# Southern Center for Broadening Participation in STEM Artery

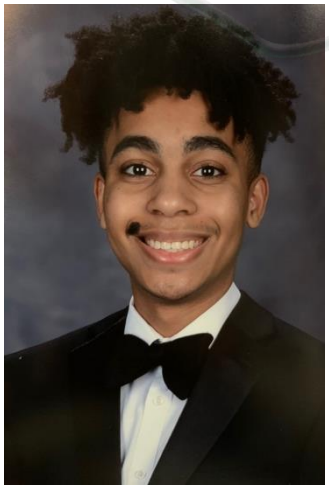
January 2022

The Southern Center for Broadening Participation in STEM is a minority-led non-for-profit organization, the Center's vision is the realization of "equitable representation and inclusion of underrepresented minorities in STEM across business, industry, policy and research sectors;" creating new possibilities in STEM career and college pathways for all students. The Center supports year-round STEM engagement K-20

## The Southern Center for Broadening Participation in STEM

# Program HIGHLIGHTS

2020 - 2021



Dr. Calvin Briggs, Founder & Executive Director
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Hoover, AL 35226
cbriggs@southernstemcenter.org

Dr. Anthony DePass, Board Chairman

Dr. Brian Stone, Beta Kappa Boule' Medical Scholarship Advisory Committee Chairman

Donate Today!

On November 9th and 16th, The Southern Center's STEM Enrichment Experience (SEE) hosted the "To the Moon and Beyond" hands-on STEM activity at the A.G. Gaston Boys and Girls Club in Birmingham, AL. The activity included a presentation on the significance of rockets, college and career pathways related to the aerospace industry, and people of color who have and currently dominate in these spaces. The Club participants (20), ranging from 5th to 6th grade, engaged in discussions about aerospace design, engineering, and space exploration. We discussed why space exploration was important, such as the growing need for natural resources that are scarce on Earth; our need to create an in expensive and renewable way to travel through our solar system. Participants were given an overview of the Estes Model Rocket that they later assembled. Participants worked in groups of 3 to construct their model rocket, led by the Southern Center's Executive Director, Dr. Calvin Briggs; SEE Board Chair, Dr. Brian Stone, and volunteers Mr. Dom Bowman and Mr. Jamari Rice. The two-hour long activity was full of excitement and questions as participants taped and glued rockets together. Participants debated the proper measurement of angles and placement of parts, heightening the anticipation of whether the craft would fly. Once completed, students showed off their rockets and prepared them for a test flight.

# Beta Kappa Boule' STEM Medical Scholarship Update

The BKB STEM Medical Pathways Scholarship Award provides one Alabama student, admitted to the University of Alabama at Birmingham School of Medicine, with a tuition and book scholarship. Nominees must be admitted to the University Of Alabama School Of Medicine and an Alabama resident. Final selection will be determined by the Beta Kappa Boule' Scholarship Award Committee.

To date, the STEM BKB Medical Pathways Scholarship Fund has raised approximately $29,500.00 toward our $30,000.00 goal. The scholarship will provide one Birmingham area student, admitted to the University of Alabama at Birmingham Medical School with a tuition and book scholarship.

Donate Today!

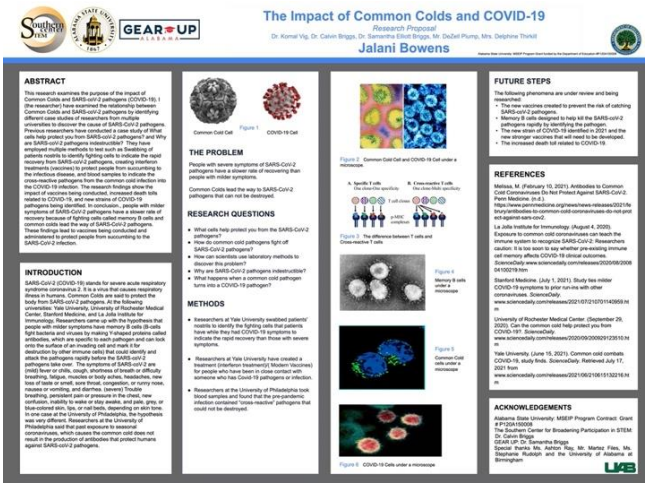
# Bridge to STEM

The Southern Center for Broadening Participation in STEM in collaboration with Alabama State University Minority Science and Engineering Improvement Program (MSEIP), and the GEAR-UP Alabama Program, housed at the University of Alabama at Birmingham, served 24 recent high school graduates in the Bridge to STEM program with a virtual STEM research experience to prepare them for the rigors of college and career. All participants received a $1000.00 stipend for their participation. The following participants were exposed to STEM professionals through a variety of professional talks and workshops "STEM Talks." The sessions were held throughout the month of June and July of 2021, SCBPS provided eight (8) week(s) of virtual sessions focused the fundamentals of STEM research, enrichment, and college life. More specifically, students enjoyed the following workshops: *Fundamentals of Research, Discovering Your Research Interest, Creating an Annotated Bibliography, Talk to the Experts, What Research Design Do I Use?, What Type of Research Instruments Do I Need?, This Doesn't Make Any Sense?, Now What?, Publishing Your Research,* and *a Research Symposium*.

