April 7, 2020

For the past four years The Center for Undergraduate Research and Creativity (CURC) has hosted a Research Symposium, which provides students from across all disciplines an opportunity to showcase their research and creative endeavors. However, as the following quote from the AUC Coronavirus Task force conveys, “…The Coronavirus 2019 (COVID-19) pandemic has presented extraordinary global challenges, including for higher education. Indeed, the safety of the Atlanta University Center (AUC) community—including students, faculty, staff, and visitors—remains the highest priority across all AUC institutions.” In keeping with the Task Force’s recommendations, this year we will be holding a juried Virtual Celebration of Research. We will review and judge: 5 creative works presentations, 21 oral presentations and 79 posters! Additionally, 23 graduate students will also be participating this year. The CURC staff, research ambassadors, university partners, and the faculty mentors have worked diligently to make this event a success and we thank all who have given of their time and talent. Please work with us as we all deal with this public health crisis.

Once again, the CURC has partnered with the Office of Graduate Programs and The Dr. Bettye M. Clark Graduate Resource Center (GRC), and the Geographical Information Systems Center to offer programs which provide students a chance to flourish in various ways. Our major goal is not only to teach students how to do research, but also how to select projects that will improve social problems. Research should not be an end to itself but a tool or skill used to enhance the quality of life for a community of people. This year’s topics range from cybersecurity to an insight into college student behaviors. The creativity and range of engagement is truly inspiring.

Under the leadership of the Administration and the QEP Advisory Board, research is becoming the hallmark of Clark Atlanta University. While research can be satisfyingly frustrating, we put that aside for now as we celebrate the hard work of our brightest students and most dedicated faculty mentors. The projects that you can see online should instill confidence in the next generation of scholars. We invite you to celebrate this sharing of knowledge by logging in and examining their work as it is the life-blood of the academic enterprise.

Thanks for your participation,

Dr. Obie Clayton, Director, CURC
Kamilah Cole, Assistant Director, CURC

Dr. Bettye M. Clark, Acting Dean, Office of Graduate Programs and The Dr. Bettye M. Clark Graduate Resource Center
Dr. Tamalyn L. Peterson, Director, Office of Graduate Programs and The Dr. Bettye M. Clark Graduate Resource Center
**Breathe**

Mya Pierce, *Mass Media Arts*, Sophomore  

**Faculty Mentor:** Sandra Taylor, Ph.D.  

Ronnie Braithwaite, *Marketing*, Graduate Student  

Clark Atlanta University  

*Abstract:* A visual of a journal entry written by a teenage girl battling severe anxiety.

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**Clothing from Plastic Bags**

Faith Ameer, *Art*, Junior  

Tamyah Andry, *Fashion Design*, Sophomore  

Zoe Crawford, *Fashion Design*, Sophomore  

**Faculty Mentor:** Professor Cynthanie Sumpter  

Clark Atlanta University  

*Abstract:* The fashion industry is one of the largest contributors to the world’s pollution because many of the textiles utilized to produce apparel are made from fibers like acrylic, nylon and polyester. These synthetic or manmade fibers are generally non-biodegradable, and they emit greenhouse gases and other pollutants that are harmful to the environment. For the research, students in the Textiles class recycled plastic bags to make apparel products for the purposes of promoting and aiding in the development of a clean and eco-friendly environment and producing wearable-friendly fashion. Plastic materials are often utilized to manufacture polyester – the most widely used synthetic fiber for apparel in the world. The recycling process will assist in limiting the frequency in which apparel products are discarded into landfills, waterways and oceans, once they have served their usefulness. Students repurposed plastic bags by processing them into a material suitable for apparel. They designed and produced a pair of sneakers and clothing item. Further research will be conducted to determine if apparel made from other plastic products can be effectively mass produced for comfort, functionality, profit and aiding in sustaining an eco-friendly environment.

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**Coir Couture**

Monique Johnson, *Fashion Design*, Senior  

**Faculty Mentor:** Professor Cynthanie Sumpter  

Clark Atlanta University  

*Abstract:* Coir is a non-edible coconut fiber that is extracted from the external shell of ripe brown coconuts. The hair-like cellulose fibers have been used worldwide as floor mats, ropes, and brushes that provide durable and water-resistant textures/bristles. Innovative and forward-thinking fashion designers have discovered new uses for coir by creating apparel that is environmentally friendly and sustainable. The focus of this creative endeavor was to design and produce eco-friendly apparel and upholstery utilizing coir as the textile material. Production of eco-friendly apparel can aid in combating the pollution of the environment. The fashion industry is considered the second-most polluting industry worldwide due to the manufacturing process of textiles from natural and manufactured material sources. Continued experimentation with coir material is needed to make the production of apparel, utilizing coconut fibers a viable alternative for textiles and apparel production by traditional means.  

**Key Terms:** Coir, cellulose fibers, coconut, textile, pollution
**The Color of Chaos**
Christian Alexander, *Art*, Junior

**Faculty Mentor**: Professor Christopher Hickey
Clark Atlanta University

**Abstract**: As a design student, color theory plays an important role in my studies; as well as the need to create original and provocative work. I’ve developed my own experimental color theories over the course of the last year that I organically introduce into my pieces. The final product is always held in high regard but the process (the most important part to me) is often overlooked. Throughout the creation of my pieces I focus on being disruptive towards my work by following my personal philosophy, “Why Not?” As an artist, I feel that it is important to take art in a completely different direction as soon as a piece starts to feel “too safe.” A piece can never be appropriately “finished” until it’s been thrown into chaos and reborn anew. Over the past year I have lost countless hours of sleep (and I’ve missed more than enough meals) dedicating my entire being to my artwork and personal philosophy. The result was the development of my own style that’s based around creating something beautiful from chaos. I dive into each piece with no idea of what the final result will be. Learning from the process is the goal for me. With each piece comes new knowledge and philosophy that is poured onto the next canvas. I break myself down along with my art, then new life is created as a result of my process. My research is a collection of portrait and landscape paintings that challenge the norm of color theory and abstraction.

**Fertile Africa- The African, African American Celebrations**
Nkechinyere Nwachukwu, *Fashion Design*, Senior

**Faculty Mentor**: Professor BJ Arnett
Clark Atlanta University

**Abstract**: Years of researching African and African American celebrations show a constant use of bright colors, textures, and patterns by their people. In Nigeria, the Yoruba tribe, often describe their parties as "Ariya" or "Owanbe," while the Hausa tribe calls it "Biki," and the Igbo tribe, calls it "Oriri." These terms cover various forms of social events from weddings, to baby naming ceremonies and even harvests. This study focused on the fashion experience of the African tribes and examined traditional celebrations in relation to African American experiences. The name "Fertile Africa" is the name for this creative work. It is a combination of materials sourced from Africa and styles seen in the United States. Through the construction of two gowns made from cotton Ankara (also called Dutch wax print, which is used all over Western and Eastern Africa), the collaboration of cultures will be highlighted. By using organic materials and the desire to reduce the carbon footprint, the combination reminds viewers of the radiant and inspiring beauty of the earth, the importance of enhancing world sustainability and pride that all from Africa and the African Diaspora can appreciate. The first outfit is an Aso Ebi, which is a traditional blouse with a skirt that varies in length and is worn all over Western and Eastern Africa. The design is a boat neck top with ¾ length sleeves combined with a long length mermaid style skirt. The second outfit is a sleeveless, A-line knee-length dress. Both designs are covered with green moss, called Hairy Fabronia, found in Sub-Saharan Africa, while the thread is of Egyptian cotton, named after King Tut (a beautifully created thread). These materials are the bridge between Africa, where the materials and designs originated from, to America, and be transformed. These creations are flattering designs that African and African American women can wear to weddings and galas, in Africa or the United States.
A Prediction of the Optimal Time to Arrive at Hartsfield-Jackson International Airport
Jasmine Brown, Mathematics, Senior
Kamron Brown, Mathematics, Junior
Faculty Mentors: Torina Lewis, Ph.D.
Professor Emeline Renz
Clark Atlanta University

Abstract: In the United States of America, air travel is a significant form of transportation for both domestic and international trips. Around 2.7 million people fly in and out of airports within the U.S. every day. However, airport travel encompasses many processes before actually taking the flight, such as travel to the airport, airport check-in processes, and Transportation Security Administration (TSA) screening. These processes: travel to the airport, and airport dynamics (peak and off peak travel times, TSA personnel strengthen, weather, traffic conditions, and etcetera) require travel planning. In fall 2019, we collected data at the Hartsfield-Jackson International Airport. Using data science techniques, we investigate the TSA recommendation to arrive up to two hours before a domestic flight. Recommendations from this project will help to provide a more precise timeframe to ensure travelers are not too early or late for their flights.

Adaptive Learning Technology
Kailell Scott, Computer Science, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: As new technology develops there has to be something done about the technology that assists with education. Adaptive learning technology is a major step in education. With adaptive learning technology we allow technology to create a learning environment that is based solely off our capacity of knowledge and adapts as we go. Adaptive learning works with all levels of education which makes the system. It does the “heavy lifting” of teaching students, and presents challenges to help them progress. In many different cases such as “traditional learning” many topics aren’t covered which is knowledge not being obtained. It is important because while its helping one it’s also used to assist that student for continuous improvement. It's made specifically for one's strengths and weaknesses and focus on their goals while teaching the student it is also adjusting to them. It makes the learners educational experience a reality. Adaptive learning is like a personalized course for a learner. E-learning, personalized education, micro-learning, badging, gamification, and cloud-based learning, while whomever set up these systems needed some education in computer science with technological advances adaptive learning can make learning fast. This isn’t always a good thing. Adaptive learning came from research in intelligent tutoring systems. There are still better ways to adapt to learners without using technology. One can adapt based on their prior knowledge. One could also adapt based on the time period on which they say the material. There can be some alternatives with adaptive learning technology. There is an advanced tutoring system where it analyzes where a learner was incorrect in a solution and shows the learner what the expert would do. Inputting adaptive learning devices into video games can get a student's attention even more because the video game makes what they’re learning more fun and less tedious.
How AI's Will Impact Education
Keshawn Lawson, *Computer Science*, Freshman

**Faculty Mentor:** Professor Mia Moore

Clark Atlanta University

**Abstract:** As the years go by, the world starts to use technology even more. Artificial Intelligence is one of those technologies that are already taking over schools in China. Soon everyone in the world will be using Artificial Intelligence in their schools. In this paper I will talk about how we need to rethink education by using Artificial Intelligence. Also, how the world would be impacted by the use of AI in education. AI in education needs to be thought about again. Once it reaches its potential, everyone in the world will begin to use it in their classrooms. This can cause teachers to lose their jobs, and an effect of that would be that students wouldn’t pay attention in class knowing that the teacher is not a human but a robot. How can students learn from a programmed AI? That doesn’t seem possible. Think about how these AI’s are being controlled, anything could go wrong with them. They aren’t like humans even though they make them to be. We as humans are not always right about things, so imagine trying to make an AI be right about everything it just won't happen. Also, Artificial Intelligence will cause major debt. Imagine the amount of money the Government would have to spend in order to put AI’s in every school around the United States. That’s something we don’t need in the U.S. Power is another big thing with the use of AI’s. We would have to use so much power to get all of these AI’s working at the same time. That would also cost us a lot of money because we would have to have enough power to have all of the AI’s working. Kids in schools won’t be able to imagine their life without technology if AI’s where to take over education. Kids are already told to put their phones down in school, just imagine them being around technology for 8 hours a day. What would that do to their brains?

Identity Theft: How it Works and How to Prevent It
Andreya Ennis, *Computer Science*, Freshman

**Faculty Mentor:** Professor Mia Moore

Clark Atlanta University

**Abstract:** Identity theft is a widespread technological issue that millions fall victim to each year. This kind of crime can tarnish an innocent person’s financial and/or social life. In my presentation, I explained why people should seek awareness from this crime. I gave details on how to avoid the crime and what to do if someone ever becomes a victim of it. My research was an investigation not only of the impact of being an identity fraud victim but how to possibly avoid becoming one and what to do if you do become one. What I discovered is that your credit is what identity thefts target most. Your credit is imperative to your daily lifestyle. Without credit, you cannot buy a home, vehicle, business, insurance, and other things that are essential to the way of life. I approached my research by first searching for multiple definitions of “identity theft”. This helped me gain a better understanding of the term and made it easier for me to do and understand my further research. I then researched statistics on identity fraud reports. Afterward, I researched how identity theft worked which also brought me to articles on how to prevent the issue. I found out that there are a number of things you could do to prevent your identity to from being stolen, including keeping your social security number safe, paying your bills online, placing a security freeze on your credit report, enrolling in credit monitoring, etc. I also discovered the many different types of identity fraud and how people use your information to complete fraudulent activities. For this research task, I wanted to gain valuable information that would be helpful to others in which
I was successful. I thought this topic would be beneficial to especially young adults who are beginning to lean towards their future as adults.

**Smart Home Technology**

Omyah Royals, *Computer Science*, Freshman  
**Faculty Mentor:** Professor Mia Moore  
Clark Atlanta University

*Abstract:* The topic I have chosen to present is Smart Home Technology. This topic will answer the question of how technology works within different households as well as what smart homes will look like in the future. I plan to make this an individual oral presentation. This is a topic that is becoming more relevant and common within today’s society. This topic will provide people with a better understanding of what smart home technology is, what it looks like, and how it works. Many people are starting to invest into smart home technology and many businesses are emerging that specialize in the making and selling of smart home products. One of the most popular forms of this technology is voice control. Have you ever heard of a device called “Alexa”? Alexa is a virtual assistant created by the popular company Amazon. While researching the impact that this type of technology has within homes, I discovered that there are many different types of technology that can be used. For example, there have been creations of things like refrigerators, microwaves, ovens, and even washer machines. These different products have shown to have different pros and cons. In many households this has been proven to make doing everyday chores such as washing dishes and flipping a light switch more efficient and easier. Although there are a lot of ways in which smart home technology can benefit in a home, there are also issues that can have a negative effect. There have been cases where cyber attacks have happened with certain devices. In some cases there has been hacking where someone can listen and monitor what people do in their home. Companies such as Amazon, Google, and Best Buy have made millions from their distributions of these household items. With these advancements, it will soon be proven that there will be hundreds of thousands of more smart homes across the nation.

**Smart Homes**

Kennedy Cooper, *Computer Science*, Freshman  
**Faculty Mentor:** Professor Mia Moore  
Clark Atlanta University

*Abstract:* Integrating innovation into homes will allow society to live a more efficient, natural, healthier, and sustainable lifestyle. A smart home is a home with an automation system that will control lighting, temperature, and entertainment setups. Having the option to keep all of the technology in your home accessible through one device is a significant comfort and allows individuals of any age to easily control the technology in their home. Smart Homes ultimately make homes more secure. Home systems can connect motion detectors, automated door locks and surveillance cameras throughout your home so you can operate them from one device. You can also activate security alarms on your device whether you're in the house or on the other side of the world. You can have complete control over the temperature of your home with an intelligent regulator that learns your patterns and temperature preferences, and suggests the most energy efficient settings for your lifestyle. Lights and automated shades can be customized to change to night mode as the sun sets, lights can turn be adjusted or turned on and off when you enter or exit a room so you never need to stress over wasting energy. Smart homes can help you run appliances better. A smart oven can help you with cooking your food to flawlessness while never stressing
Spear-Phishing
Asante Harris, Cybersecurity, Freshman

Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Most risky & commonly used method used for cyber attacks. In our digital age, spear-phishing can be a big deal for victims. Even though these are fraudulent messages, they are very convincing. Spear-phishing is the fraudulent practice of sending emails ostensibly from a known or trusted sender in order to induce targeted individuals to reveal confidential information. Spear-phishing at the surface may be as simple as requesting usernames & passwords. But these attackers will put these passwords or variation of the passwords to access different websites containing more personal information. In hopes to strike credit card numbers or Social Security Numbers to access bank accounts or create a new identity using this confidential information. Using tactics of urgency, demanding sensitive information from the targeted subject, has proven to be very effective. These attackers gain access to some of one’s most personal information such as bank accounts, PINs or Passwords, using them to conduct fraud. Anyone can be vulnerable to a spear-phishing attack, which makes it such a big threat. Spear-phishing have been the method for big attacks on multiple known organizations such as: Security giant RSA in March 2011, Email Marketing Services Company Epsilon Breach in 2011, Sony Pictures in 2014, US Department of Energy in 2015, Targeting Airbnb Customers in 2018. Tech Firm Ubiquiti Suffered a $46M Cyberheist. The company discovered the fraud on June 5, 2015. The incident involved employee impersonation and fraudulent requests from an outside source targeting their finance department. The $46.7 million went to a company in Hong Kong, then to other overseas accounts held by third parties. As soon as they realized the issue at hand, they got in contact with their bank, but was only able to receive $8.1 million back. The company attempting to get their funds back through legal proceedings in various foreign jurisdictions and STILL not being able to recover even half of the losses shows how affective spear-phishing can really be. Being able to expand this topic into my field would lower the risk of spear-phishing attacks as a whole. For one to be able to develop software that detects and reports spear-phishing would be very useful.

Quantum Battery
Christ Ouattara, Cybersecurity, Freshman

Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: The reason why I chose quantum batteries as my research topic is because they're the future and when they arrive they are going to change and improve a lot of things. The importance of quantum batteries in this day in age, is because of how efficient they are and how well they perform. The tech world is impatiently waiting for the arrivals of the quantum batteries. Physicists in Italy have designed a quantum battery that they say could be built using today’s solid
state technology. They claim that the device, that can also store energy in the excited states of qubits, could charge up very quickly thanks to entanglement and that it could provide power for quantum computers of the future. Quantum batteries are tiny, nano-size batteries meant to be used for applications on the nanoscale. A quantum system such as a qubit that stores energy in its quantum states, can theoretically be charged at a faster rate than conventional batteries. Researchers claim that quantum battery is going to have “Li-ion has 99 percent charge efficiency, and the discharge loss is small. In comparison, the energy efficiency of the fuel cell is 20 to 60 percent, and the ICE is 25 to 30 percent, at optimal air intake speed and temperature”. And these batteries may be a solution to some, if not, many of our issues. For example, they could help our computers last longer and perform better, also almost every piece of tech we own needs energy or needs to be recharged and these batteries can help them last way longer than a regular battery and have better performance. This could not only impact our society but the world. Quantum batteries can be the difference changer in the world for technology. When they arrive they’re going to have a major impact, some may say question the big changes a battery could bring, but they will be surprised at what the Quantum battery has to offer.

User Behavior Analytics
Christopher Harris, Computer Science, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: User Behavior Analytics is the act of locating, gathering and evaluating users’ data and actions via monitoring systems. Uba is an upcoming strategy that is being implemented in almost every industry, from schooling to the workforce. In this day of age, marketing is key. Your ability to advertise your brand and push it to the greater public increases your chances of having success. Uba can be used to find a brand’s core audience and push their agenda onto their fans through certain websites, radio stations, or any other outlets their consumers use. Online, User behavior analytics is commonly used to monitor who is accessing the website and adjust the difficulty of authenticating users who show irregular behavior. Uba helps to prevent outside threats and unauthorized user’s movements throughout the organization’s network, files, and devices. Uba is a very important tool in the business industry. A Lot of entities that cause companies to comprised, steam from employees' actions. 92.4% of malware is delivered by email, employees can unknowingly compromise the company by clicking phishing emails, theft or downloading malware infested documents. User behavior analytics alerts the administration when someone tries to break into their system, which is then sent out to people who can stop the situation. User behavior analytics helps organization efficiency as it creates a copy of operations, creates logs, and captures the activities from every employee. This allows companies to identify a pattern in each work and can tell whether they are working well, tired, or just slacking. Uba is also used to monitor executive assets. While millions of dollars are stolen from companies through fraudulent wire transfers via web scams or ransomware, efficient Uba systems can find and executive systems and watch them for unusual usage. Uba also monitors data exfiltration to outside sources. While sensitive files are at the hands of employees files aren't the most secure. Uba detects traffic and identifies infected systems sending unauthorized data to outside parties and alerts the administrator.
Virtual Reality
Maximo Guillermo, Cybersecurity, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: The general purpose of this research is to inform and discuss the applications of the Virtual Reality. This is an individual work and it will be presented oral. Virtual Reality (VR) is the use of computer technology to create a simulated environment. A person using virtual reality equipment is able to "look around" the artificial world, move around in it, and interact with virtual features or items. This effect can be created by the head-mounted display (HMD), which is VR most recognizable component. Virtual Reality is useful for different applications such as rehabilitation, education, entertainment, art, etc. Virtual Reality consist of hardware and software. In the software, we can find X3D, which is a file format that includes XML, CBE and Classic VRML. In the hardware, some input devices are the 3D mouse, the wired glove, motion controllers, and optical tracking sensors. Virtual Reality is advantageous for entertainment and education. The main reason for Virtual Reality is for entertainment purposes. There are many ways to have fun in virtual environments. Besides VR movies, there are several new games that uses head mounted displays to give an immersive feel for the users. Some games to note are Chronos, Valkyrie, and The Climb, that are powered by Steam. Virtual Reality can also be used for effective and immersive learning experiences. Learning how to repair a car or a bike by using a Head Mounted Display (HMD) is much better than reading a huge book. Some companies and national associations like NASA and Genentech have had applied Virtual reality to train their employees. NASA is employing virtual reality to acclimatize its astronauts to conditions they will experience across the Earth’s boundaries. The crux of NASA’s expansive Virtual Reality laboratory is to train astronauts in the aspect of spacewalking. Genentech is a using virtual reality as a training tool for eye surgeons in a clinical trial. More than 150 surgeons have used VR to simulate a surgical procedure. The surgeons use a workstation that includes a virtual reality headset and a physical replica of the human eye and replicas of surgical tools.
A Strong Finish
Adoris Gibbs, *History & Mass Media Arts*, Junior

**Faculty Mentor:** Charmayne Patterson, Ph.D.

Clark Atlanta University

*Abstract:* Imagine entering a long race after everyone has a head-start and managing to finish first. Charles Richard Patterson did just that. While the race of the Industrial Revolution was underway, C.R. Patterson was enslaved. After escaping enslavement in 1861, Patterson managed to create and father many “firsts” in the automotive and manufacturing fields (some still unmet today) and social entrepreneurship. The magnitude of C.R. Patterson’s “firsts” has unfortunately been unheard, nearly forgotten. After twenty years of a successful partnership in the carriage business, Patterson earned enough money to buy his partner’s shares to create C.R. Patterson & Sons Company. This business was the first national and international African American owned and operated automobile company. Together, C.R. Patterson and his son, Frederick Douglass Patterson, contributed significantly to the timeline of automobiles. Often in automobile pioneering, Henry Ford is the first to be named. However, C.R. Patterson & Sons Company deserves to be said in the same breath. The local communities recognized C.R. Patterson & Sons Company as quality craftsmen with a quality product. Due to circumstances, like the enslavement of Black people and economic and racial discrimination, C.R. Patterson & Sons were not recognized and manufactured at that same scale as Henry Ford. However, it is worthy of acknowledging the Pattersons did more with less time. “If it’s a Patterson, it’s a good one” (C.R. Patterson & Sons Company slogan).

