1], Imogen Rafferty [2], Nirva Tervil [2], Conrad Vallon [2], Christoph Hengartner [2] ([1]Department of Health Sciences, Barry University, Miami Shores, FL, [2]Department of Biology, Barry University, Miami Shores, FL)

More than a century after Thomas Morgan used the fruit fly Drosophila melanogaster to demonstrate that genes are contained in chromosomes, this fruit fly remains a vital research tool and model organism to investigate chromosome structure, genetics, development, and evolution. The genome of D. melanogaster and humans were both fully sequenced in 2000, and approximately 60% of the genes in the fruit fly genes were also found in the human genome. The Drosophila genome consists of four chromosomes that underwent rearrangements in some Drosophila species. According to the Muller nomenclature, each separate chromosome arm is labeled from A to F. The F element (aka dot chromosome) is usually the smallest chromosome; however, in

some Drosophila species, the F element grew longer through expansion of repeated sequences and is generally packaged as heterochromatin. Interestingly, as time has passed, the banded portion of the F element containing about 80 protein coding-genes showcases a range of expression levels that resemble genes in the euchromatic domains. This has resulted in the F element genes having unique features that enable them to function in a heterochromatic environment. We have joined the Genomics Education Partnership (GEP), an association of over 150 research institutions that train and integrate undergraduate students in an original genetic and bioinformatics research projects following a crowd-sourcing model. We completed several training modules to learn how to annotate the Drosophila genes (coding region and transcription start site) in a DNA sequence. Our DNA annotation used both experimental data (e.g. RNA sequencing and evolutionary conservation) and computational evidence (e.g. gene prediction algorithms and splice site predictions) to identify the exon-intron boundaries that define the protein-coding regions of genes. The data of this comparative genome analysis will help us better understand the consequences of radical evolutionary changes in chromosome and gene structure. Studying the evolutionary forces that maintain and modify the chromosomes of these fruit flies may help us better understand how eukaryotic genomes grew so much larger than bacteria. For our project, we have chosen to examine a 73 kb region of Drosophila willistoni's F element. We present here our methodology and approach for locating critical gene elements within this DNA sequence, and we present our proposed exon-intron structure for unc-13, one of the two genes present in this sequence.

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35. Implementing a universal healthcare standard in the United States

Imani McClammy (Department of Health Sciences, Barry University, Miami Shores, FL)

The United States healthcare system, characterized by its non-universal and fragmented approach, presents significant gaps in equitable access and quality of care across states. Despite the existence of programs like Medicare and Medicaid, the lack of a cohesive universal healthcare standard has perpetuated disparities, limiting access to essential services for millions. This paper advocates for the implementation of a universal healthcare standard that integrates successful frameworks from countries like England and Canada, which offer comprehensive public healthcare systems. Case studies highlight the contrasting outcomes between states like New York, which

expanded Medicaid under the Affordable Care Act, and Florida, which opted not to, resulting in differing rates of uninsured populations and healthcare access. The proposals for reform emphasize the necessity for federal mandates to standardize Medicaid implementation across states, thus ensuring equitable healthcare access regardless of geographic location. Furthermore, ethical considerations surrounding healthcare as a human right underscore the moral imperative for reform. Enhanced public engagement and stakeholder collaboration are vital to drive policy changes and raise awareness about the importance of universal healthcare. This comprehensive approach aims to foster a more equitable healthcare landscape, ultimately improving public health outcomes and promoting economic stability across the nation. As the pursuit for a universal standard progress, it is essential to advocate for sustained policy reform, public enlightenment, and coalition-building among healthcare stakeholders.

DEPARTMENT OF SPORT & EXERCISE SCIENCES

36. Skeletal muscle mass estimation equations: a practical approach for assessing muscle and strength relationships.

Julisa Banbanaste, and Antonella Schwarz (Department of Sport & Exercise Sciences, Barry University, Miami Shores, FL)

BACKGROUND: There are various methods to measure skeletal muscle mass (SMM), but practitioners may sometimes face resource constraints, making alternative measurement approaches necessary. PURPOSE: Thus, the purpose of this study was to evaluate the relationships between different SMM measurements and maximal strength to determine the efficacy of using skeletal muscle estimation equations (SME) as a cost-effective alternative. METHODS: Twenty-two male subjects (21.5±1.8 yrs; 175.5±5.4 cm; 84.5±;16.6 kg) participated in a BodPod analysis to assess fat-free mass (FFM), and an assessment of ten sites (bilateral biceps, forearms, quadriceps, calves, neck, and waist) to compute summed muscle circumferences (SMC). SMM was estimated using an SME. Maximal strength was assessed through 1-repetition maximums (1RM) for back squat (BS), bench press (BP), deadlift (DL), and total (TOT). Isometric hand grip strength (HGS) was measured as an additional indirect assessment of strength. Pearson correlation and Hopkins effect size were used to evaluate relationships between SMM measurements and maximal strength. Alpha level was set at $p<0.05$. RESULTS: SME showed strong relationships with FFM ($r=0.922$), SMC ($r=0.937$), and 1RM BS ($r=0.595$), BP ($r=0.469$), DL ($r=0.614$), and TOT ($r=0.597$). HGS demonstrated strong relationships across all 1RM strength measurements ($r=0.557$-0.693) and SME ($r=0.519$).

