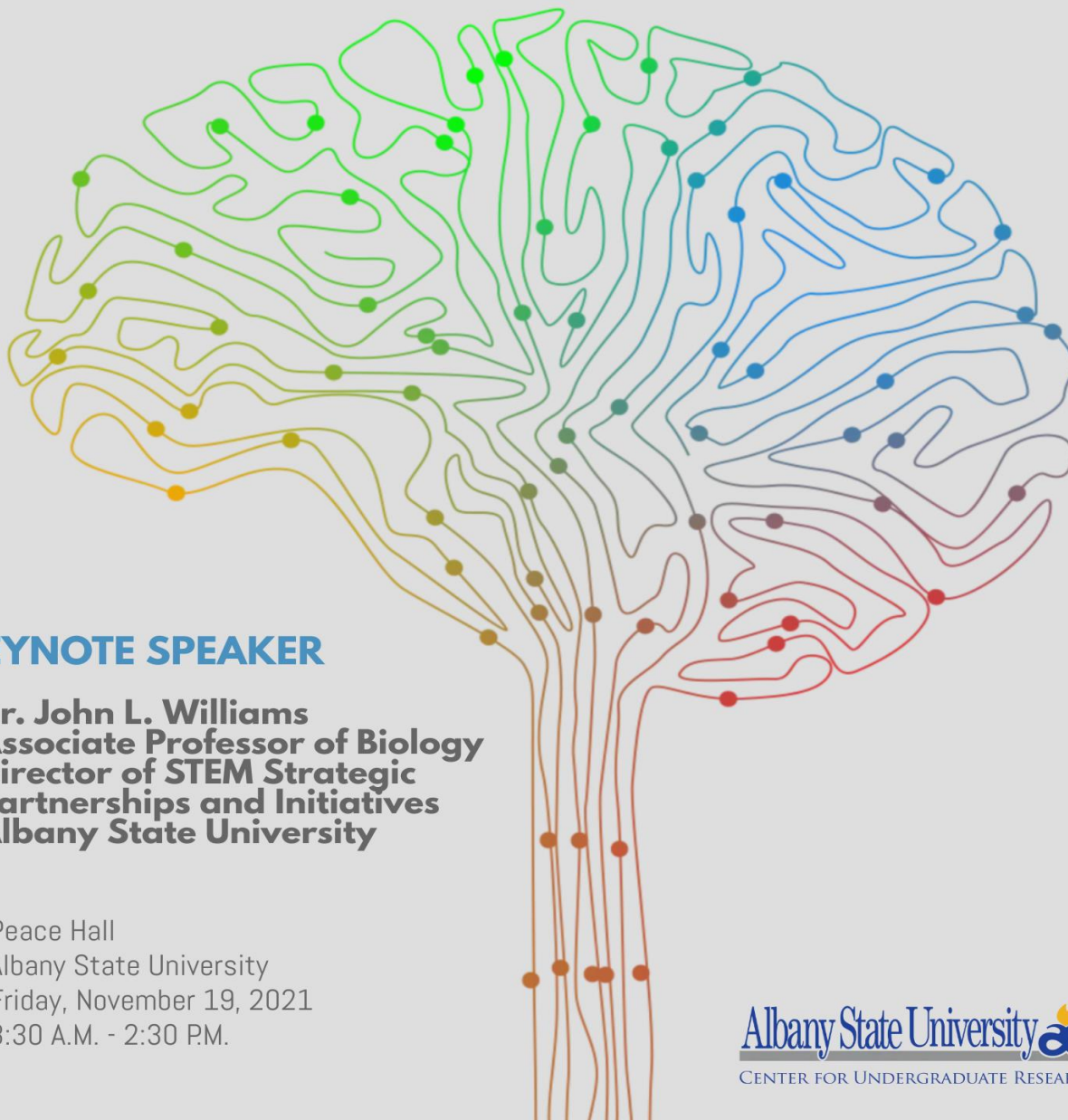


11th Annual Undergraduate Research Colloquium Fall 2021

THE FUTURE IS NOW



KEYNOTE SPEAKER

Dr. John L. Williams
Associate Professor of Biology
Director of STEM Strategic
Partnerships and Initiatives
Albany State University

Peace Hall
Albany State University
Friday, November 19, 2021
8:30 A.M. - 2:30 P.M.

ALBANY STATE UNIVERSITY UNDERGRADUATE RESEARCH SYMPOSIUM SPONSORS

Center for Undergraduate Research

The mission of the Center for Undergraduate Research at Albany State University is to promote a wide variety of undergraduate research, scholarship, and creative activities that support and enhance student learning, engage students and faculty mentors in the complete research process, and institutionalize undergraduate research as a vital component of the educational experience at the Albany State University.

Office of Title III Programs

The ASU Title III Program aims to strengthen the infrastructure of the University and to enhance the delivery of academic programs while developing students from freshmen to senior year. The implementation of these activities will increase enrollments, progression, retention, and graduation rates at Albany State University.