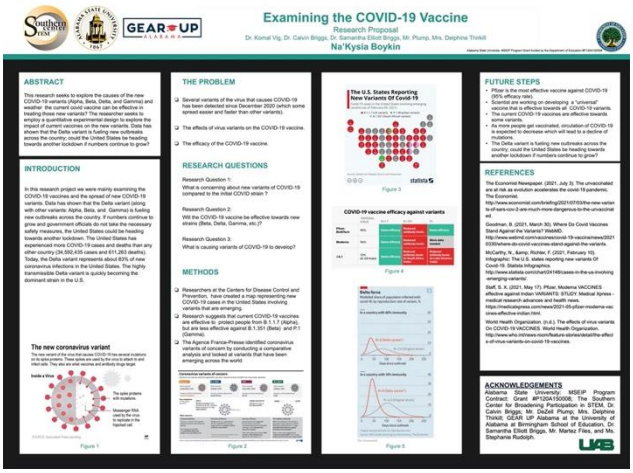
**Jalani Bowen**
*Bullock County High School*
*Midway, AL*

This research examines the purpose of the impact of Common Colds and SARS-coV-2 pathogens (COVID-19). I (the researcher) have examined the relationship between Common Colds and SARS-coV-2 pathogens by identifying different case studies of researchers from multiple universities to discover the cause of SARS-CoV-2 pathogens. Previous researchers have conducted a case study of What cells help protect you from SARS-coV-2 pathogens? And why are SARS-coV-2 pathogens indestructible? They have employed multiple methods to test such as Swabbing of patient's nostrils to identify fighting cells to indicate the rapid recovery from SARS-coV-2 pathogens, creating interferon treatments (vaccines) to protect people from succumbing to the infectious disease, and blood samples to indicate the cross-reactive pathogens from the common cold infection into the COVID-19 infection. The research findings show the impact of vaccines being conducted, increased death tolls related to COVID-19, and new strains of COVID-19 pathogens being identified. In conclusion, people with milder symptoms of SARS-CoV-2 pathogens have a slower rate of recovery because of fighting cells called memory B cells and common colds lead the way of SARS-CoV-2 pathogens. These findings lead to vaccines being conducted and administered to protect people from succumbing to the SARS-CoV-2 infection.

"*The Impact of Common Colds and COVID-19,"*



*"Examining the COVID-19 Vaccine"*




## Takeiyah Johnson

Park Crossing High School
Montgomery, AL

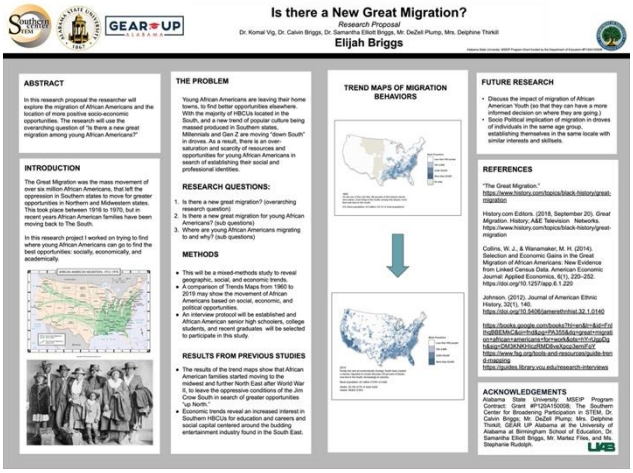
This research seeks to explore the causes of the new COVID-19 variants (Alpha, Beta, Delta, and Gamma) and whether the current COVID vaccine can be effective in treating those new variants? The research seeks to employ a quantitative experimental design to explore the impact of current vaccines on the new variants. Data has shown that the Delta variant is fueling new outbreaks across the country; could the United States be heading towards another lockdown if numbers continue to grow

## Calvin Elijah Briggs, Jr.

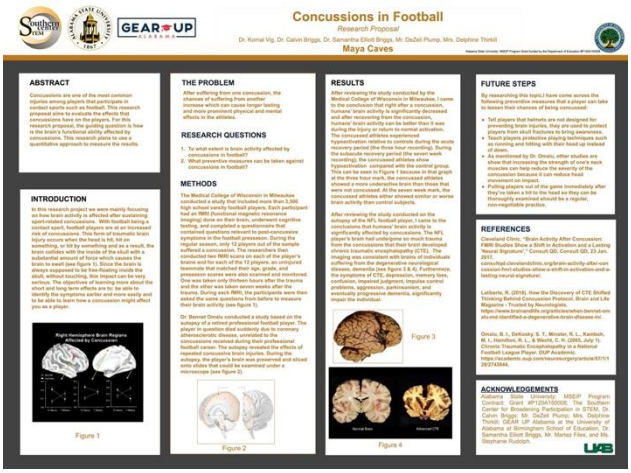
Hoover High School,
Hoover, AL

In this research proposal the researcher will explore the migration of African Americans and the location of more positive socio-economic opportunities. The research will use the overarching question of "Is there a new great migration among young African Americans?"

*"Is there a New Great Migration"*




*"Concussions in Football"*




## Maya Caves

Central High School
Tuscaloosa, AL

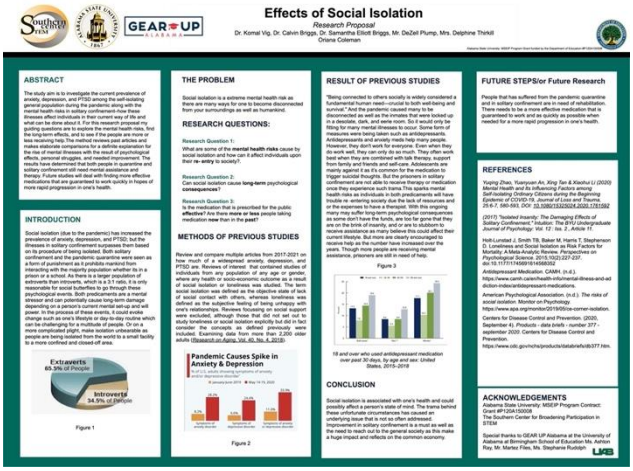
Concussions are one of the most common injuries among players that participate in contact sports such as football. This research proposal aims to evaluate the effects that concussions have on the players. For this research proposal, the guiding question is how the brain's functional ability is affected by concussions. This research plans to use a quantitative approach to measure the results.