Flying While Black: A Degradation Ceremony
Jillian Byrdsong, *Sociology*, Junior

**Faculty Mentor:** Barbara Combs, Ph.D.

Clark Atlanta University

*Abstract:* Black bodies have been the subject of extreme violence and scrutiny since they were stolen from African land and brought to America. While egregious acts of violence have been historically documented, from slavery, to the Jim Crow era, to the #BlackLivesMatter movement, what is consistent is that the violence takes new, and sometimes hidden forms. Sociologists have found that violence operates on a spectrum. Violence can be physical, psychological, and/or emotional. In whatever form it takes, the aim is the same—social control of the subjugated. I examine the 2019 case of Dr. Tisha Rowe, a black, female MD returning from a vacation in Montego Bay, Jamaica, who was publicly sanctioned and degraded for her outfit on a flight with American Airlines, all in front of her eight-year-old son. In an era of #BlackGirlMagic preceded by decades of Maya Angelou’s assertion that among other things “the span of her hips” made her a phenomenal woman, I argue that this instance was an act of psychological violence akin to what sociologist Harold Garfinkel (1959) terms a “degradation ceremony” (i.e., a communicative work aimed to change the identity of an individual to a lower status. Additionally, I use intersectionality theory to explain how the contemporary tactics of violence against black women may take forms that are different from those aimed at black men.
Hair Porosity: Into the Follicle
Kristian Gambrell, *Computer Science*, Sophomore

**Faculty Mentor:** Professor Mia Moore
Clark Atlanta University

**Abstract:** Today’s society pushes images of beauty and physical appearance on all social media. However, it is one’s hair that garners the most attention from length to color; wigs to sew-ins; braids to natural cuts. Regardless of one’s choice, the hair’s health must be taken into consideration and many people lack this knowledge. What I am proposing in this presentation is that people become educated in physical health and this includes hair.

How Bad Do YOU Want It?
Jada Mooney, *Criminal Justice*, Senior

**Faculty Mentor:** Boaz Bivens, Ph.D.
Clark Atlanta University

**Abstract:** Recently and during this presidential campaign season much attention has been given to the rich and powerful: the one percenters. Much scholarly attention has been devoted to those who reside in the top 10% or 20% of the income brackets. However, less attention has been given to those who came from the bottom 10% to find success in their endeavors. Statistically speaking, success is determined by how hard a person works for it; especially when this person has come from a less fortunate and single parent household. I plan to critically analyze and delve deeper into the success of those that come from wealthy households compared to those that come from less fortunate households. “A dream does not become reality through magic; it takes sweat, determination, and hard work (Colin Powell).” If success came into your life easily, did you really work for it?

It's Not My Business But Who is "She?": A Discussion of Gender Queer Inclusiveness Among Black College Women
Douglas Green, *Psychology*, Senior
Erica Thompson, *Psychology*, Senior
Kyra Wilson, *Psychology*, Senior
Marcellus Lewis, *Psychology*, Senior

**Faculty Mentor:** Kanika Bell, Ph.D.
Clark Atlanta University

**Abstract:** Rozen (2018) suggests that Americans broadly support the idea of affirmative action but oppose preferential treatment for minorities in college admissions with nonwhite Americans being more likely to support affirmative action than white Americans. However, transgender persons may not be considered as worthy of affirmative action policies, especially among nonwhite Americans. Morrison et al. (2017) found that transwomen college students experience less acceptance from their peers and Graham (2014) demonstrated that there is a significant amount of gender policing in school settings. Lenning (2017) reflects that HBCUs are notoriously perceived as unwelcoming towards lesbian, gay, bisexual, transgender, and queer (LGBTQ) students, and are considerably behind predominantly White institutions (PWIs) in regards to providing supportive and affirming environments. Beemyn (2005) discusses how transgender people have faced more discrimination problems regarding healthcare, public inclusion, and support as well, and suggests that it is harder for colleges and universities to achieve inclusivity when they are not discussing these problems or how to fix them. This study sought to
begin a dialogue with Black college women, about Black college transwomen and the spaces they
occupy on a historically Black campus. Fifty-five participants identifying as Black or African
American, ranging in age from 19-21, participated in this study. One participant identified as non-
gender conforming while the other 54 identified as female. Participants were then asked to discuss
their ideas about what it means to be transgender as well as in general, gender queer identities and
inclusiveness including gender policies for bathrooms, scholarships, dorms, etc. Results suggested
that though many participants appeared to view themselves and knowledgeable and inclusive,
many suggested marginalizing segregation strategies as solutions or embraced the presence of
Black transwomen on campus but felt protective regarding access to particular resources such as
gender-based scholarships, coveted titles and positions generally reserved for females on campus,
and athletic teams. Many students took an apathetic approach to the issue and many, unbeknownst
to them, did not know what it meant to be transgender. Findings suggest that further discussion
regarding Black women’s inclusion of Black transwomen in their considerations of Black
womanhood is necessary.

Lynching is Over: Why are African Americans Still Suffering?
La’Tessa S. Stanton, Criminal Justice, Junior
Faculty Mentor: Professor Elycia S. Daniel-Roberson
Clark Atlanta University
Abstract: Why has the African American community continuously faced an endless cycle
of suffering physically, emotionally, and psychologically since the end of lynching? The history of lynching
that took place on American soil caused fear, trauma, separations, and insecurities within the African
American community. Lasting effects of lynching include psychological and emotional trauma s, stress
disorders, exposure to violence, as well as the stigma and lack of use of mental health services among
African Americans today. The theories that will be used to make this argument are the W.E.B. DuBois
Double Consciousness Theory and DeGruy’s Post Traumatic Slave Syndrome Theory.

Makers of a New Society
Queen Jonafa’ Tervalon, Political Science, Senior
Faculty Mentors: Teri Platt, Ph.D.
Clark Atlanta University Andrew Douglas, Ph.D.
Morehouse College
Abstract: Black theological behavior is rooted in the work of Black women. In a study
completed by Daphne Wiggins, author of Righteous Content, most Black churches have
congregations of majority women, and clergy that are overwhelmingly male.3 Black women’s
perspectives on church and social activism serve as a guide to how the Black community should
interact with the state. This research is a proposal, constructed by the works of Sojourner Truth,
Ida B. Wells, and Ella Baker. Their religious references during their political career will be used
to construct this argument. They represent how Black women of faith have developed the most
effective socialization strategy to reach political equality because of their use of faith as a
rejuvenating agent, their participation in the socialization of children and new church members,
and their view of God as the ultimate ruler. Important questions to guide this research include:
How can equality be achieved in a political system? Can Black women’s interests benefit the entire
society? Over time, has Black women’s social activism maintained a similar understanding of faith
that is consistent to their social justice work? Is the Black Church a good model for a political
system? Can secular politics incorporate religious ideas into its system without imposing religious beliefs? Do Black women serve as a moral guide to American society?

**The MILEs Initiative: Unique Student Experiences in KEMET/EGYPT**

SheDre Woodard, *Mass Media Arts*, Junior  
**Faculty Mentor**: Medha Talpade, Ph.D.  
Clark Atlanta University  

*Abstract*: As a continuum of the Mentored Intensive Research Experiences (MILEs) initiative by the department of psychology and supported by the alumni and the Pragati scholarship fund, this research project intends to explore and discover the meaning for our university students as they connect with the global African diaspora. Specifically, during the spring break of the 2020 semester, students will be engaging in intensive and intentional research experiences in Egypt. Using an application of history and culture in pedagogy has been acknowledged as a critical factor by researchers for academic success among minority students (Almanza & Mosley, 1980; Berry, 2005; Tsurusaki et al., 2010). Researchers have revealed the positive impact of studying abroad on academic achievement (Cardwell, 2019), developing professional network, career opportunities (Burns-Cusato & Cusato, 2019), intrapersonal, cognitive, interpersonal competencies (Baer, 2019). At CAU, our mantra is to provide students with unique experiences across the global African diaspora, which is tied to our historical heritage and institutional mission, a distinctiveness which will create a continuum of experiences for the students and set our students apart from others entering the workforce. Also, demonstrating such skills in the international/global arena will make our graduating students more attractive to graduate schools. This study intends to answer the following research questions: What is the meaning of KEMET to African Americans? What are the lived experiences of African Americans in KEMET? Participants will be the 17 students, alumni, and faculty travelling to Egypt. Data will be collected using audiovisual media. Quotations, codes, and themes will be extracted from the media to answer the research question with Atlas Ti. The essence of the experiences will be distilled and presented to a local, professional audience. Validation strategies such as peer review and rich thick descriptions will be used to ensure data trustworthiness. This study is expected to initiate positive social change for the individual student travelers through academic and personal enrichment, increase the visibility of the university through dissemination of the culturally relevant unique experience, and increase alumni giving by encouraging their involvement with the MILEs initiative.

**Pre-Kindergarten to Prison Pipeline: The Juvenile Justice System**

Mikayla Brown, *Political Science*, Junior  
**Faculty Mentor**: Teri Platt, Ph.D.  
Clark Atlanta University  

*Abstract*: Why are black students put into detention more than their white peers? Why is it more likely for a juvenile to reoffend after release than an adult? Is the Presence of School Resource Officers detrimental to black students? Are Juvenile detention centers effective to rehabilitate juveniles? Is it fair to try a sixteen or seventeen year old as an adult regardless of offense? Why is over half of juvenile cases that are waived to criminal court involving African American children? The juvenile justice system is responsible for effectively trying, counseling, and rehabilitating juvenile offenders. Yet, data shows that African-American children are targeted disproportionately to other races. Recidivism is the likelihood of a criminal re-entering prison. Recidivism in youth is ever rising. A study examining the relationship between behavioral health
and recidivism showed that detained youth have serious mental health needs. About 60 to 80 percent have at least one mental disorder --- compared to the adolescent population being 15 percent. Within detained youths, recidivism rates are higher among boys, racial minority youths, and youths with early childhood trauma. Anxiety and depression are the two major mental health disorders for adolescents. If there is not proper care for these disorders, the likely outcome will result in recidivism or death. With such high rates of recidivism, one has to look at all of these questions and determine if the current system is being as effective as possible to reach its ultimate goal of rehabilitation. This research will discuss and analyze the juvenile justice system from the courts, detention centers and the interaction of students in schools and offer solutions to counter these factors from contributing to the PreK to Prison Pipeline.

Texting and Frequency of Verbal Communication

Annisa Sleight, Mass Media Arts, Junior
Daya Predon, Mass Media Arts, Junior

Faculty Mentor: Fang-Yi Flora Wei, Ph.D.
Clark Atlanta University

Abstract: Text messaging is the most popular form of nonverbal communication in today’s society. Today 81% of Americans own and utilize a cell phone per Pew Research Center (2019). There were approximately 277 million “texters” in the United States in 2016; however, this number is believed to have increased (Kenneth Burke 2016). Text messaging, instant messaging and emailing are preferred by many because they are as fast as talking. It also provides users the ability to think over their words (Larry Alton 2017). However, others will argue that verbal communication can be challenging for introverted people due to lack of confidence.

Based on the two-tailed independent-samples t-test, the results showed that there is a difference between introverted and extroverted text messaging users’ self-confidence in verbal communication. This suggests that those who are extroverted are more confident in verbal communication than those who are introverted, based on social comfortability. The correlation test revealed that there is no significant negative relationship between the frequent use of text messaging and text message users’ self-confidence in verbal communication. This could be based on the comfortability with text messaging, determining there is no significance or relationship between the two. We concluded that the participants’ text messaging frequency is not related to self-confidence in verbal communication, but potentially is related to personality type.

The URTAS 2020

Therecia Lang, Theatre Arts, Senior
Keara Jones, Theatre Arts, Senior
Emani Jones, Theatre Arts, Senior
Jayda Ross, Theatre Arts, Senior
Tepanga Fontenot, Theatre Arts, Senior
Munachukabi Eresia-Eke, Theatre Arts, Senior
Trejhaun Dueberry, Theatre Arts, Senior
Michael Jackson, III, Theatre Arts, Senior

Faculty Mentor: Professor Eric J. Little
Clark Atlanta University

Abstract: This spring, eight Clark Atlanta students (Trejhaun Dueberry, Munachukuabi Eresia-Eke, Tepanga Fontenot, Michael Jackson III, Emani Jones, Keara Jones, Therecia Lang,
and Jayda Ross) were able to attend the University Resident Theatre Association (URTAs): an annual recruiting event held each year in multiple cities. In which, 1,200 MFA candidates from all theatre disciplines: acting, arts leadership, design and technology, directing, and stage management, take part in this recruiting event where they have the opportunity to meet with faculty recruiters from among our 43 member universities and other top theatre programs, all in one place. During the duration of the trip, some students were able to view Broadway shows and audition for additional graduate schools. In doing so, the theatre majored students were able to expand possibilities for their future and take part in viewing theatrical productions to broaden their artistic eye. In this innovative expedition, the students left New York City with a better grasp of their individuality as artists and students, with an honorable understanding of what the next phase of post-graduation could comprise of.
**A & Z Sequences for Double Riordan Arrays**
Jazmin T. Jones, *Mathematics*, Junior
Clark Atlanta University

*Faculty Mentor*: Dennis Davenport, Ph.D.

*Howard University*

*Abstract*: A Riordan array is an infinite lower triangular matrix that is defined by two generating functions, $g$ and $f$. The coefficients of the generating function gives the first column and the $n$'th column of the matrix is defined by the generating function $gf^n$. We shall call $f$ the multiplier function. Similarly, a Double Riordan array is an infinite lower triangular matrix that is defined by three generating functions, $g$, $f_1$, and $f_2$. Where the zeroth column of the Double Riordan array is $g$, the next column is given by $gf_1$ and the following column will be defined by $gf_1f_2$. The remaining columns are found by multiplying $f_1$ and $f_2$ alternatively. Thus, for a double Riordan array there are two multiplier functions, $f_1$ and $f_2$. It is known that the Riordan array only has one Z-sequence and one A-sequence. This is not the case for Double Riordan arrays. In this paper we show that double Riordan arrays have two Z-sequences and one A-sequence. The set of double Riordan arrays form a group under matrix multiplication. In this paper we also found some new subgroups in the Double Riordan group.

**A Potential Genetic Profile for Castration Resistant Prostate Cancer**
Kailen Turner, *Biology*, Junior

*Faculty Mentors*: Joann Powell, Ph.D.
Sakura McLaughlin, M.S.

Clark Atlanta University

*Abstract*: Prostate cancer is the second leading cause of cancer deaths in men and disproportionately affects African American men. Early stages of prostate cancer are dependent of androgen receptor signaling, thus, the absence of androgens would reduce the cancer cells’ ability to divide uncontrollably. Castration-resistant prostate cancer (CRPC) characterizes disease progression where androgen signaling is maintained despite androgen deprivation therapy. When left untreated, this form of prostate cancer will eventually progress to metastatic castration-resistant prostate cancer where the cancer has spread to parts of the body other than the prostate, and is unable to be managed by traditional drug or surgical treatments. Countless research studies are being conducted to target advanced stages of prostate cancer, however there are fewer studies focused on developing a gene profile specific to CRPC. Characterizing CRPC through a gene profile may lead to earlier diagnosis and treatment of CRPC before the cancer metastasizes and becomes untreatable. Based on previous studies of CRPC, a list of target genes was compiled to analyze gene expression in early stages of PCa compared to advanced stages. The cell lines used were derived from a localized prostate cancer in a 50-year-old African American patient (E006 AA and E006 HT) and a lymph node metastasis of prostate cancer in a 50-year-old Caucasian patient (LNCaP and C4-2). Through quantitative real-time polymerase chain reaction (qRT-PCR), identified target genes were observed for upregulation and downregulation. Our research explores a potential gene profile for castration-resistant prostate cancer that can be further investigated. Developing a profile for CRPC may assist in early diagnosis of advanced stages of prostate cancer which may lead to more effective treatments and better patient outcome.
A Prediction of the Optimal Time to Arrive at Hartsfield-Jackson International Airport
Thiphilius Mills, Dual-Degree Computer Science and Computer Engineering, Junior
Faculty Mentors: Torina Lewis, Ph.D.
Professor Emeline Renz
Clark Atlanta University

Abstract: In the United States of America, air travel is a significant form of transportation for both domestic and international trips. Around 2.7 million people fly in and out of airports within the U.S. every day. However, airport travel encompasses many processes before actually taking the flight, such as travel to the airport, airport check-in processes, and Transportation Security Administration (TSA) screening. These processes travel to the airport, and airport dynamics (peak and off peak travel times, TSA personnel strengthen, weather, traffic conditions, and etcetera) require travel planning. In fall 2019, we collected data at the Hartsfield-Jackson International Airport. Using data science techniques, we investigate the TSA recommendation to arrive up to two hours before a domestic flight. Recommendations from this project will help to provide a more precise timeframe to ensure travelers are not too early or late for their flights.

A Study of the Geometry and Chemical Bonding in Highly Symmetrical Polyhedral Boranes, Metallaboranes, and Dimetallaboranes
Meagan Luckydo, Biology, Sophomore
Jada Wood, Biology, Sophomore
Faculty Mentor: John Hall, Ph.D.
Clark Atlanta University

Abstract: The objective of this research is to theoretically characterize the structure and chemical bonding in certain polyhedral boranes, metallaboranes, and dimetallaboranes: From closo to isocloso to oblatocloso polyhedral. Closo metal free boranes, $B_nH_{2n}^+$ and the isoelectronic carboranes $CB_{n-1}H_{2n}^-$ and $C_2B_{n-2}H_{2n}$. Such deltahedral boranes can be considered to be three-dimensional aromatic systems. Metallaborane structures are often based on isocloso deltahedra (a polyhedron whose faces are all equilateral triangles), with the metal atom at a degree 6 vertex. Dimetallaborane structures are based on highly non-spherical and very oblate deltahedra with the metal atoms typically at degree 6 or 7 vertices. Ultimately, we want to develop a new model for the skeletal bonding these dimetallaboranes. We will use a variety of theoretical methods, including Hartree-Fock methods, density functional theory and the Boys’ localization method.
Artificial Intelligence in the Classroom
Markeelus Brown, Computer Science, Freshman
Drequan Eason, Computer Science, Freshman
Kamau Williams, Cybersecurity, Freshman

Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Artificial Intelligence alludes to the usage of PC limits as against normal insight. It includes structuring PCs that copy human insight in learning, teaching, making life easier. Our project will include a poster. We will show numbers and facts of how students improved using the A.I in the classroom. This will impact society because we will be advancing and improving in academics with the help of technology. Studies show that Students showed a marked increase in task-related effort and involvement. This was a study that introduced an A.I geometry tutor that was in a. This change appeared to be due to an increase both in the students' enjoyment of the class and in the level of peer competition. A smart environment in education must integrate different aspects linked to virtual and perennial education, with integration of the profile for the students. In computing, ambient intelligence refers to electronic environments that are sensitive and responsive to the presence of people. Smart Classroom for education is one of the challengers in the area of AmI. AmI brings new ideas and approaches into the educational process at every level of education. For this abstract, I took a look at multiple experiments where teachers recorded student’s grades with the help of A.I. Overall, the outcomes are very positive, as all the kids engaged with the test were extremely intrigued about the work area and its applications. The youthful students valued the instructive help which academically helped. The results of the conducted study confirmed that AmI technologies have the potential to enhance the classroom learning experience and to be positively viewed by young learners, provided that they are carefully designed and tested. Teens seem to be aware of the opportunities offered by novel technologies and willing to embrace them, but also face classroom technologies as fancy personal gadgets. The overall objective of A.I in the classroom is to support common learning activities and enhance the learner’s experience in the classroom.

Autonomous Vehicles in Relation to Computer Science
Aikya Stevenson, Computer Science, Freshman

Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Autonomous vehicles are self-driving vehicles that sense the world around them and driving accordingly with little to no help from a human. The relationship between autonomous vehicles and computer technology is pretty simple, they operate with the concept of autonomy which is defined as self-directed freedom and a self-governing state. In this state the rolls have been reversed and the human is now the passenger and the vehicle are now the driver. The autonomous vehicle work with a sensory system that tells it all they need to know about what's going on around it, the vehicles is able to see with camera placed in the front back and sides of them and the brain is the core processor, from this steering, braking, and acceleration and all other things are based on the input of the artificial sense. The artificial sense in a self-driving vehicle is the most is the most important part of the vehicle; this helps the vehicle sense where it’s going, and helps it drive safely. The core processor act as a brain to the car processing and displaying the actions. The goal for this is to demonstrate the relation through articles and explains how technology influences the structure of autonomous vehicles and how they work with the world.
By researching articles on autonomous vehicles it becomes evident that self-driving vehicles are becoming more prominent in today’s society. The relationship between autonomous vehicles and computer technology is also simple because of how these cars work and how they are structured to work. These articles help me understand the basics of autonomous vehicles by analyzing each article to summarize and relate the article to computer technology. Each article used either explains what the autonomous vehicle is or is a scenario of how autonomous vehicles work with computer technology. My research reflects the relationship between autonomous vehicles and technology.