Office of Academic Affairs

The Office of Academic Affairs at Albany State University supports the University mission by providing the guidance and leadership necessary to maintain intellectual discovery, the foundation of the student experience. Academic Affairs upholds the standards and policies established by the faculty and administration, while overseeing all aspects of the University curriculum and encouraging students to become involved global citizens. Also, Academic Affairs provides support to assist administrators, staff, faculty, and students to realize their academic goals in pursuit of high academic achievement.

Office of Research and Sponsored Programs

The Office of Research and Sponsored Programs (ORSP) encourages, facilitates and supports Albany States University faculty and staff in their pursuit of external funding for their research, training, and other scholarly activities. ORSP provides high-quality services to the ASU community with the goal of increasing external sponsored funding for research and other programs while also protecting the University's interest assuring compliance with federal and state laws, rules and regulation.

November 19, 2021

Welcome to the Fall 2021 Annual Undergraduate Research Conference:

The theme for this year's conference is *The Future is Now*. The ancient Chinese philosopher Lao Tzu is generally credited with saying, "*The journey of a thousand miles begins with one step*," and a multitude of philosophers, poets, and song writers have contended that a journey never ends. Thus, even though it is an oxymoron, the mere act being on a journey is to change one's future.

Congratulations to the student researchers for taking the first step of a journey that could change their lives. Knowingly or unknowingly, the intellectual curiosity that propelled them down the path toward research advanced their knowledge beyond that gained in a usual classroom setting. Many faculty and professional researchers started their careers by doing undergraduate research.

In the recent past, students who engaged in undergraduate research were an exception on graduate school applications. However, undergraduate research not only makes students more competitive for graduate schools with more traditional admissions requirements, but some contemporary graduate programs will only accept students who have research experience. If a student decides graduate school is not the path for them, undergraduate research is still a valuable experience because it allows students to learn new ways of solving problems. In addition, conducting research will probably change the way students see the world. It helps them become critical thinkers, which is something valued by employers regardless whether that job is research related or not. One of my biggest hopes for the Center for Undergraduate Research is that we offer opportunities for students to grow as researchers and grow as people.

I challenge the student researchers to allow their research experience to expand the ways they view their possible roles in the future and to remember undergraduate research is a step on a journey that may lead to many unexpected and wonderful things.

Finally, I thank the ASU support staff, ITS, many mentors, faculty volunteers, proposal reviewers, presentation judges, and student volunteers without whose help our conference would not be possible. Your efforts to support ASU undergraduate researchers are appreciated.

Sincerely,



Mark D. Thomas, Ph.D.
Director of the Center for Undergraduate Research at Albany State University

PROGRAM AGENDA

Friday, November 19, 2021

LOCATIONS:

Peace Hall 121, 123, 124, & 127

C.W. Grant Student Union 2-176

Dr. Zephyrinus Okonkwo, Presiding Officer

TIME	EVENT
8:15 a.m. – 8:40 a.m.	Colloquium Registration
8:40 a.m. – 8:55 a.m.	WELCOME & ACKNOWLEDGMENTS Peace Hall 127 Dr. Mark Thomas <i>Director of the Center for Undergraduate Research</i> <i>Associate Professor of Psychology</i>
8:55 a.m. – 9:00 a.m.	INTRODUCTION OF KEYNOTE SPEAKER Dr. Zephyrinus Okonkwo <i>Professor of Mathematics and Computer Science</i> <i>Presiding Officer</i>
9:00 a.m. – 10:00 a.m.	KEYNOTE ADDRESS Q & A Dr. John L. Williams <i>Associate Professor of Biology</i> <i>Director of STEM Strategic Partnerships and Initiatives</i> <i>CASL Fellow: 2021-2022</i>
10:00 a.m. – 10:05 a.m.	INTERMISSION
10:05 a.m. – 11:50 a.m.	ORAL PRESENTATIONS 1A, 1B, 1C, & 1D
12:00 p.m. – 1:00 p.m.	LUNCHEON (<i>Reserved for Colloquium Presenters & Respective Mentors</i>) <i>*Pre-packaged lunches to be enjoyed on your own*</i> C.W. Grant Student Union, Room 2-176
11:30 p.m. – 12:30 p.m.	FINAL JUDGING TABULATION <i>Judging Committee</i>
1:00 p.m. – 1:30 p.m.	INTERMISSION Peace Hall 127
1:30 p.m. – 1:45 p.m.	ANNOUNCEMENT OF PLACEMENT & ADJOURNMENT Peace Hall 127 Dr. Zephyrinus Okonkwo <i>Presiding Officer</i> Dr. JoAnn P. McCrary <i>Professor of Biology</i> <i>Judging Committee Chair</i>

Keynote Speaker

Dr. John Williams, Jr.