## Oriana Coleman

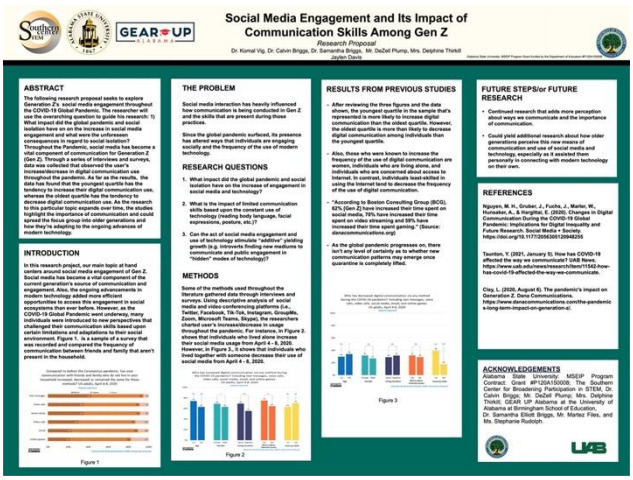
A.H. Parker High School
Birmingham, AL

The study aim is to investigate the current prevalence of anxiety, depression, and PTSD among the self-isolating general population during the pandemic; along with the mental health risks in solitary confinement–how these illnesses affect individuals in their current way of life and what can be done about it. For this research proposal the researcher's guiding questions are to explore the mental health risks, find the long-term effects, and to see if the people are receiving help. The method reviews past articles and makes elaborate comparisons for a definite explanation for the rise of mental illnesses with the result of psychological effects, personal struggles, and needed improvement. The results have determined that both people in quarantine and solitary confinement still need mental assistance and therapy. Future studies will deal with finding more effective medications that are guaranteed to work quickly in hopes of more rapid progression in one's health.

*"Effects of Social Isolation"*




*"Social Media Engagement and its Impact of Communication Skill Among Gen Z"*




## Jaylen Davis

Lee High School
Montgomery, AL

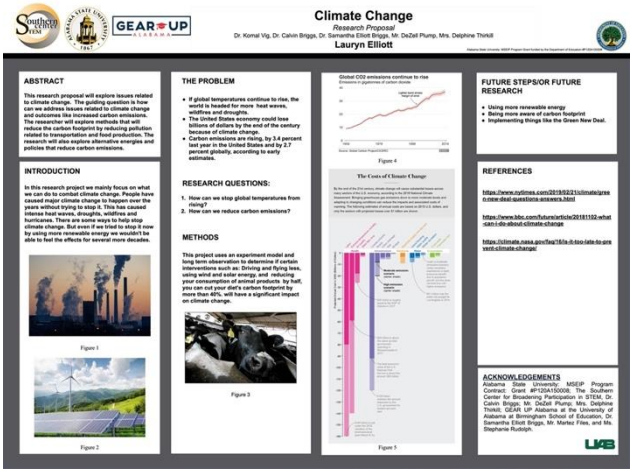
The following research proposal seeks to explore Generation Z's social media engagement throughout the COVID-19 Global Pandemic. The researcher will use the overarching question to guide his research: 1) What impact did the global pandemic and social isolation have on on the increase in social media engagement and what were the unforeseen consequences regarding social isolation? Throughout the Pandemic, social media has become a vital component of communication for Generation Z (Gen Z). Through a series of interviews and surveys, data was collected that observed the user's increase/decrease in digital communication use throughout the pandemic. As far as the results, the data has found that the youngest quartile has the tendency to increase their digital communication use, whereas the oldest quartile has the tendency to decrease digital communication use. As the research to this topic expands over time, the studies highlight the importance of communication and could spread the focus group into older generations and how they're adapting to the ongoing advances of modern technology.

## Lauryn Elliott

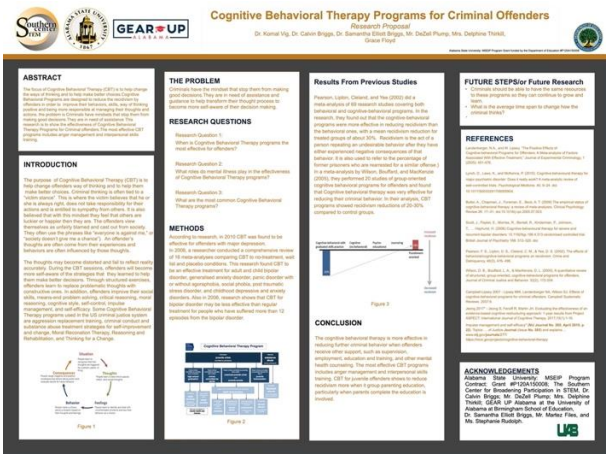
Hoover High School
Hoover, AL

This research proposal will explore issues related to climate change. The guiding question is how we can address issues related to climate change and outcomes like increased carbon emissions. The researcher will explore methods that will reduce the carbon footprint by reducing pollution related to transportation and food production. The research will also explore alternative energies and policies that reduce carbon emissions.