FFM and SMC similarly correlated strongly with all 1RM outcomes (r=0.529-0.689) and HGS (r=0.534-0.567). All correlations were significant p<0.001, indicating strong associations across all measurements. CONCLUSIONS: SME offers an accurate estimate of SMM compared to both indirect FFM and direct SMC measurements. Furthermore, when robust SMM assessments are unavailable or frequent evaluations are not feasible, pairing 1RMs and HGS with SME provides a comprehensive understanding of true SMM.

37. The impact of pre-exercise mental preparation on muscle activation during strength performance

Maya Coan, Natalia Wisniewska, Ethan Hartwig, Daniel Julis, Lia Larramendi Mirabal, Ma Shengyan, Hinata Sakamoto, Rozi Marta, Vivien Vardai, Nataniel Boiangin, Itay Basevitch (Department of Sport & Exercise Sciences, Barry University, Miami Shores, FL)

Research suggests that psyching-up techniques, including imagery and preparatory arousal, can enhance maximal force production by improving neural drive and motor unit recruitment (Cusimano et al., 2023). However, there is a lack of research on the physical and cognitive mechanisms that underlie the effectiveness of psyching-up techniques. Thus, using the scientist-practitioner approach, the purpose of the study was to determine whether specific psyching-up techniques significantly impact strength performance on a hand-grip dynamometer task while monitoring heart rate (HR), self-efficacy, and attention levels across conditions. Participants, aged 18 and older, performed a grip strength task across four conditions: control, motor-imagery, increased-arousal, and external-attention. Each condition required three maximal-effort squeezes, with condition order randomized. Baseline HR was recorded before testing, with subsequent readings taken before each condition. Self-efficacy was assessed using a 7-point Likert scale before each condition, while direction of attention (i.e., external or internal) was assessed using a one-item scale after each condition. Findings indicated that participants performed significantly better under the external-attention condition (M = 39.29, SD = 11.99) compared to the control condition (M = 38.06, SD = 11.36; p = .04). There were no significant differences among the other conditions (i.e., increased-arousal and motor-imagery). Interestingly, HR was highest under the increased-arousal condition and attention was significantly more external in the external-attention condition compared to the other conditions. This study contributes to the understanding of the underlying-mechanisms of psyching-up strategies and their effectiveness in increasing power output and performance. Given the potential benefits for enhancing force production (Cusimano et al., 2023), these findings could have practical applications in strength-based sports such as powerlifting and in recreational settings, such as when measuring maximal strength before prescribing an exercise program.

38. Pharmaceutical and lifestyle solutions for male infertility

Lia Larramendi Mirabal [1], Zacharias Papadakis [2], Justin Dubin [3], Andreas Stamatis [4]
([1]Department of Sport & Exercise Sciences, Barry University, Miami Shores, FL, [2]Department of Health Promotion & Clinical Practice, Barry University, Miami Shores, FL, [3]Division of Urology, Memorial Healthcare System, Pembroke Pines, FL, [4]Sport Medicine Institute, University of Louisville Health, Louisville, KY)

CASE HISTORY: A 49-year-old male and a 41-year-old female with a seven-year history of infertility presented to Urology. Despite a successful IVF in 2021, natural conception remained elusive. The male reported fatigue, lethargy, low libido, and unexplained weight gain. A prior scrotal ultrasound detected bilateral varicocele with reverse flow. Both had no significant medical, family, sexually transmitted diseases or significant inherited conditions within their immediate families. The male patient maintains an active lifestyle and avoids tobacco and alcohol consumption. Despite adhering to a healthy diet and exercise regimen during the previous year of infertility treatment with clomiphene (50 mg tablet, 1/2 tablet 3 times weekly), he gained 15 kilograms of weight. His body fat percentage increased from 24% to 26.2%, and his total weight rose from 107.5 kilograms to 111 kilograms. PHYSICAL EXAM: General appearance: Well-appearing, healthy male in no apparent distress; Mental Status: Alert and oriented, normal affect. Chest: No gynecomastia. Abdomen: Soft, non-tender, no masses or organomegaly. Bladder is not palpable. No evidence of inguinal hernia. Penis: Penis is uncircumcised with no evidence of plaques or induration. Urethral meatus is normal. Scrotum: Scrotum is grossly normal. Testes are descended bilaterally (right 18cc, left 18cc) with no evidence of masses or tenderness. Vas deferens: normal bilaterally. Varicocele: None. DIFFERENTIAL DIAGNOSES: Male factor idiopathic infertility. TESTS & RESULTS: Blood work and sperm analysis were ordered. FINAL DIAGNOSIS: Combined couple infertility. DISCUSSION: Following the initial February 2024 visit, the male patient was prescribed enclomiphene (12.5 mg/d) and anastrozole (1 mg twice week). His existing thyroid medication (Synthroid 100 mcgd) remained unchanged. Additionally, the patient underwent a comprehensive lifestyle modification program, incorporating a plant-based Mediterranean diet, increased physical activity, and targeted supplementation. The initial round of medication began with a body fat percentage of 24.4% and a weight of 108 kilograms. After four months, a repeat sperm analysis and blood work revealed the need to double the enclomiphene dosage to 25 mg/d. The decision to increase the enclomiphene dosage was due to suboptimal total testosterone levels, the goal is 450-600 ngdL. During this period, the patient reported mood changes, joint pain, and delayed recovery from workouts, despite consistent exercise and diet. The patient's supplement regimen included a daily men's multivitamin, omega-3 fatty