Key words: self-governing, autonomous vehicles, artificial sense, core processor

Baseline Protein Expression in Prostate Cancer Cells
Arrianna Hagins, Biology, Senior

Faculty Mentors: Sakura McLaughlin, M.S.
Joann Powell, Ph.D.

Clark Atlanta University

Abstract: Previous research has demonstrated that African American males are more likely to develop and die from aggressive forms of prostate cancer in comparison to other ethnic backgrounds. Increased concentrations of the AhR protein have been found to have a positive correlation with the progression of prostate cancer in African American prostate cell lines. The aryl hydrocarbon receptor (AhR) is a transcriptional factor involved in one of several mechanisms in which prostate cancer cells are able to sustain androgen receptor signaling in the absence of androgen. This transcription factor regulates drug metabolizing enzymes that function in breaking down carcinogens and interacts with multiple signaling pathways involved in the development of prostate cancer. In various prostate cancer cell lines AhR signaling has been found to be involved with the initiation, progression, invasion, and metastasis of prostate cancer. Quantitative analysis of AhR protein concentration as well as several other transcriptional factors believed to be involved in the AhR signaling pathway have been observed in various African-American and Caucasian prostate cancer cell lines to compare baseline protein expression levels.

BRD4 Acts as a Critical Oncogene in Prostate Cancer, BRD4 Inhibitors Show Promising Treatments for Prostate Cancer
Alira Danaher, Biology, Sophomore
Skylar Grayson, Biology, Sophomore

Faculty Mentor: Daqing Wu, Ph.D.

Clark Atlanta University

Abstract: BRD4 a member of the Bromodomain and Extraterminal protein family, has several possible functions in prostate cancer. One is as a critical player in the super-enhancers organization and a regulator of transcription of oncogenes like c-MYC. Its non-transcriptional role includes DNA damage repair, cell cycle checkpoint activation and telomere homeostasis. Small molecules have been found to chemically inhibit BRD4, a member of the Bromodomain and extraterminal protein family. In collaboration with a chemist in Texas, Dr Wu’s lab is studying the efficacy of 21 small molecules designed to inhibit BRD4’s function by ligand binding to the protein and thus disrupting its conformation and function. Each substance will be tested at various concentrations against prostate cancer cells. The first screening will provide a pool of molecules that will then be used on mice that have been given cancers from different prostate cancer cell
lines. Once cancers are present in the mice they will receive treatments with the candidates from the pool of small molecules that were validated with in vitro studies. Once an effective drug is identified further studies will be conducted to determine how the small molecule disrupts the conformation and function of the BRD4 protein.

**BRD4 vs. Prostate Cancer**
Imani Ojudoh, *Biology*, Sophomore  
Alira Danaher, *Biology*, Sophomore  
Skylar Grayson, *Biology*, Sophomore  

**Faculty Mentors:** Daqing Wu, Ph.D.  
Xin Li, Ph.D.

Clark Atlanta University  

**Abstract:** BRD4 a member of the Bromodomain and Extraterminal protein family, has several possible functions in prostate cancer. One is as a critical player in the super-enhancers organization and a regulator of transcription of oncogenes like c-MYC. Its non transcriptional role includes DNA damage repair, cell cycle checkpoint activation and telomere homeostasis. Small molecules have been found to chemically inhibit BRD4, a member of the Bromodomain and extraterminal protein family. In collaboration with a chemist in Texas, Dr Wu’s lab is studying the efficacy of 21 small molecules designed to inhibit BRD4’s function by ligand binding to the protein and thus disrupting its conformation and function. Each substance will be tested at various concentrations against prostate cancer cells. The first screening will provide a pool of molecules that will then be used on mice that have been given cancers from different prostate cancer cell lines. Once cancers are present in the mice they will receive treatments with the candidates from the pool of small molecules that were validated with in vitro studies. Once an effective drug is identified further studies will be conducted to determine how the small molecule disrupts the conformation and function of the BRD4 protein.

**Carbon Dioxide Adsorption on a Stilbene-based Manganese Metal-Organic Framework**
Talia Janelle Ferguson, *Biology, Public Health Minor*, Junior  

**Faculty Mentor:** Conrad Ingram, Ph.D.

Clark Atlanta University  

**Abstract:** The increase in the amount of CO2 and other greenhouse gasses in the atmosphere from the combustion of fossil fuels is of significant environmental concern. A metal organic framework (MOF) is a class of solid state materials that have shown great potential as adsorbent to reduce or capture CO2 from the environment. MOFs are 3-dimensional crystalline structures made from a metal ion and an organic ligand. MOFs typically have a high surface area, variable pore size and can be chemically tuned to meet specific applications, such as CO2 adsorption. We report herein, the research on the synthesis, characterization and CO2 adsorption properties of a new MOF based on manganese metal ion and two organic ligands, 2,2’-bipyridine and 2,2’-dinitro-4,4’-stilbenedicarboxylic acid. The MOF was synthesized by combining manganese (II) nitrate tetrahydrate with two organic ligands, 2,2’-bipyridine and 2,2’-dinitro-4,4’-stilbenedicarboxylic acid at 200°C for 48 hours. Non-ambient X-ray powder diffraction and thermogravimetric analyses of the final product, shows a very crystalline structure, that was a very stable structure up to 200°C. Fourier transformed infrared spectroscopy (FTIR) analysis indicate that the 2,2’-dinitro-4,4’-stilbenedicarboxylic acid ligand was deprotonated and fully coordinated...
to the metal ions), and for CO2 adsorption studies, the MOF was degassed at various temperatures (25°C, 50°C, 100°C, 120°C and 180°C) under vacuum, each was followed by and CO2 adsorption at 256 K. The CO2 adsorption capacity was highest at the degassing temperature of 180°C. Further analyses (using a degassing temperature of 180 °C) showed that at temperatures of 256 K, 273 K and 298 K, the CO2 adsorption capacities were 1.52 mmol/g, 1.55 mmol/g and 0.77 mmol/g, respectively. The experimental isotherms were fitted using a modified Langmuir-Freundlich isotherm model the MOF is therefore of potential interest based on its intriguing thermal stability and its capacity to adsorb CO2.

**Characterizing CRISPR-Cas-9 Mutant Cell Sequence at ZIC2 on Chromosome 13 of LNCAP Prostate Cancer Cells**

Zaiya Hudson, Biology, Senior  
**Faculty Mentor:** Nathan Bowen, Ph.D.  
Clark Atlanta University

*Abstract:* In prostate cancer, ZIC2 expression levels correlate with primary cancer grade. We hypothesize that increased ZIC2 expression is integral to the etiology of a significant number of prostate and other cancer types. To establish models to characterize ZIC2 in prostate cancer, we targeted the first exon in ZIC2 by CRISPR/Cas9 gene editing, with the intent of abrogating ZIC2 expression in the LNCaP cell line and established a clonal cell line. We confirmed altered ZIC2 protein expression in the LNCaP ZIC2 mutant via western blotting. To confirm that the LNCaP cell line had an altered genomic ZIC2 sequence we extracted genomic DNA and conducted PCR to determine the possible changes to the ZIC2 sequence made to exon 1 of the gene. To further explore the alteration identified by western blot the PCR product of LNCaP parental and LNCaP ZIC2 edited cells we cloned the PCR product into Ecoli. Subsequently the purified PCR product was extracted from the cloned Ecoli and sequencing was done by Genscript. To further elucidate the character of the mutant cell line, growth curves were calculated and a decrease in proliferation was noted. Additionally, migration was also tested between the parental cell line and the mutant LNCaP cell line. Migration decreased in the mutant cell line. Further experiments will be conducted to determine if the mutant LNCaP cell line has other alterations in apoptosis and other known cancer signaling pathways. In conclusion when ZIC2 is knocked down we have determined that prostate cancer cells like LNCaP proliferate at a slower rate, have decreased migration and invasion and increased apoptosis. These are all hallmarks of aggressive cancer that are reversed when ZIC2 is knocked down.

**Comorbid Diabetes Mellitus Impacts Motor Symptoms, Cognitive Function and Quality of Life in People With Idiopathic Parkinson's Disease**

Dwaina Thomas, Biology, Junior  
Clark Atlanta University

*Faculty Mentor:* Madeleine Hackney, Ph.D.  
Emory University

*Abstract:* Individuals with diabetes mellitus (DM) have a greater risk of developing Parkinson’s disease (PD). DM has been shown to possibly cause earlier cognitive decline and postural inability in patients with PD. The purpose of this study is to determine the impact of DM on cognitive, motor and psychosocial function in individuals with mild-moderate PD. We conducted a cross-sectional analysis of participants with PD (n=198) from five studies conducted over a period of 8 years. We compared performance on cognitive, motor, and
psychosocial assessments in people with PD-DM (n=35) versus those with PD without DM (n=163). Pre-test/baseline data were reviewed for normality and statistical analyses to determine differences between groups were performed using appropriate Chi square test and T-tests. The PD-DM group had fewer years with PD than the PD group (p= 0.034), but had more comorbidities (p<.001), more prescription medications (p=0.018), more males (p=0.016), and greater BMI scores (p=0.001). PD-DM participants had lower Montreal Cognitive Assessment scores (p=0.036), worse Brooks spatial memory performance (p=0.007), worse motor symptoms scores (as per the Unified Parkinson Disease Rating scale, subscale III, p=0.013), were able to rise fewer times during the chair stand without using their hands, (PD N=22; PD-DM N=6 (p=0.041)). Participants with PD-DM also reported lower Short-form 12 mental composite scores (p=0.037), and reduced life space (p=0.048). Trends (p<0.1) were noted in reduced health literacy, mental status/attention testing (serial3’s), reaction time, backward gait speed, communication and freezing of gait. However, there were no differences between groups on performance of PD Health related quality of life, forward gait speed, executive function tests, endurance (6 minute walk test), mobility or motor-cognition. DM may be a risk factor for PD and may impact cognitive, motor and psychosocial function in people with PD. Participants with PD-DM were shown to have more global and spatial cognitive impairment, greater motor symptoms, less mental quality of life and less life space.

Effects of Small Molecules Inhibitors Targeting Heterotrimeric Gai2 Protein in Prostate Cancer Cells
Janae Stiffend, Biology, Sophomore
Faculty Mentors: Shafiq Khan, Ph.D.
Silvia Caggia, Ph.D.
Clark Atlanta University

Abstract: Heterotrimeric G-proteins are ubiquitously expressed in cells, and they transduce signals from activated G-protein coupled receptors. In its inactive state, the heterotrimeric G-protein complex is composed of three subunits: Gα, Gβ, and Gγ, which are located at the plasma membrane with the Gα subunit bound to GDP. Upon GPCR activation, the complex undergoes a conformational change, which causes both the dissociation of Gα from the Gβγ subunits and the activation of Gα subunit by exchanging its GDP for GTP. It is well known that these proteins are differentially expressed in cancer, thereby activating signals that lead to different biological functions such as proliferation and cell motility. Tumor cell motility or cell migration is induced by the activation of several receptors, including receptor tyrosine kinases (RTKs) and G-protein coupled receptors (GPCRs). Previously, we have shown that Gai2 protein is essential for cell migration and invasion in prostate cancer cell lines, and its action is downstream of PI3-kinase/Rac1 activation. In this study, we tested new small molecule inhibitors capable of preventing the activation of the α subunit. To determine the effects of the inhibitor on Gai2 activation, we pretreated PC3 cells with compound #14 and then stimulated with cAMP. Western blot analysis for phosphorylated cyclic AMP response element-binding protein (CREB) showed an increase in the amount of p-CREB in PC3 treated with Gai2 inhibitor, compared to the control. To determine the effects of the Gai2 inhibitor on cell motility of prostate cancer cells, cell migration assay was performed. We observed that compound #14 at 10 μM, caused inhibition of migration in prostate cancer cells in response to EGF treatments. We conclude that the small molecule inhibitor we used in this study is able to reduce the migratory capability of metastatic cells and may be used as novel anti-metastatic agents in prostate cancer therapy.
Exploring Prostate Cancer Treatments through Ciliogenesis
Gabria Monet Pearson, Health Sciences, Senior
Spelman College

Faculty Mentor: Triscia Hendrickson, Ph.D.

Morehouse College

Abstract: Prostate cancer is the second deadliest cancer among men. One of the hallmarks of cancer is uncontrolled cell division. During the time that a cell is actively dividing, it does not make a primary cilium; however, cells that are in G0 phase are not actively dividing and will grow primary cilia. The objective of this study is to force prostate cancer cells into G0 phase with media starvation and/or pharmaceutical agents. The hypothesis is that pharmaceutical drugs that induce ciliogenesis could be used to stop prostate cancer cells from dividing. Initially, the PC3 and HEK 293 cells were grown to confluency then split and placed into six well plates. 24h later, the cells were treated with Dexamethasone and or starvation for 48 hours then fixed in 2% paraformaldehyde in PHEM, followed by a 2-minute extraction with 0.1% Titration X- 100 in PHEM. Next, the cells were labeled with antibodies to ciliary proteins (α-tubulin or Arl13b), DAPI, and phalloidin then visualized using a Zeiss Axio Imager A2. Overall, cilia were observed in the following: HEK 293 cells in 10% serum + Dexamethasone and HEK 293 cells is in 1% serum. Few cilia were observed in HEK 293 cells in 10% serum only, and PC3 cells grown in 0.5% or 0% serum. No cilia were seen in HEK 293 cells 1% serum + dexamethasone or PC3 cells in 10% serum. In conclusion, these results establish that Dexamethasone can induce cells to grow cilia in a manner similar to the serum-starvation approach. The next step is to determine whether PC3 cells are able to produce cilia without starvation when treated with a ciliogenic drug, like Dexamethasone. If so, this could represent a new therapeutic modality, similar to brachytherapy, wherein Dexamethasone could be administered locally and prohibit tumor growth.

Factors that Affect Hartsfield-Jackson Airport Travel Mode
Travis Clark, Mathematics, Senior
Jasmine Johnson, Computer Science, Sophomore

Faculty Mentors: Torina Lewis, Ph.D.
Professor Emeline Renz

Clark Atlanta University

Abstract: Hartsfield-Jackson Atlanta International Airport (ATL) is the busiest airport in the world, with 107 million passengers flying through it in the last year. From retail shops to the best dining in and fast-food restaurants, all passenger needs can be met at the ATL. The airport experienced a 3.3% increase in passenger increase in the last year. This increase dramatically impacts airport operations and travel to the airport. In a survey, travelers report different modes of transportation to the ATL. This research focuses on predicting the mode of transportation travelers use to arrive at the ATL. We observe, age, time, day, to determine the best predictors of particular airport travel modes. By analyzing the relationship between transportation modes and other attributes, passengers will know what transportation type is best to ensure on-time arrival at the airport.
Fenugreek and its Effect on Multiple Myeloma Cell Viability
Troy Jones, *Biology*, Senior

**Faculty Mentor:** Jeffrey Handy, Ph.D.

Morehouse College

*Abstract:* Multiple Myeloma is known as an incurable cancer of the bone marrow that also compromises the immune system. Fenugreek is a plant native to the Mediterranean region known for its many human health benefits, this study focusing on its anti-neoplastic properties, specifically. This investigative project seeks to produce a naturally viable extract that decreases cancer cell viability exclusively. We hypothesize Multiple Myeloma cell viability decrease after 24-hour exposure to extract.

Growth on Neurospora Band Strain MFNC9 on D-Xylose
Destine Jones, *Biology*, Junior

**Faculty Mentor:** David Logan, Ph.D.

Clark Atlanta University

*Abstract:* Neurospora band strand MFNC9 (a 10^7 cells/ml) consumes 0.1% glucose in the time frame of 3 to 6 hours in 60ml. The purpose of this experiment is to find a source of “food” for the MFNC9 cells that will take longer to consume to preserve the clock functioning. The targeted hours we would like to choose would be closer to 22 hours. Giving the Neurospora band strand MFNC9 a poorer carbon source and a poorer nitrogen source will slow growth in order to make it easier to observe the synchronization of the circadian rhythms. Using growth tubes, we grew replicas of the named carbon sources in the Fig. 1 for seven consecutive days, marking the tubes every 24 hours when the circadian conidiation is observed to be present. Measuring both tubes with a “normal” nitrogen source and a lower nitrogen source. In doing so we were able to measure the growth (in mm) per 24 hours of the cells as well as detect clear bands indicative of the clock. We also ran a luminometer experiment in each named source in the table to make sure the cells were still fluorescent on a macro scale, where we used 5 x 10^7 cells. In the same context we used a microfluidics device to look at the fluorescent marker MFNC9 on a single cell scale and proving that the MFNC9 cells are still oscillating. In doing so we found that as you lower the concentration of Xylose you are able to get clear bands and the cells still show signs of oscillating and fluorescence. The growth tubes were able to show the circadian clock was in fact working in the MFNC9 band strand as well as being able to detect the average growth rate and he period by regression. The tubes were able to show that the clock was robust with any carbon source.

Identifying the Role of GAD2 Cells in Sleep Homeostasis Using a Mouse Model of Angelman’s Syndrome
Taj'Zhere Dillard, *Psychology*, Junior

Clark Atlanta University

**Faculty Mentors:** Daniel Hummer, Ph.D.
Jason Debruyne, Ph.D.
Christopher Elen, Ph.D.

Morehouse School of Medicine

*Abstract:* Angelman Syndrome is a rare developmental disorder caused by a loss of expression of the maternal copy of the Ube3a gene (Kishino, Lalande, Wagstaff, 1997). One of the most significant symptoms of Angelman Syndrome is severely disrupted sleep. A mouse model of Angelman Syndrome using genetic knockouts of the maternal Ube3a allele, showed that Ube3a
acts as a regulator of sleep homeostasis (Ehlen et al., 2015). The loss of expression of the maternal Ube3a allele in the brain resulted in a disruption of sleep homeostasis (Ehlen et al., 2015). There is a substantial amount of research pointing to GABAergic cells and their involvement with the homeostatic process of sleep regulation (Siegal, 2004). This study aimed to identify the role of GABAergic cells in sleep homeostasis using genetic knockouts of the maternal copy of the Ube3a allele in GABA cells. We hypothesized that the loss of the maternal copy of the Ube3a allele in GABA cells will result in a disruption of sleep homeostasis. This experiment was conducted using the Cre/lox breeding system. Male mice who are homozygous for the Gad2 Cre transgene were mated with females who are heterozygous for LoxP-flanked Ube3a alleles. Adult mice with both the LoxP flanked Ube3a allele and the Gad2 cre allele were placed in cages containing running wheels and monitored on a 12:12 light-dark cycle. EEG recordings from those mice were recorded throughout a 24 hour baseline period, 6 hours of sleep deprivation, and an 18 hour recovery period. Preliminary data suggested that Gad2 mice show a longer mid-afternoon rest (i.e., “siesta”) period than wild-type mice. These data are consistent with an increase, rather than the anticipated decrease in sleep pressure. This result must be confirmed through analysis of the EEG data. These data are consistent with the hypothesis that GABAergic neurons play an important, albeit somewhat unexpected role in sleep homeostasis.

The Impact of Video Games on Real World Behavior

Austin Euler, Cybersecurity, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Video games have transcended from their origins in arcades to being able to connect with every single person, no matter what device you are on. They have taken over the reigns of the old school way of children growing up by playing outside with their friends, to now connecting with each other through multiplayer games or passing the time for themselves. To be so intertwined and influential with childhood and young adult life growth, there have been pushes from the government to limit the violence in video games. With the increase of mass shootings in recent years being linked to young adults, there is some speculation that the types of video games kids are playing now have a part to play.

The purpose of this research project is to inform the reader on what video games are and to explore the arguments against the popular violent video games of today while providing examples and studies to support or debunk these claims. One example of mass deadly incidents where the suspect was linked to playing violent video games is the shooting in Washington D.C in 2013, while another example of opposition is that of President Trump recently suggesting that video games are partly a cause for these mass shootings. The final example is the release of Modern Warfare in late 2019, with mixed reviews because of its gritty interpretation of modern conflicts.

Recent studies from the likes of Oxford and Pew Research indicate that a large majority of Americans play video games, but there is little data that suggests that video games influence violence in real life. Although this suggests that video games have little to no fault, their impact on society is still great because of its role as another form of media, easily accessible to all ages.
Improving Biometric Technology
Kezia Cook, *Cybersecurity*, Freshman
**Faculty Mentor:** Professor Mia Moore
Clark Atlanta University

*Abstract:* As the world continues to progress and evolve, so does the technology. Society has raised its awareness of biometrics and has been widely accepted. However, the increased use of technology has also allowed for more vulnerable situations that are caused by hackers. Document fraud, identity theft, terrorism, and cybercrime are examples of the many vulnerabilities that are created once people begin to rely heavily on technology. Biometrics allow the user to secure personal and valuable information by applying physical and behavioral characteristics for protection. Furthermore, biometrics is the science of analyzing traits that are specific to one person to authenticate their identity. Behavioral biometrics fall into the category of voice recognition, signature dynamics, gestures etc. Physiological characteristics are also applied to biometrics which involves fingerprints, vein pattern, the eyes, and more. While physiological traits are a huge factor to biometrics, not everyone has the advantage of using them. Original biometric identifiers like fingerprints and the like can be rendered invalid once the user is affected by events that occur in life. For example, physical labor, diseases, and accidents may leave someone to be unrecognizable to their original behavioral characteristic. This can lead to problems with quick and easy identification methods that are slowly starting to integrate themselves into daily life. These biometric technologies have been found in voting polls, hospitals, and even classrooms. With this issue unresolved, biometrics will be excluding a vast number of people who have changed drastically in their appearance due to harmful circumstances. The future of biometrics, that will hopefully solve this disadvantage, is found in sensors. There are specific sensors that detect one’s skin texture pattern and can also tell the pattern of hairless and hairy on one’s body that will make it hard to replicate. With everyone having unique types of textures, it will be a great substitute for those who may not have the other behavioral characteristics to use. By researching other sensors and its possible solutions, biometrics will be accessible to more diverse groups of people.