*"Climate Change"*




*"Cognitive Behavioral Therapy Programs for Criminal Offenders"*




## Grace Floyd

Park Crossing High School
Montgomery, AL

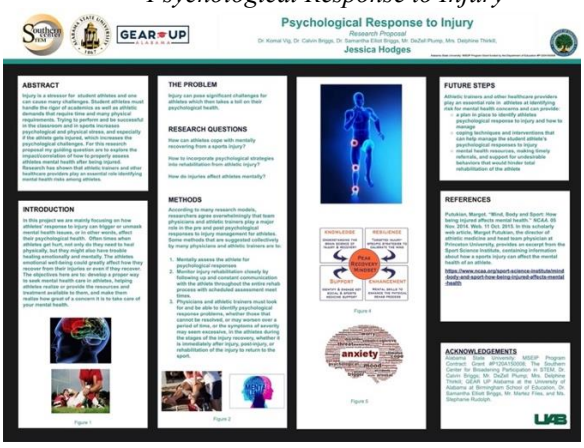
The focus of Cognitive Behavioral Therapy (CBT) is to help change the ways of thinking and to help make better choices. Cognitive Behavioral Programs are designed to reduce the recidivism by offenders in order to improve their behaviors, skills, way of thinking positive and being more responsible at managing their thoughts and actions. the problem is Criminals have mindsets that stop them from making good decisions. They are in need of assistance This research is to show the effectiveness of Cognitive Behavioral Therapy Programs for Criminal offenders. The most effective CBT programs includes anger management and interpersonal skills training.

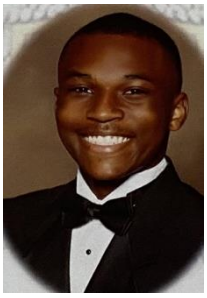
## Jessica Hodges

Park Crossing High School
Montgomery, AL

Injury is a stressor for student athletes and one can cause many challenges. Student athletes must handle the rigor of academics as well as athletic demands that require time and many physical requirements. Trying to perform and be successful in the classroom and in sports increases psychological and physical stress, and especially if the athlete gets injured, which increases the psychological challenges. For this research proposal my guiding question are to explore the impact/correlation of how to properly assess athletes' mental health after being injured. Research has shown that athletic trainers and other healthcare providers play an essential role identifying mental health risks among athletes.

*"Psychological Response to Injury"*



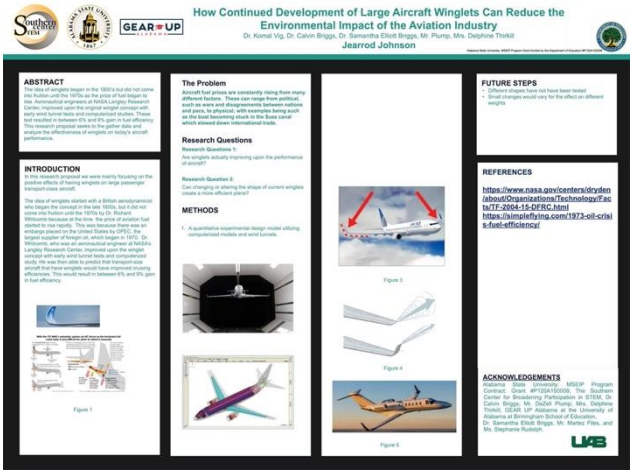


## Jearrod Johnson

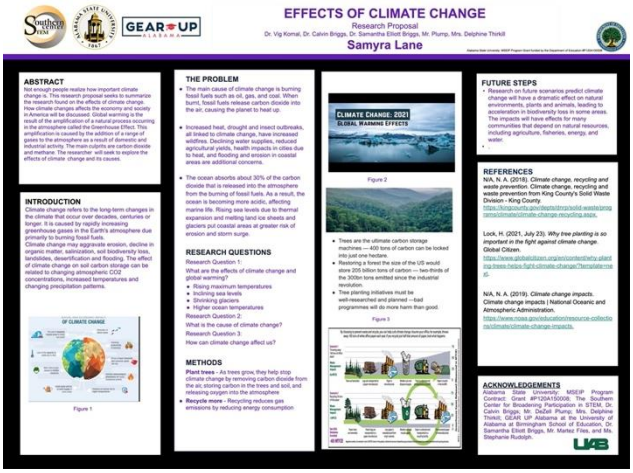
Grayson High School
Lawrenceville, GA

The idea of winglets began in the 1800's but did not come into fruition until the 1970s as the price of fuel began to rise. Aeronautical engineers at NASA Langley Research Center, improved upon the original winglet concept with early wind tunnel tests and computerized studies. These tests resulted in between 6% and 9% gain in fuel efficiency. This research proposal seeks to the gather data and analyze the effectiveness of winglets on today's aircraft performance.