acid supplements (Omega-3: 375 mg + CoQ10: 50 mg) by Perelel, and an additional omega-3 fish oil supplement (Fish oil: 1250 mg + Omega-3: 1040 mg) by Sports Research. Additionally, a daily Centrum Silver Men's +50 multivitamin was consumed. Despite these efforts, the patient's body fat percentage increased to 31%, and his weight rose to 114 kilograms. OUTCOME OF THE CASE: Patient significantly improved his sperm analysis results, achieving values comparable to those from 2018. Between February and October 2024, he experienced a 33% increase in semen volume, a 54% decrease in total sperm motility, a 233% increase in number of motile sperm, a 53% increase in total of motile sperm count, a 100% increase in testosterone, a 2.5 decease in free testosterone, and a 21.1% increase in estradiol. RETURN TO ACTIVITY AND FURTHER FOLLOW-UP: Based on these results, the couple underwent a round of IVF, which resulted in a successful pregnancy. The male will follow a testosterone hormone replacement therapy to counteract the side effects of the fertility treatment.

39. Muscle wins again: examining the relationship between maximal strength and body composition metrics

Nicolette Rodriguez, and Antonella Schwarz (Department of Sport & Exercise Sciences, Barry University, Miami Shores, FL)

Maximal strength is the greatest force a muscle group can produce during a single maximal effort. Strength is a key determinant of both athletic performance and functional capacity, and understanding its relationship with body composition offers valuable insights for optimizing overall health and physical performance. PURPOSE: The purpose of this study was to assess the relationships between maximal strength and various body composition measurements, with the objective of determining whether fat-related or muscle-related metrics are stronger predictors of strength outcomes. METHODS: Per the available subject pool, trained biological males (n=20; 21.6±1.9yrs; 175.2±5.5cm; 80.3±9.5kg; Dots: 268.7±39.2au) participated in a BodPod analysis to assess body fat percentage (BF%), fat mass (FM), and fat-free mass (FFM). Body mass index (BMI), Fat-mass index (FMI), Fat-free mass index (FFMI), lean body mass (LBM), skeletal muscle estimation (SME), and skeletal muscle quality (SMQ) were computed using basic physiological computations. Maximal strength was assessed through 1-repetition-maximum back squat, bench press, and deadlift, then summed together for a maximal strength total (TOT). Pearson correlations and Hopkins effect size were used to evaluate relationships between TOT maximal strength and body composition metrics. Alpha level was set at $p<0.05$. RESULTS: Significant muscle-related variables

demonstrated very large to moderate relationships against TOT, including SMQ (ES=0.880, p<0.001), FFM (ES=0.61, p=0.004), LBM (ES=0.57, p=0.009), and SME (ES=0.57, p=0.008). Significant very large and moderate relationships were also observed for indexed variables FFMI (ES=0.85, p<0.001) and BMI (ES=0.51, p=0.024), but not for FMI (ES=0.18, p=0.441). No meaningful relationships were found for fat-related variables FM (ES=0.18, p=0.440) and BF% (ES=0.06, p=0.792). CONCLUSION: These findings show that muscle-related metrics, such as SMQ and FFMI, are stronger predictors of strength outcomes when considering body composition variables in males. Incorporating SMQ and FFMI into health assessments offers a free non-invasive way to evaluate functional strength, metabolic health, aging, and disease risk, supporting early detection and intervention.

Submissions by:

Sachemie Archelus

Patrae Cartwright

Shunis Cherenfant

Maya Coan

Kayla Diaz

Isabella Koelkebeck

Paige Leary

Verna Liburd

Nicole Rodriguez Hilario

Katherine Solis

Jessie Wiles

Natalia Wisniewska


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