KEY WORDS: Biometrics, Physiological characteristics, Behavioral characteristics, Cybercrime, Sensors

The Increased Health Risks Associated with Being A Person of Color
Oluwatoyin Ogunleye, *Biology*, Junior
**Faculty Mentor:** Nathan Bowen, Ph.D.
Clark Atlanta University

*Abstract:* Most of the deadliest and common diseases strike black Americans harder and more often than they do to white Americans, or any other race for that matter. Despite lower tobacco exposure, black men are 50% more likely than white men to get lung cancer. Blacks develop high blood pressure earlier in life -- and with much higher blood pressure levels -- than whites. Nearly 42% of black men and more than 45% of black women aged 20 and older have high blood pressure. Cancer treatment is equally successful for all races. Yet black men have a 40% higher cancer death rate than white men. African American women have a 20% higher cancer death rate than white women. Black Americans have more asthma than any racial or ethnic group in America. And blacks are 3 times more likely to die of asthma than whites. Black American men are 50% more likely to get lung cancer than white American men. Genes definitely play a role. So does the environment in which people live, socioeconomic status -- and, yes, racism, says Clyde W. Yancy, MD, associate dean of clinical affairs and medical director for heart
failure/transplantation at the University of Texas Southwestern Medical Center. The way to fight back is through genetic research. It means improving health education and overcoming disparities with the health care system. It means making a true investment targeted to the health of Black Americans. Through genetic research, this can be done. Through document research, it is intended to not just create awareness on how to lower the statistics, but be able to see a brighter future in the black race through genetic research.

**Mobile Security Threats**
Alik Shelton, *Cybersecurity*, Sophomore

**Faculty Mentor**: Professor Mia Moore
Clark Atlanta University

*Abstract*: My project is about Mobile Security threats, and how it can turn your whole life upside down with the information that can be hacked. Mobile security threats can happen on any phone, laptop, ipad, and apple device. Hacks can happen from clicking on the wrong email or even going to a bad website. Also even connecting to a hacked wifi hotspot could give attackers access to your information. Nowadays a lot of people keep their personal information on their phones, or other mobile devices. A lot of the information that is popular to take is mobile banking, email passwords, and even credit information. Phishing is in computing, SMS phishing or smishing is a form of criminal activity using social engineering techniques. Phishing is the act of attempting to acquire personal information such as passwords and details by masquerading as a trustworthy entity in an electronic communication. On mobile devices, phishing scams are taking the form of SMS or text messages that trick users into revealing details, such as passwords. Known as SMiShing, this involves users receiving a message that urges them to call a phone number. When the user calls, data on the phone is easily extracted. Spyware may also reset the browser's homepage to open to an ad every time or redirect web searches and control the provided results, making the search engine useless. Additionally, spyware can change the computer's dynamically link libraries (DLLs) -- which are used to connect to the internet -- resulting in connectivity failures that can be hard to diagnose.

**Mobile Threats**
Markezz Johnson, *Computer Science*, Freshman

**Faculty Mentor**: Professor Mia Moore
Clark Atlanta University

*Abstract*: “Mobile Security Threats” is a topic that is extremely important for nearly everyone to know. Almost everyone in today’s age has a mobile device that they use regularly, which means that everyone is at some type of risk for the Mobile Security Threats that are out there. The impact that it has on society is both positive and negative. The positive side is that it gives people better insight on how to protect themselves from it. The negative side is that it puts people at risk for identity theft and other things. In the research project presented, I have explained a couple of things. One thing being the importance of knowing about these threats. The reason why is to be able to protect yourself from them. To prevent yourself from being put through pure chaos in the long run. I gave definitions of what they are as well. A mobile security threat is everything from mobile forms of malware and spyware to the potential for unauthorized access to a device's data, particularly in the case of accidental loss or theft of the device. This includes both physical and software-based threats that can compromise the data on mobile devices. Another reason is so you can have knowledge as to how to read them. Basically, how to determine if it is a
threat or not. In addition to the importance, I identified the different types of mobile security threats in this project as well. To name a few: Data Leakage, Unsecured Wi-Fi, Network Spoofing, Phishing Attacks, Spyware, and Broken Cryptography are all different types of threats. Along with this information, I provided numerous sources to backup my information presented. I also explained how it is related to the idea of computer technology. It relates to computer technology, because the same forms of hacking used to hack desktops, and computers are used to hack for mobile security threats.

PI3K-C2α as a Biomarker for Sensitivity to Paclitaxel in Pancreatic Cancer
Iyani Kelly, Biology, Senior

Faculty Mentor: Godwin Ananaba, Ph.D.
Clark Atlanta University

Abstract: Pancreatic cancer affects men and women equally, and the one-year survival rate for pancreatic cancer patients is 20%, and the five-year rate is 7%. These low survival rates are due to pancreatic cancer cells being able to undergo cell division quickly and become malignant in other areas of the body well before diagnosis. Treatments for pancreatic cancer include surgery, chemotherapy and radiation therapy; however, current chemotherapeutic drugs have proven to be inefficacious in reducing tumor growth. Recent research reveals a kinase-independent scaffolding function of PI3K-C2α that affects mitotic spindle formation. These results complement previous studies showing that low levels of PI3K-C2α results in increased sensitivity to taxanes. Paclitaxel is a taxane that inhibits spindle stability in the cell and results in cell death. Although lacking specificity to cancer cells, Paclitaxel is predicted to be an effective cell cycle specific chemotherapy drug for pancreatic cancer patients with low levels of PI3K-C2α. The goal of our study was to determine if PI3K-C2α expression could serve as a predictor of pancreatic cancer sensitivity to Paclitaxel. We performed a growth curve inhibition assay where Paclitaxel was applied to cancer cell lines with low expression of PI3K-C2α (i.e., HPAC), high expression of PI3K-C2α, (i.e., PANC1), and intermediate expression of PI3K-C2α (BXPC3 and SW1990). After a 96-hour incubation, a CellTiter-Glo luminescent assay was performed to detect cell viability. Our results indicate that pancreatic cancer cell lines with lower expression of PI3K-C2α were less viable than cell lines with higher expression of PI3K-C2α after being treated with Paclitaxel. However, further studies will examine if these findings hold true in resistant clones, protein downregulation, organoids and/or mouse in vivo models prior to moving forward to clinical trials.

Preparation and Characterization of Poly-hydroxybutyrate (PHB)/High Lignin Cellulose Nanocrystals (HL-CNC) by High Torque Melt Mixing
Steven Mcneil, Chemistry, Junior

Faculty Mentors: Eric Mintz, Ph.D.
Kareen Blue, Graduate Student
Clark Atlanta University

Abstract: We report the effect of high lignin coated cellulose nanocrystals (HL-CNCs) on the crystallization behavior and thermomechanical properties of poly-hydroxybutyrate (PBH). PHB/HL-CNCs nanocomposites prepared by high torque melting mixing. The crystallization and thermomechanical properties were investigated by differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). PHB/HL-CNCs composites showed an increase in percent crystallinity and storage modulus (G’) relative to the neat resin.
Preparation and Characterization of Poly(hydroxybutyrate) (PHB)/Poly(lactic acid) (PLA) Nanocomposites by High Torque Melt Mixing for Biomedical Application
Destani Jackson, Chemistry, Junior

Faculty Mentor: Eric Mintz, Ph.D.
Clark Atlanta University

Abstract: In recent years, the clinical potential for biodegradable polymers, such as poly(hydroxybutyrate) (PHB) and poly(lactic acid) (PLA), has increased in the field of biomedical engineering. PHB and PLA are both biocompatible polyesters with favorable physical and mechanical properties for biomedical applications. Previous studies have shown that the incorporation of lignin-coated cellulose nanocrystals (L-CNCs) in PHB nanocomposites led to the plasticization of PHB and improved mechanical properties of PLA. We have investigated the thermal and optical properties of various PLA/PHB blends and PLA/PHB/L-CNC nanocomposites. We have also prepared PLA/PHB/L-CNC nanocomposites incorporating maleic anhydride as a compatibilizing agent. The blends and nanocomposites were prepared by high torque melt mixing. The thermal properties were examined by differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). The optical properties were examined by polarized light optical microscopy.

Preparation of Nanocomposites Incorporating Cellulose Nanocrystals (CNCs) and Lignin in Poly(lactic acid) (PLA) by High Torque Melting Mixing and Characterization by Differential Scanning Calorimetry (DSC) and Optical Microscopy
Brandee D. Jones, Chemistry, Junior

Faculty Mentors: Eric Mintz, Ph.D.
Zakiya B. Barnes, Graduate Student
Clark Atlanta University

Abstract: Fossil fuels have been used to produce conventional plastics for decades; unfortunately, these non-sustainable plastics are detrimental because they contribute to the depletion of natural resources and are accumulating in the environment. Therefore, the use of plastic products derived from natural resources that are biodegradable has become increasingly necessary. An intimate mixture of cellulose nanocrystals (CNCs) and lignin prepared by the sulfuric acid hydrolysis of poplar (Populus deltoids) mesh were incorporated in poly(lactic acid) (PLA) by high torque melting mixing. The excellent dispersion of cellulose nanocrystals in the PLA matrix was obtained with the use of the lignin as a compatibilizer. To examine the behavior of lignin/CNCs in PLA, three different lignin to cellulose ratios (30:70, 13:87 and 6:94) were examined; holding the total lignin content at 0.09 wt.%. Melt mixing was carried out using a Haake Rheocord 90 melt mixer and the new nanocomposites were compression molded into panels using a Wabash G30H-15-CPX, and then quenched. These PLA/lignin/CNCs nanocomposites under gone rapid and slow quenching were characterized by differential scanning calorimetry (DSC) and optical microscopy.
Properties of Square Functions
Elana Edusei, *Applied Mathematics*, Junior

**Faculty Mentor:** Torina Lewis, Ph.D.
Clark Atlanta University

*Abstract:* A unit circle is a circle of radius one centered at the origin (0, 0) with radius, r. When given a polygon inscribed inside of a unit circle, with vertices that satisfy the equation $z^n=1$, we can derive the necessary information for obtaining the polygon functions. Suppose a square is inscribed inside of a unit circle, with vertices satisfying $z^4=1$ along with techniques from the classical circular functions the square functions are derived. The goal of this research is to determine the square sine, square cosine, and square dinge functions. Additionally, we state and prove the sum formula for the sine square function. Proving this result provides additional theoretic content that solidifies the polygon functions as a class of periodic functions described by the work of Lewis and Mickens.

Re-expression of JunD in JunD Knockout Cells Recovers Cell Proliferation in Prostate Cancer (PC3) Cells
Lexus Hardeman, *Biology*, Junior

**Faculty Mentor:** Ana Cecilia Millena, Ph.D.
Clark Atlanta University

*Abstract:* JunD is a member of the AP-1 family of transcription factors. The present study showed the role of JunD in prostate cancer (PCa) in cell proliferation. In this study, we knocked out JunD by CRISPR/Cas 9 and showed significant decrease in cell proliferation and cell death by controlling the expression of cell cycle mechanisms. Throughout the duration of my research, we confirmed this new finding by re-expressing JunD in PC3 cells and recovered its capability to proliferate. Western blot analyses were completed to confirm the knock-out and re-expression of JunD. Parallel studies were made to determine the effect of JunD on proliferation of PC3 cells.

Role of JunD in Ovarian Cancer Cells: Preliminary Results
Felicia White, *Biology*, Senior

**Faculty Mentors:** Shafiq Khan, Ph.D.
Ana Cecilia Millena, Ph.D.
John Davis, Ph.D.
Clark Atlanta University

*Abstract:* JunD, a member of the AP-1 transcription factor family, is involved in a variety of biological processes including cell proliferation, inflammation, differentiation, apoptosis, and carcinogenesis. Our recent studies show that JunD is essential for cell proliferation in prostate (PCa) cancer cells, while other Jun family members play little, if any, role in induction of cell proliferation in these cells. We also demonstrated that specific knock-down (KD) of JunD in PCa cells resulted in cell cycle arrest in G1-phase concomitant with a decrease in the levels of Id1, c-MYC, and Ki67, but an increased in p21 protein levels. In this study, we investigated the role of JunD in ovarian cancer cell proliferation, focusing on SK0V3 and CA0V3 cell lines. Cells were cultured in recommended media as described previously. Small interfering RNAs for JunD were transfected in SK0V3 and CA0V3 cells to knockdown JunD expression. Cell growth assays were performed by manually counting the cells using Nexcelcom’s Cellometer Vision. Selective knockdown of JunD expression resulted in significant reduction in cell proliferation in SK0V3 cells but not in CA0V3. Interestingly, we observed that CA0V3 cell line has high level of basal e-
MYC and PRDX3 which may suggest its resistance to exogenous JunD silencing. We plan to extend this study to additional ovarian cancer models to have a better understanding of JunD’s role in ovarian cancer cell proliferation. ACKNOWLEDGEMENT: These studies were supported by the NIH/NIMHD/RCMI grant#2G12RR003062 and NIH/NIMHD P20 grant #5P20MD002285

Self-Driving Cars - Should Self-driving Cars be Trusted or Not?
Gabrielle Knowles, Computer Science, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: My presentation presents the upcoming fully automated self-driving cars making an outbreak throughout the world. Self-driving cars will be being used by most of the world in at least a decade or less. Making this invention very important because what will be the effects of it be in different industries globally. It is very important to understand self-driving cars and what it could do for the world. Throughout my presentation, it discusses the background of these cars and the pros and cons all through an unbiased view. Many don’t know that we have only touched the surface of a fully automated self-driving car. A fully self-automated car will not need the help of human input in certain situations and will be able to drive and be able to respond in every capable situation. These cars will use sensors and software to detect the environment and understand what outputs are needed to drive. This car is going to be very complex and researchers are looking at the pros and cons of various possibilities of self-driving cars. The creators of self-driving cars have to take everything into account to make these cars. These cars will be equipped with a lot of safety equipment and will not be able to be distracted. Yet humans are questioning if they feel safer and if most don’t, what happens for the future of these cars? It all narrows down to how precise these cars are made and if humans will trust their life with it. Looking into also how it will affect society is a very huge discussion. One way these cars will affect society is through the economy because most people's jobs depend on automobiles. So then when cars can drive on their own, drivers will go out of jobs and could possibly create a financial crisis. Then the environment will be affected, like will there be more energy used or less than people driving their cars on their own? All in all, self-driving cars will be here soon, but will it have a positive or negative effect? KEYWORDS: Self-driving cars, Fully automated cars, Technology, Car, Energy use, Future technology

Self-Driving Vehicles
Keneddie Sanders, Computer Science, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Self-Driving Vehicles are so important because really every company is working its way into making self-driving vehicles. Self-Driving cars are poised to revolutionize the transportation industry. As of 2019, there are already newer cars that have Automated features, they allow you to Self-park, even stops when they detect a collision happening. The automated driving systems are eventually going to have some huge changes and great opportunities. They have different levels of Automated vehicles already as of today, level 0 being full human control to level 5 being fully autonomous. Two of the most talked about companies that operate or have advancements come from Google and the company Tesla. The three technologies they use are sensors, connectivity, and software/control allowing the Self-Driving vehicle to operate. This vehicle is going to have a huge impact on our future allowing people to drive the Automated cars, will most likely lower the rate of accidents that occur out the year, Energy costs will also be saved
as these autonomous vehicles maximize driving efficiency and reduce traffic congestion. The move from a human driving a car to a car driving itself is likely to have a wonderful impact on our lives and society. By 2040 there should be over 1 billion self automated vehicles on the roads, could possibly even be doubled by the time 2040 comes around. The number of companies working on the self-driving cars are already increasing rapidly and is drawing the involvement into different companies such as Google, Apple, automated companies such as BMW. Next thing you know the next invention will be the self-driving vehicles being able to fly to your destination that would be amazing!

**Serum Deprivation Induces Quiescence to Manage Oxidative Stress in Prostate Cancer Cells**
Erica Nash, *Biology*, Sophomore  
*Faculty Mentor:* Cimona Hinton, Ph.D.  
Clark Atlanta University  
*Abstract:* Chemotherapy is a treatment aimed to terminate the cell cycle disabling cancer cells to continue to grow. In order for these cells to be targeted they must be actively progressing through the cell cycle. Cellular quiescence or inactive cells have been believed to be the reason that cancer cells are able to resist chemotherapy. This experiment will show how serum deprived cells can induce quiescence to manage oxidative stress. Depletion of growth factors (serum deprivation) stimulation may occur in situations such as metastasis when cancer cells encounter a poorly vascularized environment. An angiogenesis inhibitor treatment is used to reduce blood supply to the tumor in which the central part is deprived of adequate nutrient supply. In prostate cancer cells such as DU145 and PC3, which were used in this experiment, treatments including FBS, H₂O₂, NAC, and TNF-α were used to compare the effects of quiescence of serum starved cells. These treated cells were plated and Immunocytochemistry/Immunofluorescence (ICC/IF) was utilized in order to identify quiescent cells. p27Kip1 was used as a marker of quiescence. Results indicated.

**Smart Farming Technologies**
Anaya Baker, *Dual Degree Engineering*, Freshman  
*Faculty Mentor:* Professor Mia Moore  
Clark Atlanta University  
*Abstract:* Smart farming is an emerging concept that refers to managing farms using modern information and communication technologies to increase the number of products while optimizing the human labor required. Instead of doing everything by hand using smart farming technology allows you to increase the quantity and the quality of products while optimizing the human labor required for production on the farm. Using smart farming will not only increase the time it takes to farm but will help increase the shipment time. I plan on using IoT to connect all devices for all machines to produce what needs to be made on time. Using IoT to do this will not only improve the effectiveness but also saves energy as you use it. Also, Using IoT in the process of doing smart farming is a relation to computer technology advancements because the use of IoT is growing rapidly as everything wants to be done via the internet. I plan on creating a poster that will display sketches and designs of a mini-computer that will control all of the machines and equipment such as tractors, crop sprayers and combine harvesters to do the work a human would do but from the touch of a button. My poster will also display the definitions of what IoT is and examples of smart technology. I plan on explaining the poster with some background history on
smart farming and just the history of farming itself and how it will benefit the effectiveness but will also distribute the product faster to get more money for the seller. Overall, smart farming will continue to grow and make human workers do less work when it comes to farming and also save energy and increase effectiveness. It will not only benefit the seller but the people or organizations who need to buy the product.

Keywords: Farming, Smart Technology, Agricultural Machinery, Distributor, Seller, Product, Buyer

Social Engineering
Ruler Ward, Computer Science, Freshman
Faculty Mentor: Professor Mia Moore
Clark Atlanta University

Abstract: Phishing, Whaling, watering hole protecting these are some common types of social engineering. Social engineering is the deception of individuals with the intent of getting personal information for fraudulent purposes. This is a broad term it covers most malicious programs and tells you their purpose phishing is when the hacker tries to gain access to files by targeting your phone, computer through email and text message the most common way is through them posing as a legitimate trustworthy institution check with the institute before you release any permissions to things through emails.

The term whaling refers to a similar thing except the target when whaling are giant companies such as Banks and distribution companies such as amazon Sony or anything worth billions. Watering hole attacks are interesting this is where an attacker watches what sites a person visits and infects that site as to when the computer that’s targeted visits the site it is exposed to the malware and the hacker then has access to the computer and if this is a company computer that is connected to the companies data this is very bad and it now makes sense when the companies say that the computers aren’t for personal use and to stay off of personal sites and now I see why that is a rule and is so important back in 2013 the U.S Department of Labor was attacked with a watering hole attack the attack was directed at the occupational illness compensation act those seeking compensation and help will fill out a claim on their site but the data you thought was being sent to the government was actually being stolen by criminals the virus used was called Poison Ivy RAT ways to avoid this is to look for the lock that will be displayed at the top left inside of your search bar if it glows green and has a check the site is definitely secure if you click that lock it should take you to the websites certification. Key Words: Phishing, Watering Hole, Malware, Fraudulent.

Synergistic Effects of Potassium Dimethyl 5-sulphonatoisophthalate (LAK-301) and Lignin Coated Cellulose Nanocrystals (LCNCS) on the Nucleation and Crystallization of Poly (lactic acid) (PLA)
Charles Finch, Chemistry, Junior
Faculty Mentor: Rasaan Ford, Graduate Student
Clark Atlanta University

Abstract: Current plastics are based plastics that have a very low rate of degradation. As such, more bio-based polymers, like PLA (polylactic acid), have been sought after. Previous research has shown that the use of LCNC's (lignin coated cellulose nano-crystals) in PLA have improved the characteristics of PLA. It has also been found to increase the crystallinity of NatureWorks 2500HP PLA. A synergistic affect from the addition of both LAK-301 and LCNCS's
The Thermomechanical and Rheological Properties of Poly(lactic acid) (PLA)/Poly(hydroxybutyrate) (PHB)/Lignin-Coated Cellulose Nanocrystals (L-CNCs) Nanocomposites Prepared by High Torque Melt Mixing

Janelle Raymond, Chemistry, Junior
Destani Jackson, Chemistry, Junior

Faculty Mentors: Eric Mintz, Ph.D.
Asya Tucker, Graduate Student

Clark Atlanta University

Abstract: Poly(lactic acid) (PLA)/Poly(hydroxybutyrate) (PHB) blends have previously been studied as environmentally friendly options to replace petroleum-based plastics for certain applications. PLA degrades at a much slower rate in the environment than PHB, while PLA’s mechanical properties are more similar to currently used commodity polymers than PHB. PLA and PHB are both semi-crystalline polyester thermoplastics which can be mixed in the melt phase. Blending is an economical way of producing materials with varied properties. Previously, we have found that incorporation of lignin-coated cellulose nanocrystals (L-CNCs) in various grades of PLA by melt mixing leads to nanocomposites with improved mechanical properties relative to neat PLA. In addition, L-CNCs act as a nucleating agent for both PLA and PHB. Thus, we have prepared a 100% bio-based, PLA/PHB/L-CNC nanocomposites at a 50:50 and 70:30 PLA:PHB blend ratio and a range of L-CNC weight loadings by high torque melt mixing. The thermomechanical and rheological properties of these new nanocomposites will be described.