*"How Continued Development of Large Aircraft Winglets Can Reduce the Environmental Impact of the Aviation Industry"*




*"Effects of Climate Change"*




## Samyra Lane

A.H. Parker High School
Birmingham, AL

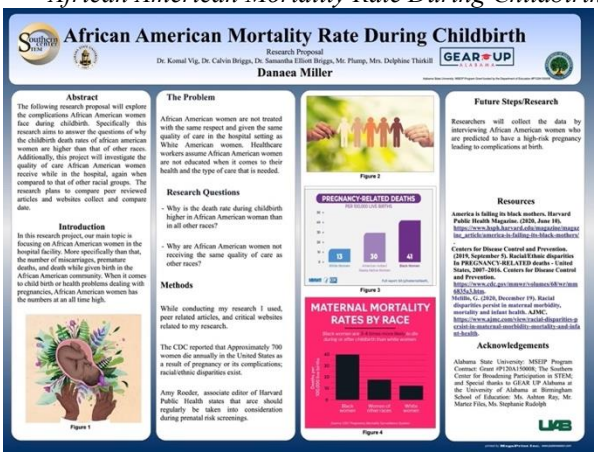
Not enough people realize how important climate change is. This research proposal seeks to summarize the research found on the effects of climate change. How climate changes affect the economy and society in America will be discussed. Global warming is the result of the amplification of a natural process occurring in the atmosphere called the Greenhouse Effect. This amplification is caused by the addition of a range of gases to the atmosphere as a result of domestic and industrial activity. The main culprits are carbon dioxide and methane. The researcher will seek to explore the effects of climate change and its causes.

## Danaea Miller

*Marengo High School*
*Dixon Mills, AL*

The following research proposal will explore the complications African American women face during childbirth. Specifically, this research aims to answer the questions of why the childbirth death rates of African American women are higher than that of other races. Additionally, this project will investigate the quality-of-care African American women receive while in the hospital, again when compared to that of other racial groups. The research plans to compare peer reviewed articles and websites collect and compare date.

*"African American Mortality Rate During Childbirth"*




*A Comparison of COVID-19 Cases Among Elderly African American 65-90 to Younger African Americans 18-30"*


## Elisha Taylor

Aliceville High School
Aliceville, AL

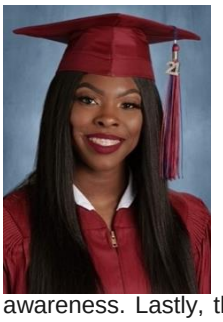
In addition, these results should be considered when making decisions about re-opening middle schools, high schools and colleges, and the importance of wearing masks and social distancing in school settings.

**Jasmine Thomas**
Carver Senior High School
Montgomery, AL

Individuals who are a part of Generation Z utilize technology daily. It is difficult for this generation to function without the use of technology. This study aims to understand what effects technology has on Gen Z'ers. For this research proposal my guiding question are explore the impact/correlation of technology on Gen Z'ers and any negative or positive outcomes. The research plans to use a qualitative review method to collect data from peer-reviewed articles and other artifacts.

*"Generation Z (Gen Z) and Technology"*


*"Psychology of Plastic Surgery"*

**Rachel Walters**
Park Crossing High School
Montgomery, AL

In this research proposal, the researcher will explore the change in cosmetic surgeries between ethnic groups, as well as the links to mental health. The researcher will compare its decline with the indirect likeness of increased therapy as well as social awareness. Lastly, the researcher will look at the long-term effects with those that possess mental disorders and whether these procedures help or harm individuals.

*"Mycelium Replaces Plastic?"*



**Deshaun Wormsby**
H. Parker High School
Birmingham, AL


Today plastics can be found in nearly every corner of the globe, in landfills, rivers, streams, and oceans making it one of most polluted materials on the planet. Based on the literature plastic can take anywhere from 10 -1000 years to decompose. The researcher seeks to explore alternative materials to replace plastic products and containers. A viable replacement material could be mycelium. The researcher will explore if mycelium is an effective replacement for plastic.

*"The Cause of Coronavirus (COVID-19)"*



**Malik Minter**
A.H. Parker High School
Birmingham, AL


The coronavirus (COVID 19) is a deadly disease that became a problem in late 2019. It became more of a problem when it rapidly started spreading in 2020. It has taken a countless number of lives. My research focuses on how the coronavirus can be eradicated.

## STEM Talks

The Southern Center invited a team of STEM experts to share their STEM academic and social journeys with the 2021 “Bridge to STEM” participants. Our experts shared their personal motivations for choosing careers in STEM, in addition to the social and economic barriers they had to overcome to achieve their goals. Experts discussed career pathways in aeronautics, aerospace engineering, veterinary sciences, urology, dermatology, obstetrics and gynecology, orthopedics and sports medicine, and understanding vaccinations as a means of preventive care.


**Gena Henderson, IE, Ph.D**

Dr. Gena Humphrey Henderson, serves as chief of the Integration Branch of the Systems Engineering Division within the Engineering and Technology Directorate at NASA's John F. Kennedy Space Center.

**Brian Stone, M.D.**

Urology Specialist
Jasper Urology

Focusing in urologic Care and urologic surgery.

**Rhesa Houston, DVM**

Is a practicing veterinarian in Birmingham, Alabama, where she serves as Chief of Staff at her hospital. Rhesa is a general practitioner focusing on small animals. He interest is in public health.

**Corey Hartman, M.D.**

Has a special interest in Dermatologic Surgery, Injectables, Hair Restoration and Laser Dermatology. He frequently speaks on cosmetic procedures and social media marketing in dermatology at meetings around the country.

**Irby Rivera, Captain**

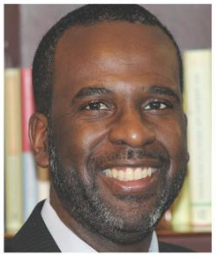
Flight Captain at United Airlines

**LoRissa Autery, MD**

Board certified for the American Board of Obstetrics and Gynecology and is a Fellow of the American Congress of Obstetricians and Gynecologists.