John Williams is a native of Albany, GA and a graduate of Albany State University, where he received his Bachelor's of Science in Biology. As a Gates Millennium Scholar and Bridge to Doctorate Fellow, he attended Florida State University, where he received his Ph.D. in Cell and Molecular Biology. During this time, he served as President of the Black Graduate Student Association, and currently maintains an active relationship with the organization.

His graduate research focused on molecular mechanisms of cardiac muscle contraction. As a faculty member, his research focuses on cardiovascular physiology and environmental factors affecting public health.



**ORAL PRESENTATIONS 1A
ROOM 121
BUSINESS & PROFESSIONAL STUDIES
+
HEALTH & SCIENCES**

TIME	PRESENTER(S)	TITLE
10:05 a.m. - 10:20 a.m.	Deon Griffin*++ Janae Teemer*++	DYING FOR JUSTICE : THE DEATH PENALTY, HUMAN RIGHTS, AND CONCEPTION OF JUSTICE BY COMMUNITY AND JUSTICE WORKERS
10:20 a.m. - 10:35 a.m.	Monique Dunn*++	CRIMINALIZATION OF POVERTY AND RACE: PERCEPTIONS OF ATTIRE AND EXPRESSION
10:35 a.m. - 10:50 a.m.	Adijat Akinsanya*+	THE RELATIONSHIP BETWEEN THE BIG FIVE PERSONALITY TRAITS, COVID VACCINATION STATUS, AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS
10:50 a.m. - 11:05 a.m.	Brittney Grant+	IDENTIFICATION AND CHARACTERIZATION OF 1,4-DIOXANE-DEGRADING BACTERIA FROM SOIL
11:05 a.m. - 11:20 a.m.	Christian Andrade Herrera*+	THE SYNTHESIS, CHARACTERIZATION, AND ANTIBACTERIAL PROPERTIES OF APPENDED 1,3-DIPHENYLIMIDAZO [1,5-A] PYRIDINE COMPOUNDS
11:20 a.m. - 11:35 a.m.	Talyia Griffin+	DETERMINATION AND INVESTIGATION OF POTENTIAL 1,4-DIOXANE-DEGRADING BACTERIA ISOLATED FROM CONTAMINATED SOIL
11:35 a.m. - 11:50 a.m.	Kiera Shy+	RISK OF HUMAN DIETARY EXPOSURE TO ORGANOCHLORINE PESTICIDE RESIDUES IN FRUITS

*Presenting the research proposal
+ Health & Sciences
++Business & Professional Studies

**ORAL PRESENTATIONS 1B
ROOM 123
ARTS & EDUCATION**

TIME	PRESENTER(S)	TITLE
10:05 a.m. - 10:20 a.m.	Roneisha Scott*	STUDENTS' LEARNING EXPERIENCES DURING COVID-19 PANDEMIC
10:20 a.m. - 10:35 a.m.	Ikechukwu Nwosu*	HOW DO MOST COLLEGE STUDENTS LEARN?
10:35 a.m. - 10:50 a.m.	Nahla Shepherd*	A STUDY ON THE EXTENT OF INDIVIDUAL PARTICIPATION IN THE CIVIL RIGHTS ERA THROUGH THE WORDS OF BLACK ELDERS IN ALBANY
10:50 a.m. - 11:05 a.m.	Lauren Jenkins*	THE RELATIONSHIPS BETWEEN PERSONALITY TYPES, COVID VACCINATION STATUS, AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS

**Presenting the research proposal*

**ORAL PRESENTATIONS 1C
ROOM 124
INTERDISCIPLINARY STUDIES**

TIME	PRESENTER(S)	TITLE
10:05 a.m. ~ 10:20 a.m.	Savion Anderson*	ESTIMATION OF FUTURE VALUE OF A RETIREMENT ACCOUNT
10:20 a.m. ~ 10:35 a.m.	Walker Pendleton	DESIGN OF A SINGLE LAYER COST-EFFECTIVE MICROWAVE ABSORBER WITH METAL PATCHES ABSORBER
10:35 a.m. ~ 10:50 a.m.	Collins Giovingo*	ENHANCEMENT OF MATERIAL DIELECTRIC CONSTANT WITH METAL PATTERNS- EXPERIMENTAL VERIFICATION
10:50 a.m. ~ 11:05 a.m.	Kayla Congress*	COMPARISON OF RACE REALIZATION AND RATING OF EXPERIENCE BY COHORT
11:05 a.m. ~ 11:20 a.m.	Amaan Mohammed	EFFECT OF SOLAR PANEL ORIENTATION WITH GROUND ON ENERGY HARVESTING