Three Metal Organic Frameworks as a Drug Delivery System for Flurbiprofen

Paris Grady, Biology, Junior

Faculty Mentor: Conrad Ingram, Ph.D.

Clark Atlanta University

Abstract: Metal organic frameworks (MOFs) are crystalline structures synthesized by mixing a metal ion with an organic ligand in a suitable solvent. MOFs have a variety of applications due to their high porosity. One application includes using MOFs as a drug delivery system for medications that are insoluble in the body. Flurbiprofen (FBP) is one drug used as an anti-inflammatory in the body, and it is insoluble in aqueous solutions. Therefore, there is a need to synthesize a new delivery system for FBP. Three metal-organic frameworks (MOFs), Fe-MIL-101, Fe-MIL-53, and Co-MOF-74, will be synthesized by solvothermal method. The structure of the MOFs will be characterized by X-Ray diffraction (XRD), Nuclear Magnetic Resonance (NMR) and Fourier transform infrared (FTIR) spectroscopy will also be utilized to characterize the MOF’s molecular composition and functional groups. Nitrogen adsorption-desorption isotherms will also help to understand the pore size, surface area, and the volume of each of the three MOFs. In order to investigate adsorption of MOF with FBP, thermogravimetric analysis (TGA), the scanning electron microscope (SEM) and ultraviolet spectroscopy (UV) will be used. TGA will allow the calculation of the amount of drug that is loaded within the MOF and its release profile will be recorded in a buffer at two different pHs. The MOFs molecular morphology will be examined
utilizing the scanning electron microscope (SEM). Lastly, (UV) will allow for analysis of the drug releasing profile.

**Uber Technology**

Tierra Jackson, *Computer Science*, Freshman  
**Faculty Mentor:** Professor Mia Moore  
Clark Atlanta University

*Abstract:* I decided to focus my research on Uber Technologies, Inc. The San Francisco based company is typically known for its ridesharing services but has become very popular for its other services. Uber started off as an American ridesharing company operating through an application that uses technology to offer jobs to low-skilled workers who may have little to no access to other jobs, and as a result, it makes labor cheap. Serving as sort of a platform for all types of ride-sharing, the app has grown tremendously. The company has transformed from being just that to becoming the most used food delivery, motor scooters, and ride-hailing service worldwide with more than half a million users on a monthly basis. In the short time that it has been in business, the company has gained so much respect in the technological world and the job market. Although Uber is most known for its transportation services, they have a lot more to offer to its users. Leading the industry in cutting edge research and ultramodern technology, the company introduced its new technology teams and the projects they had in store. Uber Advanced Technologies Group (ATG) is responsible for the development and commercialization of autonomous vehicle and ridesharing technologies, as well as Uber Elevate, which is the all-encompassing term for its initiative to launch uberAIR, the aerial electric services. With the help of its stunning technology, Uber released its self-driving car project. Even while wishing to keep this product a surprise to the community, Uber still managed to be very transparent with the technology around it. After the release of the self-driving car, the company planned to introduce a new product. This past year, Uber worked on drones that would be apart of its preexisting food delivery service. They had plans to actually release the drone this summer until they faced some legal problems with it. Uber has worked vigorously to make every model function at its best, but the company still deals with technical difficulties and failures with new products. I wanted to focus on this side of Uber Technology because this is the technology that will really impact the job market. This new technology will completely change the way we not only transport but how we connect with the world while doing it.  

**KEY WORDS:** Uber Technology, Autonomous vehicles, Unmanned aerial vehicle, Ridesharing

**Using Open Source Intelligence Techniques**

Justin Williams, *Computer Science*, Senior  
**Faculty Mentor:** Roy George, Ph.D.  
Clark Atlanta University

*Abstract:* The FBI, CIA, NSA, and plenty of other three letter agencies work to gather intelligence about terrorists, human traffickers, thieves, foreign nationals, and many other individuals. Some of the techniques and tools that these agencies use have been made open sourced; which means they are available to everyday users. These techniques may range from scraping Twitter, Instagram, or Facebook to gather information about a target to crawling the dark web looking for potential threats. As for implementation, the development was done in Python and makes use of numerous APIs along with a technique called web scraping. This project is a proof-of-concept about a general purpose tool that can be used by any individual to gather intelligence
about a subject on a much lower threat-model. For example, instead of searching for a human trafficker, an everyday user can use these techniques to research his or her airbnb’s host or locate a distant family member. There are many starting points from which data can be gathered; as a result this product requires user interaction and is not automated.

ZIC2 Regulates Oxidative Phosphorylation in Human Embryonic Cells
Jada McCall, Biology, Senior

Faculty Mentor: Nathan Bowen, Ph.D.
Clark Atlanta University

Abstract: A cell line derived from immortalized human embryonic kidney tissue (HEK293T) expresses Zic family member 2 (ZIC2), a known embryonic stem (ES) cell transcription factor. ZIC2 is expressed highest in adult cerebellum and testes cells and at lower levels in many other tissues. In order to investigate the function of ZIC2 in HEK293T derived cells, we created ZIC2 knock out (KO) cells using CRISPR-Cas9 gene editing. Loss of ZIC2 protein in these cells was confirmed by immunoblot analysis. The ZIC2-KO cells displayed significantly reduced proliferation rates. We performed RNA-sequencing on the ZIC2-KO cells in order to further explain how the loss of ZIC2 resulted in reduced proliferation. Here, we present our analysis of the RNA-Seq data indicating that genes involved in mitochondrial oxidative phosphorylation (OXPHOS) are increased in ZIC2-KO cells. Extracellular flux analysis, which measures oxygen consumption and lactate production, indicators of glycolysis and OXPHOS, revealed higher OXPHOS activity in ZIC2-KO cells when compared to the parental HEK293T cells. We also performed an integrated analysis of experimentally identified ZIC2 genomic binding sites in order to determine candidate direct transcriptional targets of ZIC2 in HEK293T cells. We present our results revealing the potential transcriptional targets of ZIC2 in HEK293T cells that regulate cell division and OXPHOS.
Am I Protected or Nah?: Examining Student Satisfaction with Public Safety on an HBCU Campus
Alisia Rios, Psychology, Senior
Douglas Green, Psychology, Senior
Mitroya Thibodeaux, Psychology, Junior

Faculty Mentor: Jimmy Davis, Ph.D.
Clark Atlanta University

Abstract: Campus police departments have a unique responsibility in college settings to provide security services that meet law enforcement and private security standards (Wilson and Wilson, 2011). Carrico (2016) reported that today’s colleges and universities are faced with many challenges in the attempt to provide a campus that is safe and secure. Despite the general crime reduction within the United States, Historically Black Colleges and Universities continue to have serious crime problems (The Journal of Blacks in Higher Education, 2003). Due to HBCUs being located in high crime rate areas, understanding issues of public safety at a college campus is critical to elements of retention and intent to stay. Colleges have the responsibility to ensure the safety of all students who attend. Although safety measures and campus security have increased, the overall satisfaction still seeks improvement for the safety of the students. The purpose of this longitudinal study is to examine the perceptions of public safety officer qualifications and student satisfaction on campus and how they have changed or stayed the same. Researchers hypothesized that students don’t feel like public safety officers are adequately trained, and as a result, female students feel as though public safety officers are less trained as opposed to male students. The hypothesis will examine how visible public safety officers are to college students and if the visibility results have changed. Data collection included a multi-question survey that was provided to students from all majors, classifications, and ethnic backgrounds. Surveys were distributed amongst all classifications. Researchers went to several heavily populated classrooms, more specifically those courses that are mandated for all students to complete. A total of 730 students that participated in this study, participants ages ranged from 18-30. Participants completed a survey to gauge satisfaction with several aspects of the university of which a subset of questions targeting public safety. Descriptive statistics will be used to examine the hypothesis. The results of this study will be used to aid universities in understanding perceptions of public safety.

American Lynching and the Lasting Impressions on the Modern Day African American Community
La'Tessa S. Stanton, Criminal Justice, Junior

Faculty Mentor: Professor Elycia S. Daniel-Roberson
Clark Atlanta University

Abstract: Why has the African American community continuously faced an endless cycle of physical, emotional, and psychological suffering since slavery? The history of lynching that took place on American soil caused fear, trauma, separations, and insecurities within the African American community. To understand “the why” aspect, we have to analyze “the what.” What is lynching and where did it come from? To begin this research discussion, I will examine The Willie
Lynch Letter: The Making of a Slave, as well as postcards of lynching. It is also important to discuss the aftermath of slavery, the birth of the Klan, and when lynching became illegal. My research will be based on the W.E.B. DuBois Double Consciousness Theory and Dr. DeGruy’s Post Traumatic Slave Syndrome Theory. There are a number of similarities between the techniques discussed in the Willie Lynch Letter that were used to control the enslaved African Americans that are mimicked in modern day. For example, this schism between dark skin versus light skin in the black community. That has somehow culturally resulted in us as a black community, to compare and not connect with each other. I will also share personal stories of victims and some lynching photography.

An Analysis of Male Student of Color Perceptions of Clark Atlanta University School of Education Prospective Teachers
Kwand Lang, Education, Sophomore
Rodney Howard, Education, Junior
Elizabeth Hinmon, Education, Senior
Faculty Mentor: Felicia Mayfield, Ed.D.
Clark Atlanta University
Abstract: The overall percentage of nonwhite teachers in the workforce is around 20%. The percentage of male teachers of color is less than 2% of the teaching population in the United States. At Clark Atlanta University, we find ourselves in the rich position of having more than 20% of our pipeline as men of color. By studying the perceptions and motivations of the CAU male future teachers, we may glean information that useful in making generalizations concerning support factors for male teachers of color recruitment and retention. A survey will be used to ascertain key factors that may be helpful in understanding motivational variables that led to CAU being higher than the national average in male teachers of color. Further, the survey may suggest faculty and staff behaviors that will be helpful in sustaining and retaining current favorable percentages. The study will attempt to explore the following questions: What factors led to the larger percentages at Clark Atlanta University? What can we learn from our current male teacher candidates with respect to motivation? How can this research provide insight to increase the teacher pipeline for men of color? What can be done to encourage retention of this population in the field of teaching?

An Ethnographic Focus on Family Dynamics in Ghana, West Africa versus the United States
Jalynn M. Stubbs, Psychology, Senior
Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University
Abstract: The purpose of this study to explore and describe the family dynamics in Ghana, West Africa in comparison to those of African Americans in the United States of America. Analyzing these culture sharing patterns is especially important in the context of the historically black institution of higher learning, where African and American cultures intersect. Both groups, Africans in Africa and African-Americans in the U.S., will benefit from this research because this will bridge gaps in knowledge, making us a citizen of the world. I was able to travel to Ghana and immerse myself into their culture and for that short period of time, I was able to observe the differences in family dynamics in America versus those in Ghana. My research explores family dynamics in three sectors: Daily life, education, marriage/childbearing. Many components make these three overarching sectors. This study is important in that it explores these differences based
on the lived experiences of the participants who are a part of each culture. In order to collect data, three focus groups were conducted among college students in both Ghana and the United States. Students who attended The University of Ghana, The University of Cape Coast, and students of the Atlanta University Center shared their lived experiences and their family dynamics. There were a total of 13 interview questions in order to explore daily life, education, roles/hierarchy, occupation, and marriage. All questions asked were open-ended, allowing the participants to discuss their experiences in detail. Atlas Ti revealed the following themes that arose from the analysis—meals, leisure activities, the value of education, attitudes toward premarital childbearing, and family roles among others. Validation strategies used are rich thick descriptions, reflexivity, and member checking. Understanding the daily lives and contexts of individuals in Ghana and in the U.S. has not been conducted systematically to date, and such an exploration is expected to help build a bridge of understanding and respect between the related cultures in addition to using best practices that will benefit the cultures mutually.

The Experience of Children Dealing with Mental Health Issues
Destiny Wade, Psychology, Senior
Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University

Abstract: The purpose of this qualitative study was to explore the experience of children dealing with generational mental health within their families, focusing specifically on teenagers at Clark Atlanta University. Past research has indicated that there has been little research on the experience of children in these situations and it is important to understand what the implications and long-term effects of dealing with family members with mental health issues. Participants were found by convinience sampling by putting up a flyer around the university interviewing the respondents, which was the data collection method. Reliability was established by rich thick descriptions and member checking. The results of this study can contribute to the field of child psychology by getting direct unbiased experiences from teenagers and to help decrease the stigma seeking in professional help and hopefully to help them identify the issues that follow dealing with the family member with mental health issues and help them healthy coping mechanisms to make a positive change for children in that situation and to follow them in their adult life.

An Exploration of Context Specific Affective Behaviors of Black Women
Dai’Trevian Murray, Psychology, Senior
Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University

Abstract: This study explored how black women express themselves in different settings. A qualitative study explored the lived experiences of 4 black women who held superior positions at their jobs. Past research on how black women expressed themselves indicated that black women are angry, loud, and aggressive. This study is unique because this exploration specifically focused on black women who held a higher administrative position at their jobs. This study answered the following research question: How do black women express themselves in a professional setting versus in a public setting? This phenomenological study included the use of stratified purposeful sampling to recruit participants. Participants were all black women who held high positions at their job such as a lead or a supervisor. Four black women were interviewed for this study. One lady was a supervisor, two women held a lead position, and one lady was a manager. Reliability was established by using rich thick descriptions and member checking. Results were coded into themes
based on the context--workplace, public place, and home setting. The findings indicated the way these women expressed themselves in the different contexts varied in terms of their ‘emotional expressions’. At work, the expression varied from showing that they were upset to showing no emotion at all. The participants felt more like themselves at home and were more likely to be more expressive when in this setting. In a public setting the participants emoted based on the type of environment that they were in. Understanding the emotional behaviors of women is important to prevent burnout and reduce distress. Thus, the results of this study can contribute to the field of organizational psychology to initiate positive change for women in the workplace.

An Exploration of the Psychosocial Behaviors of Ghanaian Males
David Triche, Psychology, Senior
Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University

Abstract: The purpose of this qualitative study was to explore and describe the experience of Ghanaian males and their psychosocial behaviors in the Ghanaian culture. Previous research in the South African and American culture reveals that in the 21st century, there are changes in the gender roles, as well as in the father figure involvement in the American culture (Lamb, 2000). In Africa however, the roles are traditionally gender specific (Lamb, 2000). The traditional family dynamics in comparison to the American dynamics may play a role in the ‘masculinity’ of the male child. Thus, the purpose of this study is to explore and describe the psychosocial behaviors of males in the Ghanaian culture, specifically, the role of a father/fatherhood figure in shaping the masculinity of the child, which has not been explored yet. Participants were 12 young adults (8 females 4 male). The data collection method included hosting focus groups at 2 universities in Ghana, Africa. One of the focus groups included 3 undergraduate students, a professor, and a local business owner in Accra, Ghana, While the second focus group included graduate students in Cape Coast, Ghana. Atlas Ti was used for the data analyses and the following themes were identified: Meaning of a father, relationships with fathers, domestic responsibilities, patriarchal hierarchy in society, meaning of masculinity, important male figures, and male interactions in society. There were differences between the responses of participants in the urban (Accra) and rural (Cape Coast) areas. Validation strategies included bracketing and rich thick descriptions. Implications of the results for future studies include further explorations of experiences from males in the global African diaspora. Such an exploration can be beneficial for introducing culturally relevant counseling and training as well as for developing a worldview about fatherhood across generations through the lens of an African American male. Keywords: male interactions, psychosocial behaviors, Ghana, patriarchal society

An Exploration of the Roles, Goals, and Social Interactions of Ghanaian Women
Raven Gilliam, Psychology, Senior
Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University

Abstract: This ethnography study sought to explore the lived experiences of Ghanaian women from urban and rural areas, and their roles in society. Research has revealed that Ghanaian women are on the rise of independence and higher education. Empirical data has identified the popular jobs among Ghanaian women in rural and urban areas as well as how much they value education. Research has also identified the careers which are and are not respected in Ghanaian
culture. This study took a unique glimpse into the lives of young Ghanaian college students’ and how aspirations and career goals for either gender is the same but differences exist in upbringing. Focus groups consisted of college students, ages 20-25. Native Ghanaian students from rural and urban area of Ghana. Research questions focused on the roles of Ghanaian women in society; specifically, their roles at home and work; their social relationships, specifically their interactions and friendships. Validation strategies include rich thick descriptions, member checking, and journaling. Atlas Ti was used for the data analyses and the following themes emerged; experiences of higher education, white collar jobs, feelings about financial stability, feelings and experiences about marriage and friendship, and the essence of independence. This exploration serves as a means to educate young African American women on the culture and values held so respectfully by Ghanaians which would be the land of many of our ancestors. This is an attempt to understand how Ghanaian women take on the challenge of laying a foundation for women to walk on while having to conform to what a male dominant society expects while still holding on to their own sense of power.

**Baby Come Back: Student's Ability to Return to their Institution**

Bhrea Turner, *Psychology*, Senior  
Shania K. Smith, *Psychology*, Junior  
Olivia M. Stewart, *Psychology*, Sophomore  

**Faculty Mentor**: Jimmy Davis, Ph.D.

Clark Atlanta University

*Abstract*: Within the core of any higher education institution, student satisfaction and retention are aspects that are looked over when reviewing an institution as a whole. While students remaining at an institution is important, there are a number of factors that can affect a student’s reasoning for staying at the respective school. In a study conducted in 2002, it examined some of the issues surrounding student retention in higher education. It was based on a case study involving a modern university in England that has good performance indicators of both widening participation (i.e. increasing the diversity of the student intake) and student retention. Furthermore, changes to student funding in the UK put greater financial pressures and stress on students, especially those from low-income groups. Nevertheless, many students cope with poverty, high levels of debt and significant burdens of paid work to successfully complete their courses of study (Thomas, 2002). Examining the engagement of a college campus can provide a unique insight into the dynamics that energize the student body to remain at an institution. An example would come from a study regarding retention being correlated with student’s success in high school, college, and university. These studies took place at Ohio State University and Clark School of Engineering. This study found that supportive staffs, focusing on students' individual and academic needs, and positive modeling, enhance student retention. (Mbuva, 2011). The purpose of this study is to examine student’s willingness to return to their institutions. The hypothesis of this study is that students are willing to give back more to their department than the university as a whole. The authors wish to examine whether intentions to stay or go are negatively affected by attending an HBCU in the southeast region America. Students reasons for leaving the institutions were narrowed down to finances, academic, housing, and personal issues. Descriptive statistics and overall perceptions of satisfaction at the university during a presidential transition will be reported.
Black American College Students and Factors that Lead to Avoidance of Current Sexually Deviant Behaviors
Jasmine Williams, Psychology, Senior

Faculty Mentor: Christopher Bass, Ph.D.
Clark Atlanta University

Abstract: The purpose of this study is to examine how sexuality is starting to be explored more in the public. Still, within the Black American community, it seems we are more conservative when it comes to sexual behavior. This study will use surveys from Black College students that will inspect their adverse childhood experiences to see if my hypothesis is correct: Black college students are not open to current sexually deviant behaviors based on their adverse childhood experiences. This study will answer the questions of why Black College students conform to the conservative aspects of sex, what adverse childhood experiences have they went through to make them conservative and why they may judge those that are not. The participants in my study are Black College students. The methods I followed were to conduct a survey that asked many questions about sex acts. Students were to choose if that act was “normal” or “not normal” based on how they felt about that act. I also gave an adverse childhood experiences survey to those same students to understand how early they were exposed to sex, the age when they started having sex, and if there were any indications of abuse. Both surveys combined will confirm my hypothesis that Black Americans have a conservative take on sexually deviant behaviors, but also answer why Black Americans stay away from these sexually deviant behaviors.
Keywords: Social Learning Theory, Adverse Childhood Experiences, Sexually Deviant, Black college students, Black Americans

Characteristics of a Cyber Victim
Shanice Blair, Psychology, Senior
Douglas Green, Psychology, Senior
Raven Gilliam, Psychology, Senior
Alisia Rios, Psychology, Senior
Destiny Wade, Psychology, Senior

Faculty Mentor: Medha Talpade, Ph.D.
Clark Atlanta University

Abstract: The cybersecurity business report (2018) estimates that cybercrime damage costs will hit $6 trillion annually by 2021 which is an upward trend from $3 trillion in 2015. This represents “the greatest transfer of economic wealth in history, risks the incentives for innovation and investment, and will be more profitable than the global trade of all major illegal drugs combined” (Morgan, 2018). To circumvent this crime, resources are being diverted towards training and understanding of the human factors involved in the crime. For example, studies have identified the characteristics of the hacker based on the type of messages (Bamatraf, 2014; Bodförd & Kwan, 2018), the psychosocial factors of the cyber victim (Das, Kim, Dabbish, & Hong, 2014; King et al., 2018; Redmiles, Kross, & Mazurek, 2017; Van de Weijer & Leukfeldt, 2017), and internet search characteristics (Greving & Sassenberg, 2018). However, most of the research has focused primarily on the Caucasian population with African Americans and other minorities being overlooked. Pew research center (Feb. 2018) indicates that 75% of US adults who own a smartphone are black and the majority (94%) who own a smartphone are 18-29 years of age. The report also indicates that reliance on smartphones for online access is especially common among
younger adults, non-whites and lower-income Americans. Thus, it is important to study the psychosocial characteristics of this under-represented segment of the population in cybersecurity research. This study analyzed the psychosocial characteristics of cybersecurity victims by being active participants in a mock cybersecurity attack. The central research question of this study is: What are the psychosocial characteristics of the African American cybersecurity victim? The population for this study were African American college students between the ages of 18-22 years. Sampling was conducted in the context of a historically black university (HBCU) in the southern part of the U.S. Although data is still being collected, a total of 101 completed responses to date, were analyzed. The following research questions were analyzed: (1) What is the effect of personality type on becoming a cybersecurity victim? (2) What is the effect of message content on cybercrime? (3) What are the demographic characteristics (age, gender, socioeconomic status, religion) of the cybersecurity victim? The predictor variables for this study are personality type as measured by the Big Five Personality test, religiosity as assessed by the Extrinsic-Intrinsic religiosity scale, message content (type of advertisement), technology (social media) activity and expertise, and demographic characteristics as assessed through self-report. The dependent variable is whether or not participants clicked on or opened the mock cybersecurity attack which comprised of a phishing email embedded with advertisements that would appeal to the demographic. The mock cybersecurity attack involved sending out advertisements related to scholarships, travel, vacations, to student emails, with a link that was able to identify if the respondents clicked on the advertisement or opened the email. Researchers then correlated the responses to the psychosocial characteristics of the cyber victims. Results of a between-group t-test analysis showed significant differences between those who were susceptible to the cyber-attacks to those who were not. Findings indicated that the participant activity on YouTube and Email were significant predictors of being a cybersecurity victim. Preliminary results show that individuals who have a lower number of friends/subscribers on YouTube and Email have a significantly lower chance of becoming a cybersecurity victim. Results support past research on the relationship between the demographic variables and cybersecurity victimization but shed new light on these relationships in the minority population.