**Robert Agee, M.D.**

MD from UAB followed by a residency in Pediatrics at The Children's Hospital of Alabama



**Raegan Durant, M.D.**

Associate Professor
UAB - Preventive Medicine

Developing strategies to increase minority participation in clinical trials.

Volunteer Today

## Bridge to STEM Pre/Post-Survey at-a-Glance

The Summer Enrichment Experience (SEE) engaged elementary, middle and high school students during an 8-week project-based program to enhance and enrich students' knowledge and understanding of STEM related activities, instruction, and career pathways. Students participating in the 2021 Bridge to STEM program consisted of 24- high school graduates, 14(58%) females and 10(42%) males; 24(100%) identified as African American. Participants received enrichment in medical and health pathways (biology and chemistry), aerospace engineering, mathematics, and public health. In addition, students completed research sessions that included: *Fundamentals of Research, Discovering Your Research Interest, Creating an Annotated Bibliography, Talk to the Experts, What research design do I use?, What type of research Instruments Do I Need?, This Doesn't Make Any Sense?, Now What?, Publishing Your Research,* and *a Research Symposium.*

Twenty-four participants completed the pre and post-survey. Likewise, a significant number of the students for both, the pre-survey 24(100%) and the post-survey 17(70%), indicated that they had already completed 3-4 science and mathematics courses. The following data are brief highlights from the 2021 external evaluation results (figures 1a. - 2b.)

*Figure 1. I am confident I have the ability to learn the materials taught in science, technology, engineering, and mathematics (STEM)courses*

**Figure 1a.** Pre-Survey

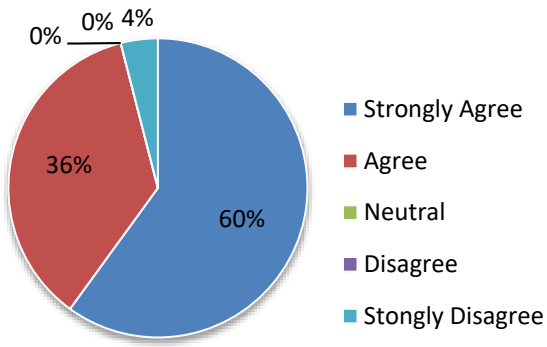



**Figure 1b.** Post-Survey

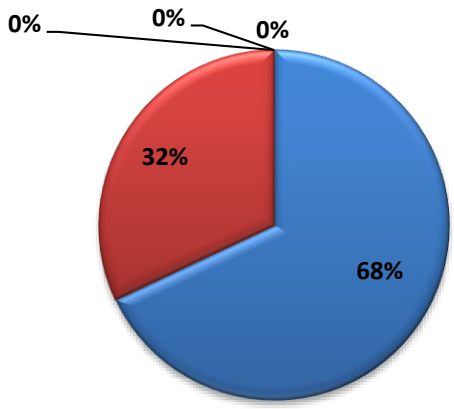


*Figure 2. I am confident I can do well in a STEM major*

**Figure 2a.** Pre-Survey

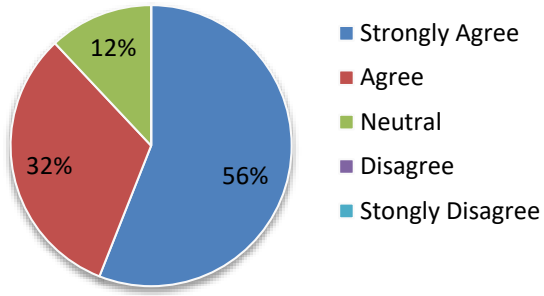
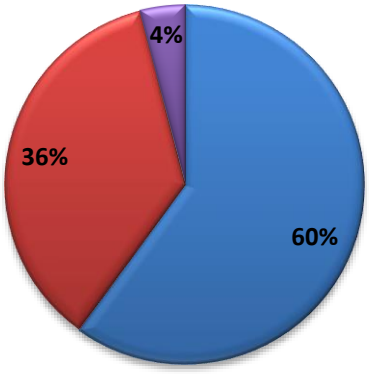



**Figure 2b.** Post-Survey




**8% indicated higher confidence in a STEM**

**12% more students believe they will do well or better than other students in STEM majors**

# 100%

of Parents strongly agree

*SEE has met their expectations*

*SEE's Facilitators have done an excellent job facilitating*

*SEE has made a significant academic contribution to their child's development*

*SEE is preparing their son/daughter for future opportunities in STEM*

**Summer Enrichment Institute Participant (2007-2009)**

***Engineering Major at the University of Alabama at Birmingham College of Engineering***

**Jaylen Davis** graduated from Lee High School in Montgomery, AL. Jaylen is currently majoring in civil engineering at the University of Alabama at Birmingham. The title of Jaylen's Bridge to STEM Research Proposal is *"Social Media Engagement and its Impact of Communication Skill Among Gen Z."*

## Descriptive Summary

The success of the Southern Center for Broadening Participation in STEM has emerged from the extensive development, implementation, and evaluation of its pre-cursor programs. The STEP-UP in STEM, 2-PI-STEM, and STEM Cubed programs funded by the National Science Foundation at Lawson State Community College. The program was funded for 15 consecutive years, led by its Director, Dr. Calvin Briggs, evolving from only engaging high school students and undergraduates to developing a STEM pipeline from K – 20. The Southern Center for Broadening Participation in STEM expands the foundational work beyond its initial incubator, crossing state, regional, and national boundaries. The Southern Center has framed a Virtual STEM Learning Community posed to fulfil its mission to "increase the number of underserved and marginalized minorities in STEM college and career pathways.