**Presenting the research proposal*

**ORAL PRESENTATIONS 1D
ROOM 127
HEALTH & SCIENCES**

TIME	PRESENTER(S)	TITLE
10:05 a.m. ~ 10:20 a.m.	Norman Newton Jr.*	COMPARATIVE STUDY OF MANGANESE (MN)-DOPED CSPBBR3 SOLAR CELLS
10:20 a.m. ~ 10:35 a.m.	Fareeha Mohammad	DNA BARCODING IN SOUTHERN HEMISPHERE FLINT RIVER MUSSELS
10:35 a.m. ~ 10:50 a.m.	Lisa Padua*	THE RELATIONSHIPS BETWEEN EMOTIONAL INTELLIGENCE, COVID IMMUNIZATION STATUS, AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS
10:50 a.m. ~ 11:05 a.m.	Chelsea Porter*	RETURN TO PLAY STRATEGIES AND FACTORS INFLUENCING CONFIDENCE AFTER MULTIPLE ACL INJURIES: A QUALITATIVE CASE STUDY
11:05 a.m. ~ 11:20 a.m.	Jada Smith*	FORENSIC INVESTIGATION OF BIO-REMEDIATION OF A SELECTED CONTROLLED SUBSTANCE-USING CONSOLCIUM OF BACTERIA
11:20 a.m. – 11:35 a.m.	Zukrat Olajide*	THE RELATIONSHIPS BETWEEN ANXIETY, COVID IMMUNIZATION STATUS, AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS
11:35 a.m. – 11:50 a.m.	Cyntoyia Polite*	THE INVOLVEMENT OF AN AFRICAN AMERICAN FATHER AFFECTING A CHILD'S BEHAVIOR

**Presenting the research proposal*

ABSTRACTS

CRIMINALIZATION OF POVERTY AND RACE: PERCEPTIONS OF ATTIRE AND EXPRESSION

Monique Dunn
Department of Social Sciences
Dr. James Pratt
Department of Criminal Justice
College of Business, Education & Professional Studies

This research project will examine the perceptions related to the relationship between poverty and race and how together they lead to class and race specific criminalization and collateral consequences. I further consider attire as a cultural factor, specifically laws regulating sagging pants, as an instance where race, poverty, and culture come together in the context of crime and the law. Relying on the literature in both psychology and criminology, I examine the justifications for and themes related to my concepts and consider further their impacts on cultural identity, psychological wellbeing, respectability politics, and other norms in a predominantly black community. The project will rely on data from in depth-interviews of approximately 40 participants consisting of local policy makers, key state institutional stakeholders, and college aged students to qualitatively explore the perceptions of and investment in collateral consequences regarding the criminalization of race and poverty in the city of Albany, Georgia. In addition, to capture the historical framing, this study will use descriptive statistics, historical legal developments and meeting minutes, as well as news articles that will together help develop an advanced understanding of how these perceptions have shaped policy and more generally community perceptions and public support for criminalization.

FORENSIC INVESTIGATION OF BIO-REMEDIATION OF A SELECTED CONTROLLED SUBSTANCE- USING CONSOLIUM OF BACTERIA

Jada Smith
Department of Biology, Chemistry, & Forensic Science
Dr. Uzoma Okafor
Department of Biology, Chemistry, & Forensic Science
College of Arts and Sciences

A controlled substance is a drug or other substance that is tightly controlled by the government because it may be abused or cause addiction. The usage of controlled substances by youths is a menace to society. Controlled substances include both prescription drugs and illicit drugs with no recognized medical value. Drug misuse, abuse, and addiction can all lead to both short-term and long-term health effects. The long-term physical effects of drug use vary depending on the type of drug and the duration of use. However, experts have linked chronic drug use with numerous health conditions. Drug overdose deaths in the United States rose 29.4% in 2020 to an estimated 93,331, including 69,710 involving opioids, according to preliminary data. Understanding the pathway involved in the biodegradation of controlled substances can help in elucidating the effect of the metabolites and identifying these controlled substances. This will aid the drug law enforcement agencies in the field identification and seizures of various synthetic drugs produced from clandestine labs.

HOW DO MOST COLLEGE STUDENTS LEARN?

Ikechukwu Lawrence Nwosu

Department of Nursing

Ms. Laura Kim Gosa

Department of Nursing

Darton College of Health Professions

Grade school teaches us that the best way to study is to read a textbook and highlight information. This form of studying is called Rote Memorization or Rote Learning. “The biggest weakness students have is they either try to remember school material by rote memorization or have no strategy at all, relying on some kind of magical mental osmosis.” (Klemm,2013). While memorization is a fundamental part of learning, that should not be where a student chooses to stop their learning. Memorization should serve as the root of learning. This principle is noted in Bloom's taxonomy, where “Knowledge is the foundational cognitive skill and refers to the retention of specific, discrete pieces of information like facts and definitions or methodology, such as the sequence of events in a step-by-step process.” (Adams, 2015). Rote memorization is a form of studying based on the idea one will learn and memorize something based on the number of times they reread something. This idea tends to fail students when pursuing higher education because it is a learning style based solely on memorization, not application. Rote memorization has also failed me in my nursing program, where facts matter but critical thinking and application outpace the idea of memorization. Critical thinking is said to have no universal definition. However, in a research project done, it is said critical thinking is summarized as the “ability not just to acquire knowledge but also to make sense of new information.”(Nold, 2017) Also, in this article, it is said the majority of Professors agree the aim for students is to attain critical thinking skills but in the same vain research shows , “many college faculty do not fully understand how to effectively teach critical thinking or develop higher-order cognitive abilities and are not able to incorporate critical thinking exercises into course curricula”(Nold, 2017). I hypothesize most college students solely rely on memorizing as their way of studying and, as a result, will not effectively be able to apply their knowledge in their future workforce. My research will be to survey Albany State University students in their perspective disciplines and possibly survey in the community to analyze their study habits and behaviors. The research hopes to determine how their learning affects their performance in their disciplines of study. If Time Permits: With this data, I would then propose different study plans and tips for a set of students or even whole majors as the most effective way to study, shown with my evidence-based research.