Coping Mechanisms in Black Women Dealing with Stress
Derionna Hodges, *Criminal Justice*, Senior

*Faculty Mentor*: Medha Talpade, Ph.D.

Clark Atlanta University

*Abstract*: Black women are victims of gendered racism as a result of their intersectionality. This makes Black women susceptible to stereotypes, sexism, and racism. Black women also face other forms of oppression if they are overweight, transgender, or disabled. The purpose of this qualitative study is to explore how Black women, although predisposed to combined forces of oppression, cope with stress. Past research acknowledges racial and gender groups differences with stress, stressors, and coping mechanisms for stress management. This study will view stress, stressors, and coping mechanisms for a group that is unfortunately susceptible to the oppressions of their intersectionality. This study is unique because it looks at how Black women cope with their never-ending stressors. Stressors that may be a direct result of their intersectionality. This study is phenomenological and uses the interviews as the data collection method. Participants are Black women of any age and background. The findings indicate that Black women develop high functioning depressive traits to cope with stressors that they encounter daily. These high functioning depressive traits have negative effects on mood, interpersonal relationships,
performance, and health. The results of this study can contribute to the future of therapy for Black women. Black women are need access to resources that will provide them with therapy in safe environments. Resources where Black women can be themselves and be understood. A resource that accommodates the intersectionality of Black women and diagnoses them accordingly. The goal of this research is to initiate a positive change for therapy for Black girls and Black women globally.

**Correlates of Gendered Notions of Identity and Inclusion Among Black Women**

Leah Richards, *Psychology*, Senior  
Rashiara Brown, *Psychology*, Senior  
Jessica Cotto, *Psychology*, Senior  
Douglas Green, *Psychology*, Senior  
**Faculty Mentor**: Kanika Bell, Ph.D.  
Clark Atlanta University

*Abstract*: In a study of cisgender men and women’s attitudes and feelings related to transgender people, Wilson, Peterson and Parrott (2009) found that African American women had more negative attitudes than their White counterparts toward members of the LGBTQ community and that these racial differences in negative feelings were attributed to cultural variables including home of origin messages and spiritual beliefs, specifically factors such as stereotypical gender beliefs perpetrated at home, political views, and for women, religiosity. Negative school climate and oppressive policies and laws significantly impact the psychological and academic well-being of transgender students in the United States (Abreu, Kenny, Hall, & Huff, 2019), and it stands to reason that colleges with a high number of African American women, may struggle with gender queer inclusiveness in particular ways. Black college women’s attitudes toward transgender Black women and their inclusion of transgender Black women in their definition of Black Womanhood was assessed based on a number of demographic factors, including region of origin, age, and classification. Fifty-five participants identifying as Black or African American, ranging in age from 19-21, participated in this study. One participant identified as non-gender conforming while the other 54 identified as female. Participants were challenged to address their own knowledge and experiences with transgender people and speak openly about inclusion of Black transwomen in larger sociopolitical Black women spaces as well as in their own collegiate environment. Results indicated that participants raised in the South were more likely to endorse more stereotypically feminine representations of Black Womanhood in terms of their definitions of Black women as well as their own identities. They were also more likely to place more traditionally masculine women at the end of their rankings for inclusion and identity. Women raised in the South were also less likely to correctly define transgenderism as a concept. This finding may have relevance to gender queer inclusive policies at HBCUs, which are overwhelmingly housed in the southern states.

**Crime Prevention Should Be Everyone's Business**

Jamall McFarlin, *Business Administration/Supply Chain Management*, Senior  
**Faculty Mentor**: Professor Emeline Renz  
Clark Atlanta University

*Abstract*: I conducted my research on a topic that is really important to me because I’m trying to find a way to cut down on violence on black minority. For my research I took a look at
schools, crimes, and SNAP usage in Charleston, SC using open GIS data sources. I identified in disadvantaged neighborhoods using SNAP information at the census tract level. Then I used driving distance from these schools to compare crime around those schools. Last I found the school with very high crimes and suggest a huge corporation like Boeing in Charleston, SC help with funding at Academic Magnet High.

Drug Addiction
Mykayla Wyrick, Psychology, Junior  
**Faculty Mentor:** Medha Talpade, Ph.D.  
Clark Atlanta University

*Abstract:* The purpose of this qualitative study was to explore the lived experiences of college students who were affected by drug addiction in their families at a historically black university. Previous research on drug addiction discussed the impacts that it has on children and how drugs can leave children being neglected, abused and in the foster system. This study is unique because it explores how drug addiction impacts the family dynamics. The central research question of the study was; How does drug addiction affect family members who have an addiction in their family? The qualitative strategy used in this study was hermeneutical phenomenology. Critical case and maximum variation were used as the sampling strategies to recruit the participants in the study. Participants in the study needed to be key informants or have variations with the phenomenon. The validation strategies used in this study prolonged engagement, rich thick descriptions, member checking and peer review. Interviews with the key informants revealed five themes: close family ties, dysfunction, external factors, attitude on drugs, and compassion. The results from this study concluded that participants witness the destruction of their individual families due to drugs. Implications of these results for further research include breaking the cycle of the use of drugs within the family, more access to therapy to deal with trauma, and the risks associated with socioeconomic status. The results from this study can contribute to the field of substance abuse and mental health and help initiate healing for individuals who are struggling with this disease and the families who are also impacted that will allow for them to come together and overcome the disease of addiction.

Effects That Incarceration Has on Black Males Future Achievements and Education
Taylor Martin, Social Work, Senior  
**Faculty Mentor:** Mustapha Alhassan, Ph.D.  
Clark Atlanta University

*Abstract:* The United States is the world's leader in incarceration with 2.2 million people currently in the nation's prisons and jails. African Americans are incarcerated at more than 5 times the rate of whites. More than half of the population incarcerated who are serving life without parole are black males. African Americans have been the largest growing racial group incarcerated since 1790. Life after prison is not easy for black males. Employment becomes harder to find because now these black males are considered felons and some jobs will not accept you as a felon. The unemployment rate of black men is rising due to more black males being put in jail. Education is also affected because most of the time, when black males get released from incarceration, the only thing that they want to do is get back on their feet and education is not a main priority. The research uses cross-sectional design method. A total of 30 incarcerated men were interviewed for the study. The results from the survey show different crimes however, some men did have the same and
similar crimes. Some of the men were incarcerated due to armed robbery. Others were incarcerated due to sexual assault or domestic violence. Offenses went from grand larceny all the way to failure to pay child support. Bivariate results show a significant relationship between length of time in jail and how respondents feel about finding a job after their jail time.

**Examining the Impact of Marijuana Use on Academic Performance**
Imani Pressely, *Social Work*, Senior  
**Faculty Mentor:** Mustapha Alhassan, Ph.D.  
Clark Atlanta University

**Abstract:** Marijuana use is common amongst college students in the United States. It remains at the highest levels seen in the past three decades, according to the annual national Monitoring the Future Panel Study (Sherburne, 2018). The continued increase of daily marijuana use among college students is worrisome because the brain is still growing in the early 20s, and scientific evidence suggests that heavy marijuana use can be detrimental to cognitive functioning and mental health. The problem under study is how marijuana abuse can cause negative academic outcomes, such as low performance on exams, a lower grade point average, and dropping out of school (Drug Enforcement Administration, 2017). The purpose of this study is to discuss the effects of marijuana use on the academic performance of college students. The research uses cross-sectional design method. The researcher sampled students from the Atlanta University Center (AUC), primarily the campuses of Clark Atlanta University (CAU), Morehouse College, and Spelman College. The sample size consists of 30 college students (15 males and 15 females). The snowball sampling method was used for data collection. Descriptive results show that majority of the respondents were African-American students (97%). Bivariate results show that there is no significant relationship between college students’ use of marijuana and their academic performance.

**The Experiences of Families Who Have Veteran Family Members Diagnosed with PTSD**
Malaysia Lewis, *Psychology*, Senior  
**Faculty Mentor:** Medha Talpade, Ph.D.  
Clark Atlanta University

**Abstract:** The purpose of this qualitative study was to explore the experiences of family members of veterans diagnosed with post-traumatic stress disorder (PTSD) at Clark Atlanta University. Past research on military spouses indicated that the family members have a hard time balancing their lives with the challenges of living with the veteran. The past research on adolescent offspring of PTSD veterans also indicated that the children of veterans may suffer emotionally. This study is unique because it does not only address significant others or children; this study explores the lived experiences of the family holistically. This study answered the following research questions: (1) how do families of veterans with PTSD manage their family and daily lives? (2) how do the families make meaning of their experiences with a veteran family member who is diagnosed with PTSD? The qualitative strategy used in this study was the phenomenology approach. The sampling strategy to recruit participants was maximum variation. Participants were 5 college students who had exposure to having a significant other with PTSD. The data collection method included semi-structured interviews. Validation strategies included reflexivity and rich thick descriptions. Reliability was established by member checking at the end of each interview. Results were coded into the following themes--negative feeling from family members,
consideration, understanding, perceptions of PTSD, and positive support systems and treatments. The findings indicated that family members of PTSD veterans are trying to do what is best for the veteran but still struggling with the behavior of the veteran. Implications of the results for future studies include establishing support systems for the family members of those suffering with PTSD. The results of this study can contribute to the field of psychology and help initiate positive change for family members of veterans suffering from PTSD.

**Exploring the Use of Prescription and Non-prescription Drug Use Among Minority Students**

Tara Zaccheus, *Psychology*, Junior  
**Faculty Mentor**: Medha Talpade, Ph.D.

Clark Atlanta University  

**Abstract**: The United States Food and Drug Administration (FDA) defines prescription drugs as those that are prescribed by the doctor, bought at a pharmacy, and prescribed for and intended to be used by one person, and regulated by the FDA. Non-prescription or over the counter (OTC) drugs that do not require a doctor's prescription, are bought off-the-shelf in stores, are regulated by FDA through OTC drug monographs. OTC drug monographs are a kind of "recipe book" covering acceptable ingredients, doses, formulations, and labeling (USFDA, 2017). According to the National Institute on Drug Abuse (NIDA, 2018), 18 million people, with 6% aged 12 and older have misused prescription medications, especially pain relievers, prescription stimulants, tranquilizers, and sedatives. Prescription drug misuse can have serious medical consequences. Increases in prescription drug misuse over the last 15 years are reflected in increased emergency room visits, overdose deaths associated with prescription drugs, and treatment admissions for prescription drug use disorders, the most severe form of which is an addiction. Overdose deaths involving prescription opioids were five times higher in 2016 than in 1999 (NIDA, 2018, para 3). According to NIDA (2017) OTC medicines are also misused and involves taking a dose other than directed on the medication; taking the medicine for the ‘high’; mixing OTC to create new products. The costs of this misuse are physiological and psychological. For example, OTC drug misuse can cause effects such as poor motor control, increased blood pressure, panic, anxiety, aggression, permanent brain damage, addiction, and death (NIDA, 2017). These factors vary by demographics with the misuse at its highest among young adults, 18 to 25. Thus, the intent of this study is to explore and describe the prevalence of prescription and non-prescription drug use among the at-risk population at a black university. An online, anonymous survey will be administered to students at the university, and information about what constitutes misuse and support services in the community will be provided to all the respondents via the consent form. The findings will be used to design interventions and informational sessions at the university. Understanding the use of drugs on a university campus is important to tap the need for resources and ensure academic progress and success of students.

**Factors Influencing the Academic Achievement of First-Generation College Students**

Alexis Brooklins, *Social Work*, Senior  
**Faculty Mentor**: Mustapha Alhassan, Ph.D.

Clark Atlanta University  

**Abstract**: According to a 2011 report from the Higher Education Research Institute, first-generation students were less likely to complete their college degree in six years than their peers.
whose parents had at least some college experience (50% first-generation versus 64% non-first
generation). First generation college students can be defined as predominantly non-white college
students who are mostly from low income backgrounds. The purpose of this study is to recognize
the different influences on first generation college students prior and during their experiences in
college. The research uses cross-sectional design method. The participants for the study were 30
students for the Atlanta University Center (AUC) that is, students from Morehouse College,
Spelman College, and Clark Atlanta University. Self- administered was used for the data
collection. Descriptive results show that majority of the respondents were Africans Americans
students (90%). Bivariate results show that there is no significant relationship between first
generation college students’ background/environment and academic performance ($X^2=.957^a;$
$p=0.620$).

**Gentrification around CAU**
Markayla Smith, *Criminal Justice*, Junior

**Faculty Mentor:** Professor Emeline Renz
Clark Atlanta University

*Abstract:* I used GIS pro to create a map to show how gentrification is affecting the
community around CAU. I used two data sets housing affordability and service occupations from
Census Tract. I found my data from Open data. I used the spatial analysis tool Spatial join and
calculated fields to combine my two data sets together. I also used geotagged photos to show
abandon houses, new housings, and new business in the area that has caused the cost of living to
increase. I used graduated colors and symbols to help indicate my attributes.

**How do College Students’ Instagram Activities relate to their Sleep Patterns
during the School Year?**
Reginae Butler, *Mass Media Arts*, Junior
Paige Hall, *Mass Media Arts*, Junior
Taniece McCoy, *Mass Media Arts*, Senior
Asia Battles, *Mass Media Arts*, Senior
Tawan Johnson, *Mass Media Arts*, Senior

**Faculty Mentor:** Fang-Yi Flora Wei, Ph.D.
Clark Atlanta University

*Abstract:* Per the Natural Center for Education Statistics (2018), approximately 14.1
million college attendees used Instagram. Instagram seems to be the most popular social media
among youths that potentially influences their lifestyle. Because of addictive use of Instagram,
heavily engaging in online activities can cause sleep loss. Consequently, college students who use
Instagram before bedtime have suffered in a variety of health complications such as: insomnia,
anxiety, depression, and low performance. Thus, this health issue arouses our attention: Whether
college students’ sleep relates to Instagram activities. A cross-sectional anonymous survey was
employed to recruit 100 participants from Clark Atlanta University. Based on the two-tailed
independent-samples t-test, the results showed that there is a statistically significant difference
between Instagram users and non-Instagram users with respect to the amount of sleep in college
students, suggesting that students who do not use Instagram receive a more adequate amount of
sleep pattern and rest. The correlation test revealed that there is no significant negative relationship between hours of using Instagram and the amount of sleep for college students. The potential explanation is that we tested “linear relationship” rather than non-linear correlation. When college students hit their physical limitations, they still need to have a certain amount of sleep. We concluded that participants’ sleep hours might not necessarily decline linearly with their excessive use of Instagram. However, in comparison to non-Instagram users, Instagram users have fewer sleep hours in school.

I’m Every Woman: The Impact of Representations of Black Womanhood on Identity

Kyra Wilson, Psychology, Senior
Marcellus Lewis, Psychology, Senior
Alexis Baxile, Psychology, Senior
Nia Anderson, Psychology, Senior

Faculty Mentor: Kanika Bell, Ph.D.
Clark Atlanta University

Abstract: Rozen (2018) suggests that Americans broadly support the idea of affirmative action but oppose preferential treatment for minorities in college admissions with nonwhite Americans being more likely to support affirmative action than white Americans. However, transgender persons may not be considered as worthy of affirmative action policies, especially among nonwhite Americans. Morrison et al. (2017) found that transwomen college students experience less acceptance from their peers and Graham (2014) demonstrated that there is a significant amount of gender policing in school settings. Lenning (2017) reflects that HBCUs are notoriously perceived as unwelcoming towards lesbian, gay, bisexual, transgender, and queer (LGBTQ) students, and are considerably behind predominantly White institutions (PWIs) in regards to providing supportive and affirming environments. Beemyn (2005) discusses how transgender people have faced more discrimination problems regarding healthcare, public inclusion, and support as well, and suggests that it is harder for colleges and universities to achieve inclusivity when they are not discussing these problems or how to fix them. This study sought to begin a dialogue with Black college women, about Black college transwomen and the spaces they occupy on a historically Black campus. Fifty-five participants identifying as Black or African American, ranging in age from 19-21, participated in this study. One participant identified as non-gender conforming while the other 54 identified as female. Participants were then asked to discuss their ideas about what it means to be transgender as well as in general, gender queer identities and inclusiveness including gender policies for bathrooms, scholarships, dorms, etc. Results suggested that though many participants appeared to view themselves and knowledgeable and inclusive, many suggested marginalizing segregation strategies as solutions or embraced the presence of Black transwomen on campus but felt protective regarding access to particular resources such as gender-based scholarships, coveted titles and positions generally reserved for females on campus, and athletic teams. Many students took an apathetic approach to the issue and many, unbeknownst to them, did not know what it meant to be transgender. Findings suggest that further discussion regarding Black women’s inclusion of Black transwomen in their considerations of Black womanhood is necessary.
The Impact of Phytoestrogens on Behavior
DaNashia Thomas, Psychology, Junior
Faculty Mentor: Timothy Moore, Ph.D.
Clark Atlanta University

Abstract: Phytoestrogens are estrogen-mimicking, plant-derived compounds found in various food products—most notably soy. Health benefits commonly attributed to regular consumption of phytoestrogens are low risks for cardiovascular diseases, obesity, cancer, decreased bone density, and severe menopausal symptoms. The association has triggered an exponential rise in American consumption of soy-based products. From meat and dairy alternatives to and infant formulas and dietary supplements, soy benefits claim has sparked a gradual shift in what is deemed healthy in America. Although such health benefits are linked to soy consumption, concluding whether each is appropriately credited to phytoestrogen consumption is unclear. The complexity in determining the effectiveness of phytoestrogens leads to research centered around unmasking the potential benefits to lack conciseness. Studies opposing soy benefits discovered potential consequences on the endocrine system which can, in turn, impact behavior. The gradual increase of soy-based products amongst American’s has increased the need for clarifying potential dangers and benefits. If phytoestrogens reportedly cause disruptions to the endocrine system, then regular consumption of soy-based products can have an impact on behavior.

Inequality of Gender Roles in Modern Society: Perceptions of HBCU College Students
Erica Hale, Criminal Justice, Senior
Faculty Mentor: Sandra Taylor, Ph.D.
Clark Atlanta University

Abstract: The topic of gender roles and the inequalities between men and women continues to be an important issue long after early arguments of those on conservative and more liberal sides of the debate. As we move forward in the 21st century, we see the line between men and women begin to blur as it relates to what has been referred to as “sex-role segregation.” However, even though society is moving toward greater equality between men and women, there are still certain circumstances wherein some people view men as being more suitable for a particular role while women are more fit for another. The idea that there is a clear divide on what a woman can or cannot do or even what a woman is meant to do and not do prevails despite evidence to the contrary. This research examines a group of HBCU college students’ ideas on gender roles and their perceptions regarding “a woman’s place.”

Is this Really About My Socks? White Socks, Written Rules and Gray Areas
Fantashia Felder, Criminal Justice, Junior
Sarah Obadeyi, Criminal Justice, Junior
Faculty Mentor: Barbara Combs, Ph.D.
Clark Atlanta University

Abstract: In today's society most people do not experience racism on the forefront but more so under the table. According to the law, people of color have equal rights, but they still endure oppression and lack equal opportunity due to current stagnant mindsets. This poster investigates
how bias can operate in implicit ways that result in overt manifestations of prejudice against people of color. I utilize a case study approach and examine the case of a black man in Memphis, Tennessee, visiting his apartment complex pool on the Fourth of July who was purportedly asked to leave the space because he was violating the “no socks” policy. This poster, “Is this Really About my Socks? White Socks, Written Rules, and Gray Areas” goes through a systematic analysis of the event in order to determine whether racial bias motivated the incident. I utilize visual analysis of the space, which shows others (all white) in the pool area with socks on and Combs’s (2017, 2018, 2019) framework, Bodies Out of Place (BOP), to analyze the incident. I conclude that racism, not concern of hygiene, was a motivating factor in the incident. Finally, I outline how this act of calling the police on an African American man because he refused to comply with the directive by the apartment manager to remove his socks was an attempt to maintain the apartment pool area as white space and push black bodies out of the space.