### Program Participants

This descriptive summary of the **Bridge to STEM Program 2021** consisted of the summer 2021 participants. The total number of STEM scholars recruited were twenty-four, 14 (58%) males and 7 (42%) females. To date 20 (83%) entered a post-secondary institution in the fall of 2021; 7 (50%) of those accepted were male and 2 (29%) were female.

**Summer 2020 STEM Enrichment Experience (SEE).** During the summer of 2020, the height of the COVID-19 global pandemic, SEE hosted 15 students virtually across 4 states one district (Alabama, Georgia, New Jersey, Indiana, and Washington, D.C.), 6 grade levels ($7^{th}$ – $12^{th}$), covering topics in **Biology:** cardiovascular function and disease; **Chemistry:** thermodynamics; **Mathematics:** integral calculus, geometry, and **The Art of STEM**: design, drafting, and visual communication.

The **Virtual Scholar Program Fall 2020** consisted of 9 undergraduate participants, 3(33%) males and 6(67%) females; class rank: 100% seniors. participant major's were in the areas of biomedical, computer science, and forensics, more specifically, research participant research foci were "Determining PMI from Thanato Microbiome (Anterior and Posterior Pituitary Glands); artificial intelligence; Tissue Engineering/Bio Fabrication; and Drug Delivery Systems for Cancer. 50% of the students identified as African American and 50% identified as Asian or Other. 50% of the participants indicated that their parents had a career in a STEM field and 100% of the participants indicated they would pursue a STEM career pathway. 88% of students plan to pursue advance degrees in STEM, and 12% indicated they would enter directly into the workforce. When participants were asked **"What did you enjoy most about the Virtual Scholar Program/ASU- MSEIP?"** They indicated that they enjoyed networking, the insight into their fields, the ability to do research and develop their skills under the guidance of a mentor, and exposure to different industries. I believe the quote by one of our participants sums up the importance of the work we do.

> *"The feeling you get when you actually see the final product. You spend time trying to figure out the best way to get the results, you end up making some errors, having to redo the work, run it again, and then you finally see amazing results! The fact that you actually get to use your brain in the smartest and most logical way possible; where every assignment thrown at you is a challenge. I will be forever grateful for being allotted such an opportunity!"*

## Activities, Collaborations and Presentations

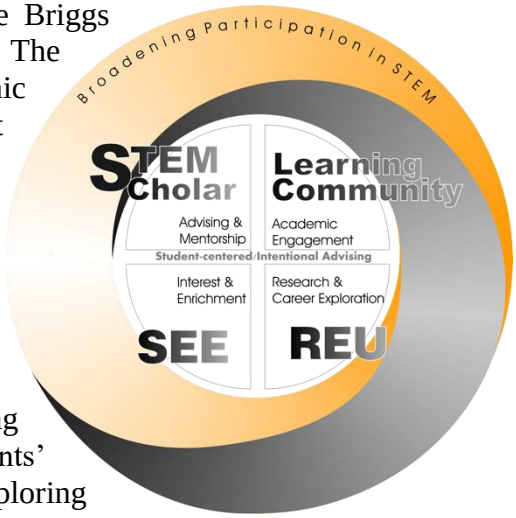
From 2019 - 2022 The Southern Center has hosted more than thirty program activities, research projects, collaborations, and presentations. These accomplishments provided STEM facilitators, students, collaborators and partners opportunities to recruit, retain and enrich STEM students. In addition, program leadership disseminated best practices, research findings and expanded collaborative efforts state and nation-wide. A notable collaboration was established with Alabama State University providing research and career exploration opportunities to 15 undergraduate STEM majors during the height of the global pandemic. In addition, Dr. Calvin Briggs, Executive Director of the Southern Center, served as one of the inaugural editors for the American Association for the Advancement of Science (AAAS) Disruptor Blog. The Southern Center's STEM Enrichment Experience (SEE) hosted the "To the Moon and Beyond" hands-on STEM activity at the A.G. Gaston Boys and Girls Club in Birmingham, AL. The activity included club participants (20), ranging from 5$^{th}$ to 6$^{th}$ grade engaging in a discussion on the significance of rockets, college and career pathways related to the aerospace industry, people of color who have and currently dominate in this space, and the construction and launch of model rockets. Dr. Briggs also presented a research poster titled: *Building Bridges to STEM College and Career Pathway Completion,* at the American Association of Colleges & Universities (**AAC&U**) Transforming STEM Conference held November 4-6, 2021. In addition, the Southern STEM Center has partnered with **Complete College America**, a national leader and advocate for implementing strategies for college completion, to explore digital learning across Historically Black Colleges and Universities (HBCUs) titled, **Digital Learning Infrastructure Initiative.** The initiative's goal is to reduce equity gaps for racially minoritized students, The Southern Center for Broadening Participation in STEM assist CCA in its efforts to gain a comprehensive view of the digital learning challenges facing Historically Black Colleges and Universities. The Southern Center assists in building a co-design partnership, scaling up the DLI Body of Work, through a unique perspective, culturally-responsive lens, and ability to leverage the Center's cultural credibility among HBCUs. The DLI initiative includes improving availability, awareness, and adoption of digital infrastructure, which includes the technologies, services and implementation supports, and models required to develop, deliver, continuously improve, and sustain high quality digital learning infrastructure, with the ultimate goal of reducing equity gaps for racially minoritized students.