ENHANCEMENT OF MATERIAL DIELECTRIC CONSTANT WITH METAL PATTERNS- EXPERIMENTAL VERIFICATION

Collins Giovingo

Department of Mathematics, Computer Science, & Physics

Dr. Arun Saha

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

Dielectric constant is an electrical property of a material which determines how fast or slow an electromagnetic signal can travel through this material. Material dielectric constant emerges from the separation or polarization of charges in neutral atoms under the influence of external electromagnetic field. There are numerous publications to report enhancement of dielectric constant by doping microscopic impurities in the host material through costly chemical processes. Recently in another study, it is shown by simulation that dielectric constant can be enhanced macroscopically by adding metal patterns on the material due to the fact that alternating electric fields induces charge polarization in the metal inclusions and contributes to overall dielectric constant value. In this project, a systematic experimental study was planned to demonstrate the enhancement of dielectric constant using rectangular metal strips and/or circular metal patches printed on a host material.

**THE RELATIONSHIP BETWEEN THE BIG FIVE PERSONALITY TRAITS, COVID VACCINATION STATUS,
AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS**

Adijat Akinsanya
Department of Social Sciences
Dr. Theodosia Lovett
Department of Social Sciences
College of Arts and Sciences

The proposed research will examine the way the big five personality traits, covid vaccination, and mask-wearing behaviors are related. The participants will include approximately 120 students. Personality traits may affect whether people wear masks and choose to be vaccinated. In conjunction with completing the NEO-PI-R (Costa & McCrae, 1992b), a survey will be used to investigate mask wearing behaviors and vaccination status of Albany State University students. The resulting data will be delineated by personality traits to determine whether the big five personality domains are related to vaccination status and mask wearing behaviors. The Big Five personality traits were originally conceived by Fiske (1949). Unlike personality type indicators, the idea of trait theory is that everyone has the same traits with different amounts of each trait (Goldberg, 1993). Although the traits became more refined over time, the basic structure of the big five has not changed much (Costa & McCrae, 1992a, 1992b; Digman & Inouye, 1986, Digman, 1990; Fiske, 1949; John, 1990; Goldberg, 1993; etc.). The big five personality traits are openness, conscientiousness, extroversion, agreeableness, and neuroticism (Costa & McCrae, 1992a, 1992b). The Openness domain contrasts openness to experience with being close to experience (Costa & McCrae, 1992a, 1992b). The Conscientiousness domain contrasts scrupulousness with fastidiousness (Costa & McCrae, 1992a, 1992b). The Extroversion domain contrasts extroversion with introversion (Costa & McCrae, 1992a, 1992b). The Agreeableness domain contrasts altruism with antagonism, and the Neuroticism domain contrasts adjustment/emotional stability with maladjustment (Costa & McCrae, 1992a, 1992b). The proposed research will use questionnaires to examine the relationships between the big five personality domains, vaccination status, and mask-wearing behaviors. The proposed research has strong publication potential because any information that can increase the mortality and health status of African Americans is useful.

**THE RELATIONSHIP BETWEEN ANXIETY, COVID IMMUNIZATION STATUS, AND MASK WEARING
BEHAVIORS AMONG HBCU STUDENTS**

Zukrat Olajide
Department of Social Sciences
Dr. Theodosia Lovett
Department of Social Sciences
College of Business, Education & Professional Studies

The proposed research will examine the relationships between anxiety, Covid immunization status, and mask wearing behaviors among undergraduate students at a Historically Black College (HBCU). The study will compare the anxiety levels of individuals who are vaccinated to those who are unvaccinated. In addition, it will compare the anxiety levels of people who report high mask use to those with low mask use. The participants will be approximately 120 students who are currently enrolled in psychology courses at Albany State University. The participants will complete questionnaires that will ascertain participants' demographics, trait of worry and anxiety, as well as mask wearing behaviors and immunization status. The research will determine if different levels of anxiety exist for HBCU students who are vaccinated and unvaccinated and those who report high mask use as opposed to low mask use. If anxiety exist, proposed research will examine whether those traits contribute to vaccination and mask wearing behaviors.