It was Racism! An Insider Outsider Analysis of an Occurrence of Eating While Black
Terria Davis, Criminal Justice, Senior
Faculty Mentor: Barbara Combs, Ph.D.
Clark Atlanta University

Abstract: In late July of 2018, Oumou Kanoute was a rising sophomore at Smith College, a highly selective, private women’s liberal arts college in Northampton, Massachusetts. Notable Smith alumni include Gloria Steinem, Sylvia Path, Julia Child, Nancy Reagan, and Barbara Bush. As she was eating lunch in a common room of the campus, Ms. Kanoute, who is black, was presumed not to belong in the space and another Smith College employee called the police and reported her as a trespasser. Ms. Kanoute recalled her account to several media outlets. Smith College investigated the incident and determined racism did not motivate the incident. In this presentation, I argue it was racism. Black bodies have continuously experienced hate-driven violence throughout centuries and this century is no different. These incidents of hate usually focus on the psyche of the aggressor but seldom consider the psychological impact on black bodies being pushed out of white spaces has on African Americans. In this research, I utilize the insider outsider framework popularized by black feminists, including bell hooks, Patricia Hill Collins, and Audre Lorde and intersectionality theory to arrive at these conclusions. Together, insider outsider and intersectionality theory demonstrate how the status of being on the margins affords insight into both the mind of the oppressed and the oppressor. This research serves the purpose of giving a broader prospective on the impact of having white spaces and the ways in which black and brown bodies are expected to navigate such space in order to avoid the peril of violence—mental, physical, or otherwise.

Keywords: Racism, psychological effects, violence, white space

Peace at Home
Jahvada Young, Criminal Justice, Junior
Faculty Mentor: Professor Emeline Renz
Clark Atlanta University

Abstract: Gentrification is a process that has been affecting many urban cities for the past several decades. Atlanta began to experience an increase in gentrification prior to the 1996 Olympics and this process has continued unabated. With gentrification comes many problems,
including crime. How does gentrification play a role in property crimes in Atlanta? Based on the crime areas on the map, where should the city of Atlanta place new police stations to reduce crime? Using property crimes and median household income in Atlanta from 2010 and 2019, I generated services area to illustrate the regions that police stations could access in under 10 minutes driving an emergency vehicle. Then I compared the income change and property crime change in each station's service area. It's important to know the connection between gentrification and crime and how the community is affected by it.

**Perceptions of Abortion Law and Sexual Activity in College Students**

Erica Thompson, *Psychology, Junior*

**Faculty Mentor:** Medha Talpade, Ph.D.

Clark Atlanta University

*Abstract:* This qualitative study explored the experiences of college students related to heartbeat abortion state laws. The heartbeat law in our state prohibits abortions after a fetal heartbeat is detected, which is around 6 weeks of pregnancy, unless there is a threat to mother’s life or police reported cases of rape and/or incest. This phenomenological research recruited students from a historically black college within the Atlanta University Center. Conducting this study is important because abortion laws impact college students as they are relevant for a large proportion of the population that is sexually active and directly impacted by the heartbeat law. If this study is not investigated one of the major groups this law impacts, will continue to be underrepresented. Previous research on the recent laws have focused on its impact on the entertainment and movie business in states such as Georgia. There has also been research on compulsivity in the sexual activity of college students and the likelihood of sexual harassment on college campuses. Therefore, college students will benefit from this study because it will provide a platform for their perspectives on reproductive laws and the sexual activity on college campuses. 12 participants were recruited through purposive sampling. The data collection strategy included personal interviews and focus groups. The results were analyzed using Atlas Ti 8.0. Validation strategies used were member checking, rich-thick descriptions, and triangulation of data (observations, interviews, and documents). Selective codes revealed that the participants expressed that women’s reproductive rights are important and this law will instill fear and safe sex practices among college students. This information can help initiate positive social change by informing interventions for college students.

Keywords: heartbeat law, sexual activity, prochoice, prolife, college students

**Racial Differences in Exposure to Rap Music: The Relationship between African Americans’ Rap Music Listening and Expressions of Aggression**

Takiyia Price, *Mass Media Arts, Junior*
Malik Williams, *Mass Media Arts, Junior*
Milaiza Kelly, *Mass Media Arts, Junior*
Anisa Barnes, *Mass Media Arts, Junior*

**Faculty Mentor:** Fang-Yi Flora Wei, Ph.D.

Clark Atlanta University

*Abstract:* Rap music has become an important aspect of youth culture, and the African-American community in particular. Rap has always been criticized because the lyrics contain the
negative lifestyles and gritty themes. However, many people view rap music as a “slice of life” art form, as well as an expression of Black culture. In turn, the general public has created a negative social stereotype toward rap music and implied that Black listeners are the more aggressive than other ethnicities. Therefore, the purpose of this study is to investigate (1) whether there is a difference between African American and non-African Americans’ frequent exhibitions of heightened anger (2) whether exposure to rap music is related to listeners’ exhibitions of heightened anger. A total of 100 participants were recruited from an urban university in the South to participate in an anonymous survey study. Based on the two-tailed independent-samples t-test and correlation tests, the results showed that there is no statistically significant difference between African Americans’ and non-African Americans’ frequent exhibitions of heightened anger. There is also no statistically significant relationship between frequency of listening to rap music and the frequent exhibitions of heightened anger. Interestingly, nonsignificant statistical results revealed that Black listeners’ levels of anger are not different from other ethnicities. More important, listening to rap music does not necessarily trigger listeners to display their heightened anger. Hence, the findings break down the traditional racial stereotype toward African American culture.

Rape Culture on College Campuses
Lyric Crockett, Business Administration, Senior

Faculty Mentor: Teri Platt, Ph.D.
Clark Atlanta University

Abstract: My mission is to bring awareness to Rape Culture on college campuses. Rape Culture is a society or environment whose prevailing social attitudes have the effect of normalizing or trivializing sexual assault and abuse. It can be defined in many ways and anyone can be a victim no matter what gender they are. Rape Culture can be the use of certain sexual language towards a person, as well as sexual assault. It is the sociological concept which we allow rape to be pervasive and regularize among our community. We have to create a society and environment that makes students, particularly women, feel safe in their day to day life while being on campus at their university. College campuses are surrounded by Rape Culture. It is exposed to us in the movies that we watch, music that we listen to, and most often at the parties we attend. Many people decide to accept how things are and blame it on boys being boys, however in doing that, the inappropriate behavior is normalized. In my research, I found that 75% of the male that were surveyed didn’t realize that the actions they were partaking in constituted as Rape Culture. As a society, we have to work together to bring more acknowledgement to end Rape Culture epidemic.

(Re) Claiming Our Space: Black Oaklanders’ Response to Barbecue Becky
Passion Peoples, Sociology, Senior
Adriana Wright, Criminal Justice, Senior
Deajia Kershaw, Criminal Justice, Senior

Faculty Mentor: Barbara Combs, Ph.D.
Clark Atlanta University

Abstract: Freedom is a hallmark of American democracy, yet in many ways racism (or the fear of being subjected to racist acts) influences African Americans’ willingness to move to and through certain spaces. Slavery, Black Codes, Jim Crow laws, segregation and other tools have been used to instill fear in people of color and keep them in their place—a position of subservience to whites. According to Feagin (1991: 103) African Americans who face public racism may engage in a variety of responses, including “withdrawal, resigned acceptance, verbal confrontation, or
physical confrontation.” We examine a mid spring 2018 incident at a park in Oakland, California, to illuminate how black resistance and reclaiming of presumptively space operates as an often-ignored contemporary response to racism. For hundreds of years, there have been varied forms of black resistance-- from the many slave rebellions to today’s activist movements such as Black Lives Matter. Throughout this presentation, we trace black resistance and explain how it has changed (if any) over the years. We utilize Combs’ (2017, 2018, 2019) to understand how racism operates today, and we clarify how different generations are pursuing black resistance against powers that have tried to hold them back.

Rediscovering Victims
Elisha Azize, Criminal Justice, Sophomore

Faculty Mentor: Celeste M. White, Ph.D.
Clark Atlanta University

Abstract: This research seeks to raise awareness about the occurrences of sexual assault on college campuses. RAINN 2017, the United State’s largest anti-sexual violence organization, reports that 11.2% of all students experience rape or sexual assault through physical force, violence, or incapacitation among all graduate and undergraduate students.” Interestingly, WomensHealth.Gov records that only one in five women report their assault. This study endeavors to seek clarity into the issue of campus sexual assault and gauge its impact on college communities through the use of a focus group methodology using approximately 7-10 individuals. Students participating in this focus group are attendees of the Atlanta University Center institutions, specifically Clark Atlanta University, Morehouse College and Spelman College. The students will be engaged in a one to one a half-hour session facilitated by both this student researcher and the research advisor. The purpose of this inquiry was to examine the knowledge and familiarity with the policy, practice, and procedures relating to sexual assault occurrences in college. Participants were provided with informed consent and the Research facilitator utilized best practices for conducting the focus group. No incentives for participation were provided. Considering title 9 requirements, it is anticipated that students will be familiar with their school’s obligation to maintain the policy. However, because there is a relatively high experience rate, it is anticipated that participants will be familiar with the topic as either a primary or secondary victim. Conversely, it is anticipated that the participants will be unfamiliar with the prevention infrastructure to prevent sexual violence.

Save Our Youth
Sierra Morrison, Criminal Justice, Junior

Faculty Mentor: Professor Emeline Renz
Clark Atlanta University

Abstract: For my research I wanted to compare the median income to the median age of people in the Atlanta area to find the best locations to build new youth centers. I believe that if more youth centers are built in areas where there is a lot of low-income youth, these will be used as a branch of Hope. Disconnected youth are more likely than their peers to be involved in several systems that present obstacles to future success. There were approximately 6.7 million youth in the US who were not enrolled in school and who had been disconnected from the workforce for at least six months. That represents about 17 percent of the 16-to-24 age group nationally. Sometimes referred to as “opportunity youth” or “disconnected youth,” this population is among the hardest to reach with traditional social interventions. Which is why
building new youth centers will “Help to improve cultivate social and emotional skills, and further students’ academic achievements. Furthermore, the safe environment provided by out-of-school time programs can offer children and youth, especially those living in disadvantaged urban areas, a welcome retreat from the streets and a place to be with friends,” as said by Mary Terzian.

**Tattoos and Piercings: Attitudes, Behaviors and Interpretations of College Students**

Alyse Lowery, *Social Work*, Senior  
**Faculty Mentor**: Mustapha Alhassan, Ph.D.  
Clark Atlanta University

*Abstract:* Tattoos and piercing have many meanings and is often used as a self-expression. Despite piercings and tattoos becoming more common than ever, studies suggest it may still affect your possibility of getting a job. A Pew Research study held in 2018 found that people aged from 18 to 29 are 40% likely to have a tattoo. Stigmas associated with tattoos and piercings have formed discriminatory beliefs in professional work settings. Although most stigmas often are passed down, younger generations have become open minded, changing societal norms. College students are becoming the new generation of the work population, which mean their beliefs mean more than ever. Could college students’ perspective on tattoos and piercings change stigmas in the workplace? There is a lack of knowledge regarding the relationship between age and/or classification in college and the perspective on tattoos and piercings. In addition, there is a lack of representation of the black community in most studies. The study used a cross-sectional research design method. Fifty-three (53) participants were selected from various college campuses such as Howard University, Clark Atlanta University, Morehouse College, Georgia State University, etc. Convenience sampling was used for the data collection. Descriptive results show that majority of the respondents were African American students (98.2%). Bivariate results show that there is no relationship between college students’ age/classification and their perception of tattoos and piercings. Also, most college students (75.6%) did not believe they were discriminated against because of tattoos or piercings.

**What am I Paying For? Students Willingness and Intentions to Give Back to their Institution**

Douglas Green, *Psychology*, Senior  
Alisia Rios, *Psychology*, Senior  
Bhrea Turner, *Psychology*, Senior  
**Faculty Mentor**: Jimmy Davis, Ph.D.  
Clark Atlanta University

*Abstract:* Today, most will find that Historically Black Colleges and Universities are privately owned and operated institutions of higher education and learning. These schools must rely and depend heavily on funds provided from a multitude of sources, in order to keep their doors open. Sources such as private donors, benefactors, investors, scholarship funds, and more have been listed as various sources of money to HBCUs in order to keep them up and running. According to a study looking at factors for young alumni donations, the results of the study indicated that factors such as residential status, receiving financial awards and making donations to other charities have positive correlations with young alumni being donors to the university. A multiple regression analysis shows that an alumnae's overall positive experience at the university,
being an in-state student, and giving to other charities are significant predictors of an alumnus making gifts to the institution (McDearmon, J. T., & Shirley, K., 2009). Examining the different aspects of engagement on a college campus can provide a unique insight into the dynamics that energize the student body to remain at an institution, perceptions of their willingness to give back to said institution and involvement in the process of a new leader altogether. According to another study, the results present ‘image of education’, ‘image of communication’ and ‘satisfaction with social and academic environment’ as determinants of the commitment relationship, which provide important clues for the marketers’ decision-making process when developing activities geared towards alumni. This process should emphasize aspects relating to their willingness to give back, academic and relationship quality, and institutional values (Pedro, I. M., Pereira, L. N., & Carrasqueira, H. B. (2018). The purpose of this study is to examine the intention of students to provide monetary donations back to their institution. Descriptive statistics and overall perceptions of satisfaction at the university during a presidential transition will be reported.

**What Causes Individuals to become Victims of Cybercrime via Social Media**

Alisia Rios, *Psychology*, Senior  
**Faculty Mentor:** Medha Talpade, Ph.D.  
Clark Atlanta University

*Abstract:* The purpose of this qualitative study was to explore what causes individuals to fall victim to cybercrime via social media for seven psychology students at two Historically Black College and University in the South East region of the United States. This study is unique because it investigates the lived experiences of individuals whom had exposure and direct victimization of cyber-crime. The qualitative strategy used in this study was a phenomenological approach to guide this research. The sampling strategy to recruit participants was the snowball methods to gather participants by their professors to receive extra credit for class. The data collection method included: a poster and consent form were sent to many professors at the Historically Black College and University to provide information about the study and if the professors would allow the opportunity of extra credit given to the students that participated in the study. After approval of extra credit for the Psychology classes, a total of seven individuals contacted the principal investigator via email to schedule a location and time to perform the interview. Once the date, time, and location were established the participants were read the consent form, given a copy of the consent form to keep, and tips with websites that can be used to combat cyber-crime and spread education about the misconceptions of privacy on social media. Each interview was audio recorded with the participant's permission and physical notes were recorded as well. Validation strategies included rich thick descriptions and member checking. Reliability was established by consistent credibility. Results were coded into the following themes association and manipulation. The findings indicated majority of participants had been victim or exposed to cyber-crime due to personal relationships with the attacker. Implications of the results for future studies included gender theory and the possibility of gender having a role in cyber-crime. The results of this study can contribute to the field of Cyber-Psychology and help further initiative of proper cyber-training.
Working to Make a Killing
Khalid Lea, Criminal Justice, Junior
Faculty Mentor: Professor Emeline Renz
Clark Atlanta University

Abstract: My research included reading sources to discover what contributes to homicides in a community. Based on the findings from Kubrin and Weitzer (2003), the overall factor is a concentration of neighborhood disadvantages. This includes poverty, unemployment, low income, and other factors. I decided to delve into unemployment and see how homicides related to unemployment. Based on my observations, homicides are most likely to occur in areas of high unemployment. I went on to research how to lower unemployment rates to overall lower homicide rates and found that there are unemployment centers placed in Atlanta to help people find jobs. I mapped out these unemployment centers, the unemployment rates in each census tract in Atlanta, and the homicides that occurred in 2017. I used this data in my spatial analysis to find out who has reasonable access to the centers by calculating the walking distance within three miles of each unemployment center because not many unemployed citizens have access to a car. I also used my spatial analysis to see how many people in this three-mile distance are unemployed. This research can help these unemployment centers market to these unemployed citizens to help find them a place of work and overall encourage less homicides to happen in these communities.
GRADUATE
Students
ABSTRACTS
A Computational Study on Binding Affinities of Naturally Occurring α-Amino Acids with Graphene

Jovian Lazare, Ph.D. in Chemistry Graduate Program

Faculty Mentor: Tandabany Dinadayalane, Ph.D.

Clark Atlanta University

Abstract: Graphene is a single atom-thick, lightweight and high conductivity material. Graphene-based amino acid sensors are suitable biomarkers for diagnosing diseases such as cancer and diabetes. Part of this research assesses the possibility of graphene-based amino acid sensors through analyzing the binding affinity trends, structural features of the complexes and electronic properties. Our comprehensive computational study reveals that distinct geometrical features of the complexes provide valuable insight to the binding affinity of diverse amino acids. The high-quality data will help to improve the force fields and guide future experiments.

Hot Girl Epidemic: Current Events and Their Impact on Changes in Gender Roles and Identification

Deja Shands, Mental Health Counseling Graduate Program

Faculty Mentor: Kim Lee Hughes, Ph.D.

Clark Atlanta University

Abstract: Due to rapid changes in politics, socioeconomic factors, and biology, the mental and behavioral health of numerous communities and individuals have been uniquely and critically impacted. Specifically within the last decade changes surrounding sexual preference, identification, and definition have broadened public knowledge and opinion. Today the LBGTQ community has increased, and gender norms and roles that once set the mold of human purpose have formed into alternative structures and concepts. Women, and those who identify as such, have sparked a new movement in avocation of femininity. The #MeToo and #HotGirlSummer movements and rise in political concerns surrounding biological and sexual autonomy have empowered and influenced a new level of masculine and aggressive behavior in women. The purpose of this research is to explore the lived experiences of women in a graduate program in the Southeast and how society has an impact on changes in gender roles and structures, specifically surrounding mental health.

Journey of Computational Nano-engineering of Graphene via Nitrogen Doping

Nada Alzaaqi, Ph.D. in Chemistry Graduate Program

Faculty Mentor: Tandabany Dinadayalane, Ph.D.

Clark Atlanta University

Abstract: This study investigates how the location and direction of nitrogen substitution in graphene sheet plays a paramount importance in the stability of the system as well as manipulating the electronic properties. Computational modeling was used to explore double nitrogen substitution in a finite-sized graphene \([C_{184}N_2H_{36}]\). The doping process is a direction-dependent approach for all dopant configurations. The results of this study reveal the preferential direction in which the nitrogen atoms prefer to locate. Our study indicates that the bandgap can be opened by controlled nitrogen doping in the graphene network. Doping of two nitrogen atoms in specific
sites could be an effective approach to open the band gap in order to realize many chemical, biological and electronic applications.

**Juvenile Delinquency: Leading Factors and Preventing Reoffending**

Imani Watson, *M.A. Sociology Graduate Program*

**Faculty Mentor:** Sandra Taylor, Ph.D.

Clark Atlanta University

*Abstract:* Although juvenile arrest rates have been on a decline, they remain important to recognize and understand why this trend has continued. With that, it is also important to understand how to keep juveniles from reoffending once released from detention. The many environmental variables that play a role in juvenile delinquency includes, but are not limited to family life, school, mal-treatment, and mental health. This research provides an in depth discussion as it relates to the arrests of juveniles, as well as how the treatment and counseling process influences reoffending. To test what factors play the largest role in youth ending up as juvenile delinquents, interviews were conducted during the fall 2018 semester at Clark Atlanta University. These interviews included individuals who worked within the Reentry Services Team for the Department of Juvenile Justice in Georgia. Job titles included Resource Coordinator, Reentry Specialist, Program Manager, and Director of the program. Six professionals who primarily work with juveniles to prevent reoffending were interviewed during this process. To extend this research, secondary data to support the hypothesis that school plays the largest role in youth offending were utilized. Youth who end up in the juvenile system often times face a wide range of issues before their initial involvement. These same issues have also been proven to have a major effect on if youth will reoffend once released from detention. Contrary to my original hypothesis, it was found that a majority of cases had the trend of a weak family dynamic, being a leading cause for youth offending. Interviewees from the original research, also revealed that the success of youth after being released depended heavily on family involvement with the youth’s treatment.

**Preparation and Characterization of Poly(lactic acid) Nanocomposites Incorporating Lignin-cellulose Nanocrystals (SL-CNCs) Prepared by Sulfuric Acid Hydrolysis**

Zakiya B. Barnes, *Chemistry Graduate Program*

**Faculty Mentor:** Eric Mintz, Ph.D.

Clark Atlanta University

*Abstract:* The development of environmentally friendly polymer matrix composites produced from renewable resources that can be biodegraded to benign carbon dioxide and water by microorganisms are of great interest. Biobased, biocompatible, compostable poly(lactic acid) (PLA) and nanocellulose/lignin (SL-CNCs), prepared by sulfuric acid hydrolysis, were processed into nanocomposites by high torque melting mixing with Haake Rheocord 90 melt mixer to give polymer matrix composites (PMCs) with excellent dispersion and distribution of the nanofiller. The new nanocomposites were compression molded using a Wabash G30H-15-CPX hot press. The use of lignin as a compatibilizer supported dispersion and distribution of CNCs in PLA by improving interfacial interaction with the matrix and led to increased thermal stability at low loadings in the PLA matrix. The sulfonated lignin acts as both a compatibilizer and a plasticizer in the PLA matrix. Neat PLA is brittle and has low stiffness, which leads to poor mechanical performance. The SL-CNCs act as nucleating agents, thus leading to faster crystallization, a higher degree of crystallinity, and a higher Young’s modulus in the nanocomposites. The objective of this
research was to examine the behavior of SL-CNCS at various lignin/CNC ratios and loadings in NatureWorks PLA 4043D matrices, under gone rapid and slow quenching, by differential scanning calorimetry (DSC), dynamic mechanical analysis (DMA), tensile testing, thermal gravimetric analysis (TGA), and melt rheology.

**The Speculative Mind: Black Queer Youth in Speculative Fiction**
Marcus Haynes, *Humanities (English/African American Studies) Graduate Program*  
**Faculty Mentor:** Rico Chapman, Ph.D.  
Clark Atlanta University  
*Abstract:* Even in a world of increasingly intersectional identities, the concept of a Black queer child is one that is heavily contested. Some would argue that children have no concept of sexuality, despite the fact that heterosexuality is forced on children by adults and general society. Others wholeheartedly believe that queerness in Black communities is a result of colonization, even though what we now know as queerness was present in several African countries and cultures long before the transatlantic slave trade. Others still have trouble even conceiving of Black children, choosing instead to adultify Black children to the point that the very idea of a Black child is all but an oxymoron. Thankfully, there is a way to challenge the limited purview that cannot conceive of any of these identities and their intersections: through speculative fiction, particularly speculative fiction that parallels the experiences of Black queer children in the lived world. This paper will interrogate three speculative fiction texts, Ernest Cline’s *Ready Player One*, Randall Kenan’s *A Visitation of Sprits*, and John Darr’s *Forest Heights* novellas, for their usefulness in exploring Black queer childhood. It seeks to show how these speculative texts allow readers a glimpse into the lives that Black queer children lead, affirming the reality of their existence. The end result will show that the psyche rattling explorations that these texts employ can be used to purge the Black queer child from the margins of the world.