## Summary

The Southern Center, in collaboration with its partners, provided funding for fifty-four students, across 6 states, and 25 high schools, attending more than 12 colleges/universities. Participant majors include, but are not limited to pre-med/biology, mathematics, biomedical engineering, forensics, chemistry, and computer science.

# Student-Centered Advising

The Southern Center follows the Briggs conceptual model (The Briggs Model) based on the Center's programmatic goals and objectives. The conceptual model consists of advising and mentorship, academic engagement, research and career exploration, and increased interest and enrichment opportunities for students. According to Jennifer Varney, intrusive advising involves intentional contact with students with the goal of developing a caring and beneficial relationship that leads to increased academic motivation and persistence (2007). Earl defines it as proactive interactions with students, with the intention of connecting with them before a situation occurs that cannot be fixed (1987). If you believe that intrusive advising is "hand-holding" or parenting, it is not, according to Upcraft & Kramer, but rather it is active concern for students' academic preparation; it is a willingness to assist students in exploring services and programs to improve skills and increase academic motivation (Upcraft & Kramer, 1995).



**Briggs Intentional Advising Model**

The framework of the conceptual model includes advising and mentorship, research and career exploration, and interest and enrichment; these components radiate into projects and activities: learning communities, research experiences elementary, middle, high school, and undergraduates; summer enrichment experiences, and college bridge opportunities. The projects and activities are encompassed by guided pathways to success and broadening participation; emphasizing the need to increase underrepresented minorities. All the components of the conceptual model essential, however, student-centered intentional advising is the central force which binds the model.

Intentional advising is action-oriented; involving motivating students to seek help when needed. Intentional (Proactive or Intrusive) advising: (mentoring; enrichment; academic enhancement, accountability, and advising; social, and economic resources, academic monitoring (progress reports; study plans; time management), social enhancement (social accountability), and enrichment.

# Why is Intentional advising needed?

It is essential to teach students to seek help when they need it, and before it's too late**.**

- **Increasing Cognitive Bandwidth** [familial, socio-economic barriers, cultural norm (racial stereotypes, gender bias)]
- **Academic self-efficacy** [Improving mathematics self-efficacy, enhanced study skills, peer support, peer tutoring, social accountability, academic accountability, faculty support, enhanced research skills, time management, academic engagement, social/academic engagement].

# Best Practices

The success of the Southern Center's programmatic activities increasing STEM interest and persistence of underrepresented minorities in STEM, has resulted in best practices which supports the intentionality of its mission. These best practices have enhanced instructional strategies; student learning, leadership, and engagement, academic enrichment activities, and curriculum.

1. **Digital Learning Infrastructure**
    a. Reliable access to Wi-Fi;
    b. Adequate and secure devices to engage in web-based learning and communications.
    c. Access/subscriptions to web-based instructional resources and learning management
        i. systems;
    d. Access to web-based student support resources;
    e. Access to web-based student engagement tools.

2. **Student Advisement/Mentorship**
    a. Students are advisor/mentored by highly qualified academic professionals;
    b. Students receive direct (virtual and face-to-face) contact with STEM professionals

3. **Cohort Format**
    a. Students complete STEM enrichment and research in cohorts;
        i. Providing peer support;
        ii. Supporting and enhancing STEM learning community model;

4. **Weekly Student Led Meetings**
    a. Emphasizing student leadership development;
    b. Students provide input regarding activities and experiences (buy-in)

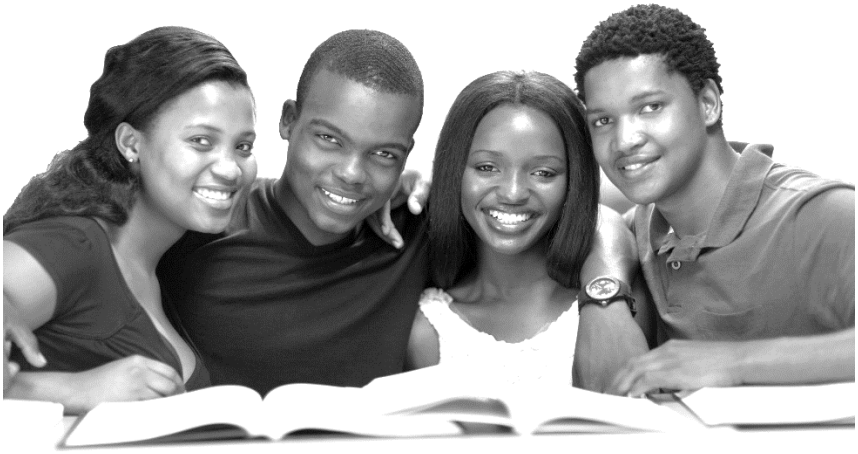
5. **STEM Student Engagement**
    a. Students commit to STEM engagement (5 hours a week);
        i. Mentor/Advisor;
        ii. Research/Peer Tutoring;

6. **Community & Service-Learning Commitment**
    a. K-12 tutoring and enrichment, 4-year and business collaborations;

7. **Research Commitment/Development**
    a. High school and undergraduate students complete summer research experiences, i.e.,
    b. Bridge to STEM, Research Experience for Undergraduates (REU);

8. **Curriculum Enhancements**
    a. Bridge to STEM Program provides recent high school graduates with the opportunity to enhance their research skills and explore STEM career pathway.

*The Center is supported through your tax-exempt donations.*



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*"Creating New Possibilities in STEM Career and College Pathways"*