**DYING FOR JUSTICE: THE DEATH PENALTY, HUMAN RIGHTS, AND CONCEPTION OF JUSTICE BY
COMMUNITY AND JUSTICE WORKERS**

Deon Griffin

Department of Criminal Justice

Janae Teemer

Department of Criminal Justice

Dr. James Pratt

Department of Criminal Justice

College of Business, Education & Professional Studies

Our research project will phenomenologically examine the death penalty and its relationship to justice and human rights. Using theories of desire and violence, we plan to explore and develop grounded theoretical frameworks that help understand state uses of violence. We will rely on approximately 60 participants including judges, lawyers, senators, graduate students, and district officials in a mid-sized southwest Georgian city to explore justifications for the death penalty and its meanings associated with human rights. The participants will undergo in-depth interviews inquiring about their perception of the death penalty and will gauge if they feel it infringes on human rights or not. In addition, this study will use historical sources concerning the development and theoretical arguments about the death penalty in relation to region and race. These data include local news stories and legislative reports that add context and triangulate our findings. Through content analysis, we will gauge views on the death penalty as a form of punishment and its relation to human rights to develop critical grounded theories of state violence and expressions of power. With this research, we will make speculative arguments about the need for the death penalty in the interest of justice.

**THE SYNTHESIS, CHARACTERIZATION, AND ANTIBACTERIAL PROPERTIES OF APPENDED 1,3-
DIPHENYLIMIDAZO [1,5-A] PYRIDINE COMPOUNDS**

Christian Andrade Herrera

Department of Biology, Chemistry, & Forensic Science

Dr. Richard Mason

Department of Biology, Chemistry, & Forensic Science

College of Arts and Sciences

Bacteria are constantly evolving to become more resistant to antibacterial medications which has left biologists and chemists scrambling to find new antibacterial compounds that can combat this issue. Imidazo[1,2-a] pyridines have been studied extensively due to their antifungal properties and show promising signs as antibacterial agents. However, the synthesis of imidazo[1,2-a] pyridines is challenging and requires harsh conditions as well as the use of toxic and harsh reagents. Until recently, there has been limited focus placed on the isomers of imidazo[1,2-a] pyridines, in particular, imidazo [1,5-a] pyridines, as antibacterial agents. The purpose of this research is to synthesize, characterize and evaluate a small library of imidazo[1,5-a] pyridines that can be used as potential antibacterial agents. The characterization of the new molecules will be achieved using ^1H and ^{13}C NMR spectroscopy. In addition, each new compound will be evaluated for its effectiveness against various gram-negative and gram-positive bacteria.

COMPARISON OF RACE REALIZATION AND RATING OF EXPERIENCE BY COHORT

Kayla Congress
Department of Social Sciences
Dr. Patrick Whitehead
Department of Social Sciences
College of Arts and Sciences

When did you learn your race? In previous research projects, the exact time this realization occurs is often debated. Many research studies look at infants to determine to understand race. However, these studies only highlight that infant pay more attention to race consistently based on eye movement. This differs from the current research in that these differences could be due to the fact the baby's eye movement focuses on those like what they frequently saw. For example, a study would show that black babies will focus more on a black person, not necessarily because the baby knows he/she is black, but due to the fact many people the baby sees are black. The current study plans to look at four to five cohorts: 1950-1959, 1960-1969, 1970-1979, 1980-1989 and 1990-2000, and compared Age of Realization (AoR) to their rating of experience (RoE) to disprove that younger generations experience AoR earlier and have a more negative RoE.

STUDENTS' LEARNING EXPERIENCES DURING COVID-19 PANDEMIC

Roneisha Mone Scott
School of Business
Dr. Devi Akella
School of Business
College of Business, Education & Professional

All higher education institutions (HEIs) across the world, to survive COVID-19 pandemic had to shift to online mediums or hybrid-modalities to continue providing educational services to their students. Students now found themselves without the comforting presence and guidance of their teachers and their peers. Modern technology teaching platforms meant for students studying independently in complete isolation. In addition, lack of proper internet facilities, technology glitches and uncoordinated instructional goals further exacerbated students learning experiences. Stress, high levels of tension and anxiety thus became unavoidable for all students during the pandemic. This research study will focus on college students and how they experienced college life during the COVID-19 pandemic; the sudden changes higher education institutions had to abruptly adapt to, and the aftermath of that moving forward. It will explore the learning experience of the college student, their feelings, and emotions while in college during the pandemic; integrating survey analysis conducted on a group of college students enrolled at a historically black university (HBCU), located in a small town in southern part of United States. The emphasis will be on exploring the impact of COVID-19 on the students during the lockdown period of Spring semester 2020, with a shift in their teaching modalities, and its consequences. In addition, plausible recommendations will also be suggested to support students better in similar situations in the future.