**Synergistic Effects of Potassium Dimethyl 5-sulphonatoisophthalate (LAK-301) and Lignin Coated Cellulose Nanocrystals (L-CNCS) on the Nucleation and Crystallization of Poly(lactic acid) (PLA)**
Rasaan Ford, *Chemistry Graduate Program*  
**Faculty Mentor:** Eric Mintz, Ph.D.  
Clark Atlanta University  
*Abstract:* Current petroleum-based plastics and have a very low rate of degradation in the environment. As such, more bio-based polymers, like PLA (polylactic acid), have been sought after. Previous research has shown that the incorporation of lignin coated cellulose nano-crystals (LCNC’s) in PLA, produces nanocomposites with improved thermomechanical properties relative to neat PLA. Adding both LAK-301 and LCNC’s in a 1:8 ratio has also been found to produce a synergistic effect that causes an increase in the crystallinity of NatureWorks 2500HP PLA upon cooling. We have prepared nanocomposites incorporating various ratios of LAK-301 and L-CNCS in order to find the optimum ratio for nucleation of crystallization at the minimum materials cost. We have used Dynamic Scanning Calorimetry (DSC) to assess the rate and degree of crystallization in these nanocomposites. We will report the results of this study.
Understanding the Role of High Lignin Cellulose Nanocrystals (HL-CNC) and LAK in Poly-hydroxybutyrate in the Development of Crystallinity of Nanocomposites
Kareen Blue, Chemistry Graduate Program

Faculty Mentor: Eric Mintz, Ph.D.
Clark Atlanta University

Abstract: We have investigated the incorporation of High-lignin-coated nanocellulose crystals (HL-CNC) and LAK (sulfates) in poly-hydroxybutyrate nanocomposites via high torque melt mixing and determined the static and dynamic thermomechanical properties of these new nanocomposites. DSC and DMA were used to characterize the thermal properties of the new poly-hydroxybutyrate composites. Tension experiments via DMA indicated that all the LAK, SL-CNC PHB composites moduli were at least 10-times higher than the neat PHB. We also found via DMA analysis that the Tg of the composites were significantly higher than the Tg of the neat PHB. DSC analysis of the PHB nanocomposites indicated that the sulfonated lignin in the SL-CNCs did not act as a plasticizer, which was illustrated by the Tg of the composites. From the DMA and DSC analysis we found that HL-CNCs along with LAK increased the dynamic thermal properties of PHB.
Advocacy Competency and Burnout/Compassion Fatigue for Grassroots Organizers in the Metro Atlanta Area

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Faculty Mentor: Obie Clayton, Ph.D.
Clark Atlanta University

Abstract: The Metro-Atlanta area has a rich history of community organizing and advocacy rooted in the modern civil rights movement. Sims-Alvarado (2017) noted that Black communities in Atlanta strategically organized to advocate for social change. The strategic organization developed and engaged in by Black advocates between 1880 and 1910 lead to Atlanta becoming affectionately known as the “Cradle of the Civil Rights Movement.” Despite Atlanta’s rich history of advocacy and community organizing, and despite being known today as the city that is “too busy to hate,” discrimination, marginalization, and oppression are ever present. Public health issues, mass-incarceration, racial inequity, discrimination based on gender and sexuality, etc. are all still evident in the Metro-Atlanta area. As a result, countless advocates and activists alike are leaning on the history of the city and courageously fighting for social, political, and economic change in the area. Because of this, there is a need to explore advocacy competency and burnout/compassion fatigue of those engaging in advocacy efforts in Atlanta. A mixed methods approach was used where advocacy competency was assessed using an adjusted Social Justice Advocacy Scale (Dean, 2009), and Burnout/Compassion fatigue was assessed using Stamm’s (2009) Professional Quality of Life Scale, version 5. To galvanize this data organizers who were heavily involved in community engagement, fieldwork, and other direct responses to advocacy were selected to participate in interviews. Using these data we can provide greater opportunities for advocacy competency training for organizers, and provide more mental-health and other wraparound services for advocates in the city, specifically those engaging in advocacy efforts at the margins of our communities.

Binding Affinities of Aliphatic α-Amino Acids with Graphene: A Computational Study

Jovian Lazare, Ph.D. in Chemistry Graduate Program
Faculty Mentor: Dinadayalane Tandabany, Ph.D.
Clark Atlanta University

Abstract: Density functional theory (DFT) calculations were performed to understand the binding of eight aliphatic naturally occurring α-amino acids (glycine, alanine, valine, leucine, isoleucine, cysteine, methionine, aspartic acid, and glutamic acid) individually with two finite size graphene sheets. After performing conformational analysis for these eight amino acids using Merck Molecular Force Field (MMFF) implemented in Spartan '18 software package, geometries of all the conformers were refined first at the HF/6-31G(d) level and then at the M06-2X/6-31G(d) level. The most stable conformer obtained at the M06-2X/6-31G(d) level was used to build complexes with graphene by considering different possible binding modes. All the complexes were fully optimized using M06-2X/6-31G(d) level. Binding energies with and without basis set superposition error (BSSE) correction were calculated and analyzed. Our study reveals that multiple C-H…π and N-H…π interactions contribute for stabilization of the complexes. The data obtained from our computational study may be helpful for force field development and for future
experiments on non-covalent interactions of amino acids with graphene. Our findings would provide insights for experimentalists exploring graphene nanomaterials for potential applications in drug delivery, biomedical implants (or biocompatible materials), biomedical imaging, protein sequencing, and biosensor devices. Our goal is to understand the relationship between the binding affinities of various complexes and structural features including the orientation of amino acid adsorbed on two different sizes of graphene surfaces.

**Data Analytics of PolyX Repeats in Proteins Related to Neurodegenerative Diseases**

Quashanna Price, Chemistry Department, Ph.D. Program  
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Clark Atlanta University  

**Abstract:** Tandem single amino acid (polyX) repeats could provide multiple functional insights and implications. Previous studies showed the presence of poly-glutamine (poly-Q) repeats being indicative of Parkinson’s Disease (PD), which is a neurodegenerative disorder destroying neurons in the brain. Neurons are essential as they work to control movement, brain function, in addition to passing information and stimuli throughout the brain. Nearly 1.5 million people in the US alone were affected by Parkinson's Disease, which is the second most common neurodegenerative disease after Alzheimer’s Disease (AD). Additionally, Huntington’s Disease (HD) is diagnosed once a mutant-Huntingtin exceeds 35 consecutive glutamines. Preliminary data mining of the Protein Data Bank (PDB) for proteins involved with neurodegenerative diseases provides the details of average polyX percentage. The sequence analyses for proteins associated with Alzheimer’s Disease, Parkinson’s Disease, Huntington’s Disease, amyotrophic lateral sclerosis (ALS), and multiple sclerosis (MS) were done via RStudio for amino acid prevalence and structural trends. Our analysis supports previous data concerning degenerative polyX repeats but provides new insights on the frequency of these repeats in short sequences ranging in length from di-to hexa-peptides. For all proteins studied, we found that non-polar amino acids are far more prevalent than polar or charged amino acids regardless of the polyX length. Charged amino acids are typically found as di- and tripeptide repeats and are rarely observed at the longer peptide lengths. Structurally, the longer peptide repeats are nestled within the inside of the proteins which leads to misfolding and accumulation. In addition, we were able to determine that poly-leucine (poly-L), poly-glutamate (poly-E), and poly-serine (poly-S) repeats longer than three tandem amino acids tend to reside on the alpha-helix; however, most poly-valine (poly-V) and poly-phenylalanine (poly-F) are found on beta-sheets. This is a continuing study from our group on polyX repeats and subsequent data analysis in protein structures. The extension of our study by increasing the number of proteins to include healthy and target proteins will allow for the development of statistical validated models that may provide significant implications to be incorporated into drug development research.

**Deconstructing the Daddy’s Girl Phenomenon: Understanding the Role of Attachment on Attitudes Toward Dating, Men and Marriage**

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Clark Atlanta University  

**Abstract:** This study examines African American college age women who self-identify as either Daddy’s Girls (25) or Non-Daddy’s Girls (25). It explores the relationship between their
Adult Attachment Type (Security Attached, Anxious or preoccupied attachment, Dismissingly Avoidant Attachment, and fearfully avoidant attachment) and their experiences and attitudes toward relationships, Black men, and marriage. Research suggests that children fare better academically and emotionally when fathers are involved. However, attention is often placed on the father-son dynamic, with only peripheral attention given to the benefits of the father-daughter bond. In this study, it is hypothesized that Daddy’s Girls with healthier adult attachment types will have more favorable attitudes toward dating and Black men, and they tend to have a greater appreciation for the value of marriage than non-Daddy’s Girls. Implications for these findings provide valuable insight toward the importance of father involvement in the lives of women and serve to counter the negative stereotypes of Black fathers.

Electronic and Structural Stability Assessment of Double Nitrogen Doping in Graphene along Zigzag vs Armchair Directions
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Abstract: It is known that pristine graphene has zero bandgap and it is crucial to tuning its electronic properties for variety of applications. This study examines how the position and direction of nitrogen substitution in graphene sheet plays a paramount importance in the stability of the system as well as manipulating the electronic properties. Density functional theory (DFT) calculations were performed to explore double nitrogen substitution in a finite-sized graphene consists of 186 carbon atoms and the edges were terminated with hydrogen atoms. The substitution of two nitrogen atoms were considered along the zigzag and armchair directions. The doping process is a direction-dependent approach for all dopant configurations. The results of this study reveal the preferential direction in which the nitrogen atoms prefer to locate. All calculations for full geometry optimizations were performed using B3LYP/6-31G(d) level. HOMO-LUMO energy gap values for all the positional isomers were calculated using TPSSh/6-31G(d)//B3LYP/6-31G(d) level. Gaussian 16 suite of programs were used for all the calculations. The most preferred positions for doping of two nitrogen atoms along zigzag and armchair directions were identified. Our study indicates that the bandgap can be opened by controlled nitrogen doping in the graphene network. However, the selectivity of the direction plays a role in band gap opening. Doping of two nitrogen atoms in specific sites could be an effective approach to open the band gap in order to realize many chemical, biological and electronic applications.

Exploring the Role of the Strong Black Woman Stereotype on Black College Women Seeking Psychological Help
Desiree Richardson, Clinical Mental Health Counseling Graduate Program
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Abstract: Research has found that a large percentage of black women endorse the Strong Black Woman (SBW) stereotype. This stereotype is the thought that black women are naturally stronger and can withstand harsher emotional conditions than any other group. While this notion can seem as an encouraging factor for black women, it could also be a discouraging factor towards the willingness to seek psychological help. In this study, we will investigate what type of influence the Strong Black Woman (SBW) stereotype has on the college black woman's attitude and willingness to seek psychological help.
Feasibility of Double Nitrogen Doping within the Rings of Model Graphene
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Abstract: Heteroatom doping with graphene is one of the efficient approaches to finetune its electronic properties that are determining factors for application of graphene systems. Among many heteroatoms, nitrogen atom has attracted an exceptional amount of interest in doping to manipulate the properties of graphene. In this study, we have investigated double nitrogen doping within six-membered rings of the finite-sized graphene \([\text{C}_{186}\text{H}_{36}]\). Three possibilities of dinitrogen doping within a ring exist 1,2-, 1,3- and 1,4-substitutions that can correspondingly be considered as ortho-, meta- and para-like substitutions. Density functional theory (DFT) at B3LYP/6-31G(d) level calculations present the results of positional preference of double nitrogen doping involving multiple non-equivalent six-membered rings. Our aim is to investigate the positional preference of three different doping possibilities and the selectivity of rings for doping of two nitrogen atoms. HOMO-LUMO energy gap values for all the positional isomers were calculated using TPSSh/6-31G(d)//B3LYP/6-31G(d) level. All the calculations were performed using Gaussian 16 program package. The doping site of all three types of double nitrogen doping plays a key role in the stability of the graphene sheet. Our computational study predicts the most stable isomer having two nitrogen dopants substituted near the zigzag edge. On the other hand, nitrogen doping close to the armchair edge provides structures with high relative energies. We have examined the effect of nitrogen doping in graphene on HOMO and LUMO energies and HOMO-LUMO energy gaps.

How has homelessness Affect College Students in the Urban Community?
Brittany Johnson, Clinical Mental Health Counseling Graduate Program
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Clark Atlanta University

Abstract: Envision moving out of your loft in the night in light of the fact that your living circumstance is undermining with expulsion. You can only take some clothes and your personal belongings. Since you needed to leave the solaces of your home, you are calling individuals to see who has space in their loft for you to crash until you can make a few courses of action. You end up crashing at your "fellow companion" companion's studio apartment on the floor for 3 months. You need to call your folks for help however you are too humiliated about your present living circumstance and are resolved to recover financially without the assistance of your folks. Those were the more regrettable three months of your life. You started to feel depressed, lonely, anxious, homesick, stressed, and suicidal. You and your personal companion have started butting heads because both parties are frustrated and stressed. Arguments are at an all-time high. The argument then turns into domestic violence which causes you to have suicidal ideation that led to suicidal attempts. This happened not on one but two occasions. You now find yourself at a breaking point. The breaking point is you calling your parents and asking them to help you acquire this apartment and help pay 2/3 of the rent. Your parents have agreed to assist you until you graduate from college. Whew, thank GOD for your parents. This research hopes to show how homelessness has affected college student’s mental health, what services and resources are needed to combat this epidemic. The research will use the identified method that has been outlined. This research looks to create programs to better serve this population in years to come.
Mechanism of ID4 Phosphorylation
Jazzmin Owens, Ph.D. in Biological Sciences Graduate Program
Majid Al-Zahrani, Ph.D. in Biological Sciences Graduate Program
Shravan-Kumar Komaragiri, Ph.D. in Biological Sciences Graduate Program

Faculty Mentor: Jaideep Chaudhary, Ph.D.
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Abstract: Inhibitor of DNA binding 4 (ID4) is a basic helix-loop-helix helix-loop-helix (bHLH) protein. ID4 can act as a tumor promoter or tumor suppressor. The function of ID4 may have a dual role in different cancer based on the type of cancer. ID4 acts as a tumor suppressor in prostate cancer and as a tumor promoter in breast cancer. It is unclear by what mechanism ID4 is able to play this dual role in various cancers. One possible mechanism of action is ID4 interaction with other bHLH proteins mediated by the HLH domain. Another possible mechanism for regulation of ID4 function is through post-translational modifications. Previous studies have shown that phosphorylation in the SPVR region can determine if the ID protein acts as a tumor promoter or tumor suppressor. A found that phospho-ablated Id2 (S5A) acts as a growth suppressor and pro-apoptotic in myoblasts cells. Id4 like Id2 also has a (SPVR) site and serine 5. This leads me to my hypothesis that phosphorylation determines whether ID4 acts as a tumor suppressor or tumor promoter. Experimental Procedures: Site directed mutagenesis was done in the prostate cancer cell line DU145 at serine 5 in the SPVR region to create a phosphor-mimic and a phospho-ablated mutant. Moreover, the growth of the mutant cell lines was evaluated to determine if phosphorylation plays a role in determining ID4’s function as a tumor promoter or suppressor. Results: The results found that phosphor-mimic S5E had a slower growth rate than the phosphor-ablated S5A mutant. Also, S5E had some morphological changes in comparison to the S5A mutant. Conclusions: This study suggests that phosphorylation may play a role in determining if ID4 acts as a tumor promoter or tumor suppressor.

Metal-Organic Framework as Electrodes in Lithium Ion Batteries
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Faculty Mentor: Conrad Ingram, Ph.D.
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Abstract: Metal-organic frameworks (MOFs) are a class of emerged multi-dimensional porous materials, that are composed of metal ions and organic ligands as linkers. They have demonstrated remarkable properties such as permanent porosity, high surface areas, high chemical and thermal stability and chemical tunability. MOFs have attracted great research interest in many fields, such as catalysis, gas storage, sensing, and separation. The application of MOFs in lithium ion batteries (LIBs) is currently a field of increasing attention in recent years. Lithium ion batteries (LIBs) is a family of rechargeable battery types in which lithium ion moves from the negative electrode to the positive electrode during discharge and back when charging. Due to difficulties with the rechargeability of lithium and related safety concerns, alternative electrodes are being sought. MOFs have been introduced to improve the properties of existing cathode and anode materials in LIBs. The thermal and chemical stability, which is highly demanded, is of critical importance for their practical applications. The lack of high stability of MOFs in the harsh electrochemical environment of Li-ion battery electrodes is a significant drawback that restricts their application in this regard. However, MOFs have attractive features such as structural tunability, which affords opportunity to enhance their stability and performance. The main
The Metaphysics of Hair, A Holistic Perspective: The Exchange of Energy
Robert Mack-Jones, MSW in Social Work Graduate Program
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Abstract: Hair is one of the most significant sources of energy for human vivacity. For many African American women, it is both a source of both pride and pain. Hair helps define who they are, what they are, and where they come from. It can also be a harsh reminder of who and what they are not, as well as how they do not fit in. The purpose of hair is to provide protection; it aids in body temperature regulation and helps to facilitate perspiration evaporation, and beautification. Hair also acts as sense organ and extends our sense of touch beyond the skin, thus making it more sensitive than direct skin touch. The head is the central communication and information center. The head sends and receives signals to and from other people and animals. It also assists in evaluating potential responses to outside stimulation. Hair provides also acts as the antennas which aids in the collection and filtration of a significant amount of the information processed by the brain. The way hair is cut and styled energizes one’s magnetic field and stimulates the pineal gland. Hair is also an adjunct organ of the skin. Like skin, hair serves as a filtration system. Everything one puts into the body comes out in the hair. Additionally, the energy associated with the traumatic physical, mental, and spiritual things women experience eventually comes to reside in their skin and hair. However, unlike the skin which can be exfoliated, the hair remains because it is a symbol of and an expression of style and beauty. With the introduction of weaves and lace front wigs, some made of synthetic and other made of 100% human hair, how does one effectively and efficiently spiritually cleanse the hair they glue or sew on to their head? What are the mental, physical, and spiritual ramifications of attaching the spiritually unclean hair to one’s spiritual and mental information and processing center? This research provides insight on how someone else’s mental, physical, and spiritual trauma energy can be passed through hair, thus affecting women wearing it.

The Role of ID4 in Regulating SAT1 Gene Expression in Prostate Cancer Phenotype
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Abstract: Inhibitor of DNA binding 4 (ID4), a bHLH protein and a transcriptional regulator, is a tumor suppressor gene in prostate cancer. ID4 is expressed in prostate cancer cells (LNCaP), which are androgen sensitive, but epigenetically silenced in a more aggressive DU145 cells. The epigenetic silencing of ID4 is associated with increasing tumor grade and castration resistant prostate cancer (CRPC). ID4 regulates the expression of some other genes such as SAT1, which is a rate limiting enzyme found in the X chromosome involved in the catabolic pathway of polyamine metabolism by catalyzing the N(1)-acetylation of spermidine and spermine. Recently, SAT1 was also shown to mediate histone H3 acetylation suggesting its role in regulating gene expression. Next generation sequencing (NGS) data showed a significant low expression of SAT1
when ID4 is up regulated and vise-versa, which led to a hypothesis that ID4 might regulate the expression of SAT1 gene in prostate cancer cells.

Experimental procedures: The NGS (exon sequencing) was performed on prostate cancer cells either over-expressing ID4 (DU145(+)ID4) or cells in which ID4 was genetically silenced (LNCaP(-)ID4). Moreover, immunohistochemistry (IHC) analysis was performed on mice prostates tissues (WT and ID4/- mice) and DU145(+)ID4 tumor xenografts tissues to analyze SAT1 protein expression in the presence and the absence of ID4. Results: The NGS and IHC data analysis suggested that Spermidine/spermine N(1)-acytyltransferase (SAT1) is up-regulated in cells lacking ID4 such as (LNCaP(-)ID4) but down-regulated in cells which express ID4 (DU145(+)ID4). These results prompted us to investigate the effect of silencing SAT1 on ID4 expression and on cancer phenotype. The expression of SAT1 gene in prostate cancer cell lines LNCaP, and DU145(+)+ID4 cells showed low expression compared to cells lacking ID4 gene such as in LNCaP(-)ID4 and DU145 cells. Moreover, SAT1 expression is also increased in the prostates of Id4/- mice. Silencing SAT in LNCaP(-)ID4 and DU145 cells lead to massive cell death. On the contrary, over-expression of SAT1 in LNCaP cells increased cell proliferation. Conclusions: The studies suggest that ID4 may regulate the expression SAT1. Moreover, SAT1 expression appears to correlate with increased proliferation of prostate cancer cells.
Abstract: It is socially understood that many Black men battle a diverse range of factors that complicate their lives and overall well-being. Navigating oppression often on the space of race, social class and education, Black men are also known to not seek professional help that could aid them mentally and emotionally. With the barbershop and sporting team(s) being two of the few settings where Black men often express themselves and communicate openly, this study intends to expand Black men’s safe spaces. Gauging the effects of group therapy on Black men, we observe and determine if this psychotherapy form produces different experiences or results for men of differing generations. Specifically, this study involves gathering six to eight individuals identifying as Black men for three focus groups—one for each generation (X, Y/Millennial, & Z)—and having them engage in therapeutic group processes led by a licensed professional. These groups will then meet for five one-hour counseling sessions where we will observe and assess their responsiveness to the aforementioned processes. By creating an atmosphere of security and community similar to the barbershop or a sports team, this study hopes to bring about emotional and mental clarity and maturation.