ESTIMATION OF FUTURE VALUE OF A RETIREMENT ACCOUNT

Savion M Anderson

Department of Mathematics, Computer Science, & Physics

Mrs. Jayanti R Saha

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

Dr. Chinenye Ofodile

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

There are various schemes for employees to save some money for retirement. 403(b) is one of those where an employee can save some pre-tax money in every month. In this research, we calculated total accumulated or future value of this retirement account using simple interest rate and planned to do the same using compound interest rate. We also planned to estimate the average rate of return for both cases. An algorithm was planned to write a computer program to verify the calculated results numerically. Besides these works, we planned to estimate a principal amount for one-time deposit at the beginning to generate same amount of future value with a given simple and compound interest rate.

RETURN TO PLAY STRATEGIES AND FACTORS INFLUENCING CONFIDENCE AFTER MULTIPLE ACL INJURIES: A QUALITATIVE CASE STUDY

Chelsea Porter

Department of Health & Human Performance

Dr. Timothy Hughley

Department of Health & Human Performance

Darton College of Health Professions

Anterior Cruciate Ligament (ACL) injuries are common with over 200,000 injuries occurring yearly in the United States. Despite excellent objective measures, only 63% of patients return to their pre-injury level of activity. The low number suggest psychologically mediated disability in ACL reconstructed (ACLR) patients or the possibility of inappropriate return to play strategies. The purpose of this qualitative study is to describe the confidence of one athlete who underwent multiple ACLR. After review of the participant's medical history, the primary investigator will conduct a semi-formal interview, which will be transcribed and coded. Peer briefing will be conducted with a faculty supervisor. Text segments will be categorized into themes from the interview using NVivo analysis software and a member check will be completed by the participant to verify the accuracy of the analysis. Finally, the primary investigator will triangulate the results of the interview with the participants medical history and review of the literature, to arrive at the results and description of the case. The athlete will undergo a rehabilitation and a return to play protocol after the second ACLR. Once the athlete has been cleared to return to play the same qualitative procedure will be conducted to describe the factors influencing the confidence level after the second ACLR and the two qualitative analysis will be compared.

COMPARATIVE STUDY OF MANGANESE (MN)-DOPED CSPBBR3 SOLAR CELLS

Norman Newton Jr.

Department of Mathematics, Computer Science, & Physics

Dr. Liqiu Zheng

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

Manganese (Mn)-doped CsPbBr₃ perovskite solar cells have attracted tremendous interests recently, because the partial replacement of Pb with Mn, not only can significantly enhance the quantum yields of the device but also can considerably reduce the toxicity of Pb brought to our environment. The effect of Mn ions on the structural, spectral properties and photovoltaic properties of CsPb_{1-x}MnxBr₃ based solar cells are still under debate. In this project, comparative study of CsPb_{1-x}MnxBr₃ will be conducted. The structural, spectral and photovoltaic properties of CsPb_{1-x}MnxBr₃ will be investigated experimentally and theoretically. For theoretical research, WIEN2k software will be adopted to look into electronic structure calculations of CsPb_{1-x}MnxBr₃ by using density functional theory (DFT). It is based on the full-potential (linearized) augmented plane-wave ((L)APW) + local orbitals (lo) method, one among the most accurate schemes for band structure calculations.

THE RELATIONSHIPS BETWEEN EMOTIONAL INTELLIGENCE, COVID IMMUNIZATION STATUS, AND MASK WEARING BEHAVIORS AMONG HBCU STUDENTS

Lisa Padua

Department of Social Sciences

Dr. Theodosia A. Lovett

Department of Social Sciences

College of Arts and Sciences

The current study will examine vaccination status and behavior in relation to emotional intelligence (EI) of students from a rural Historically Black College and University (HBCU). It will survey EI, immunization status and self-reported mask wearing behaviors. Participants will include students who are currently enrolled at Albany State University. The participants will be asked to complete a survey that will measure three EI components (emotional intelligence, emotional empathy, & trait arousability). The proposed research will determine the relationship between EI and the students' behavior and decisions under the COVID-19 pandemic.

DESIGN OF A SINGLE LAYER COST-EFFECTIVE MICROWAVE ABSORBER WITH METAL PATCHES ABSORBER

Walker Pendleton

Department of Mathematics, Computer Science, & Physics

Dr. Arun Saha

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

A microwave absorber is a single or multilayer dielectric materials covered by metal plane on one side while other side is exposed to free space to absorb a particular microwave signal. In this research, a microwave absorber was designed with a given single layer absorbing material whose relative permittivity and permeability were known. In this design process, impedance matching between absorber and free space was achieved by circular metal patches of predesigned shape printed periodically on absorbing material. Designed microwave absorber along with predesigned metal strip was modeled in 3D electromagnetic simulation software HFSS. Simulation result showed that circular metal patches could improve impedance matching between air and absorber and could tune the absorption frequency. The authors acknowledge the National Science Foundation (Grant # 2000289) for research support.

EFFECT OF SOLAR PANEL ORIENTATION WITH GROUND ON ENERGY HARVESTING

Amaan Mohammed

Department of Mathematics, Computer Science, & Physics

Dr. Arun Saha

Department of Mathematics, Computer Science, & Physics

College of Arts and Sciences

A solar panel produces maximum electrical energy when sunlight falls perpendicular to the panel, but it is impossible to maintain the perpendicular orientation of solar panel with respect to sunlight at all times because of earth rotation. This project determined an optimum angle of a solar panel with respect to the ground for a particular location in order to harvest maximum amount of electrical energy output. The experimental results showed that the maximum electrical energy output was obtained when a solar panel was oriented at 60 degrees to the ground.

IDENTIFICATION AND CHARACTERIZATION OF 1,4-DIOXANE-DEGRADING BACTERIA FROM SOIL

Brittney Grant

Department of Biology, Chemistry, & Forensic Science

Shakira Banks

Department of Biology, Chemistry, & Forensic Science

Dr. Yong Jin Lee

Department of Biology, Chemistry, & Forensic Science

College of Arts and Sciences

Mr. Logan Willis

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1,4-dioxane is a four-carbon, organic, cyclic compound composed of carbon, oxygen, and hydrogen. It is utilized as a solvent in paints, cosmetics, and detergents and can be found in groundwater and drinking water as a contaminant. Because of its conformation, 1,4-dioxane is classified as a carcinogen, which is also recalcitrant. Here, we report two strains that degrade 1,4-dioxane, isolated from contaminated soils at the Savannah River Site. Strain 3 and strain 4 were identified by 16s rRNA gene sequencing after purification using the streak-plate technique. Strain 3 showed 94% similarity to *Serratia marcescens* after the BLAST search. The cellular morphology of strain 3 was coccobacillus, and it was stained Gram-negative. Strain 4 showed 94% similarity to *Paenibacillus wynnii*. Strain 4 was observed as bacillus and stained Gram-negative. Based on the phylogenetic analyses, both strains could be facultative anaerobic. Additional characterization is in progress. This research can provide a practical insight into the microbial degradation of 1,4-dioxane in soil.

RISK OF HUMAN DIETARY EXPOSURE TO ORGANOCHLORINE PESTICIDE RESIDUES IN FRUITS

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The objectives of this present study were to assess the level of organochlorine pesticide (OCP) residues in fruits and to determine the potential health risks associated with the exposure to these pesticides. A total of 120 fruits (apples, strawberries, and banana) were collected from a local market to analyze the organochlorine pesticide residues. By the end of the experiment you will know what pesticides affects the human body.

DETERMINATION AND INVESTIGATION OF POTENTIAL 1,4-DIOXANE-DEGRADING BACTERIA ISOLATED FROM CONTAMINATED SOIL

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1,4-Dioxane is a cyclic ether that can be used as a stabilizer to chlorinated compounds. While 1,4-dioxane can be found in products that are commonly used in the household and as a byproduct from industrial processes, it has been identified as a harmful human carcinogen. In situ removal of 1,4-dioxane from contaminated sites poses a great challenge, so alternative methods, such as biodegradation by soil bacteria, are being considered. To explore this alternative, 1,4-dioxane-degrading bacteria were isolated and purified from soil collected from the Savannah River Site using ammonium mineral salt (AMS) medium. The isolates were identified by their 16S ribosomal RNA gene sequences through Sanger sequencing, which were then compared to the sequences of known species in GenBank. Strain 2 showed 94% similarity to *Bacillus circulans*, while strain 10 showed 85% similarity to *Bacillus wudalianchiensis*. However, strain 10 grown in the absence of yeast extract appeared to be Gram-positive and coccus, while grown in the presence of yeast extract appeared Gram-negative and bacillus, suggesting a further purification is necessary. We have been testing spectrofluorometry for measuring 1,4-dioxane degradation by the isolates growing on 1,4-dioxane (50 mg/L) in AMS medium. This research aims to identify potential bacteria capable of degrading 1,4-dioxane in contaminated soil, which will broaden bioremediation approaches for 1,4-dioxane contamination and minimize its impact on the environment.

DNA BARCODING IN SOUTHERN HEMISPHERE FLINT RIVER MUSSELS

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Mussels are among some of the longest living creatures in the world with a life span of about 100 years or more, but unfortunately, about 70% of freshwater mussel species have become imperiled, threatened, endangered, or even extinct as of late 2020 due to human interference. Some of the most diverse groups of freshwater mussels belong in the state of Georgia which is home to about 10% of the world's mussel population. The Flint River Basin specifically contains about 28 species of mussels, but unfortunately, quite a few are considered endangered under the federal and state Endangered Species Act. As filter feeders, they play a valuable role in the ecosystem by ridding the waters of debris and bacteria, so therefore, it is critical for us to understand mussel ecology and evaluate conservation efforts in the Flint River Basin. One such method is by understanding the mussels' unique reproductive system. Mussels produce parasitic larvae known as glochidia which attach to fish gills. If the host fish - glochidia arrangement is successful, they will grow to become juveniles and eventually detach. From this, we can evaluate the best mussel-host fish relationships, and thereby, help in mussel conservation efforts.

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