

100th Annual Meeting

Alabama Academy of Science

Meeting jointly with
Alabama Junior Academy of Science
Gorgas Scholarship Competition

March 8-10, 2023

hosted by
Samford University
College of Health Sciences
Birmingham, Alabama

alabamaacademyofscience.org



Inscription Samford University Memorial of Remembrance & Reconciliation

“Let justice roll down like waters, and righteousness like an ever-flowing stream.”
Amos 5:24

Between 1619 and 1865 millions of people of African origin were enslaved in this land. In Samford University’s early history, slavery and its aftermath permeated the economic, social and religious life of the institution and much of the United States.

The resulting racism has led to discrimination, oppression, injustice and violence throughout the history of our nation. This evil is cause for repentance. All who walk with God are called to pursue justice and mercy.

This obelisk honors the sacrifices of many African Americans for the mission and vision of Samford University even in days when their efforts were invisible or barely acknowledged.

In memory of Harry (1831-1854), an African American man who lived in slavery and died from injuries received while rousing the students at the burning of the Howard College building at midnight on October 15, 1854. Harry is remembered for bravery that saved lives and sustained this institution.

In memory of Audrey Lattimore Gaston Howard (1940-1989) who in 1967 became the first African American student admitted to Samford University. She received a Juris Doctor degree from Cumberland School of Law in 1970 and later became the first woman in the southeast appointed to the United States Attorney’s Office.

This marker was authorized as a symbol of the university’s mindful commitment to the mission of reconciliation in the name of the Lord Jesus Christ by the Samford University Board of Trustees.

Dedicated
May 5, 2020

ONE HUNDREDTH ANNUAL MEETING
of the
ALABAMA ACADEMY OF SCIENCE, INC.



Meeting Jointly With
ALABAMA JUNIOR ACADEMY OF SCIENCE
and
GORGAS SCHOLARSHIP COMPETITION

PROGRAM BOOK

March 8-10, 2023



Samford University, Birmingham, AL

www.alabamaacademyofscience.org

<http://alabamajunioracademyofscience.org>

<http://alabamajunioracademyofscience.org/home/gorgas-scholarship-competition>

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Welcome Messages



20 February 2023

Dear Alabama Scientists, Educators, and Students,

It is with great joy and great humility that I welcome you to Samford University to celebrate with us the 100th meeting of the Alabama Academy of Science. I am honored to serve the AAS as President during this milestone year, which has given me the opportunity to reflect on its long history and many accomplishments. Dr. Geraldine Emerson, the first woman president of the AAS, was once quoted saying that *"Although people may not be familiar with the name of the Academy, most of them are familiar with our activities."* That is certainly true, at least if you've been in any way connected to the STEM professions in Alabama since AAS came into existence in 1924. Over the past century, the AAS has supported many initiatives to nurture research and education in Alabama, several of which are still ongoing. For instance, the AAS has conducted the Gorgas Scholarship Competition since 1948, providing scholarships to senior high school students who give winning presentations at our annual meeting. Through the Alabama Junior Academy of Science we also support the Science Olympiad in Alabama and seven science fairs at different sites across the state. The AAS publishes a peer-reviewed research journal and recognizes scientists and science educators from Alabama with a number of prestigious awards, including the Wright Gardner Award and the AJAS Outstanding Teacher Award. This year, we are debuting our newest award, named for UAH professor Adriel D. Johnson, which will recognize outstanding mentors of students.

Our most visible activity, however, is our annual meeting, hosted nearly every spring since 1924. This year marks our 100th annual meeting, hosted by Samford University. Samford has hosted the meeting many times over the years; the first time was in 1932, back when the university was known as Howard College. We've got a great event planned for you this year. We will have ten sections of research presentations on March 9 followed by the AJAS paper reading and Gorgas competitions on March 10. We are also very excited to host Dr. Sharlene Newman of the University of Alabama and executive director of the Alabama Life Research Institute as our awards banquet keynote speaker on the evening of March 9. Dr. Newman will be delivering a presentation titled "Improving Brain Health in Alabama: a Neuroscientist's Perspective". At lunchtime on the 9th we will also be holding a panel discussion on "The Science of Health Disparities Research" that promises to be both fascinating and timely.

In conclusion, we hope you are as excited as we are to celebrate our centennial year with us and are ready to help us enrich the sciences in this wonderful state. The AAS remain strong and vibrant after all these years because of the hard work, brilliant discoveries, and conscientious mentorship by people like you, and with your continued support we can look forward to another 100 years of opportunity for the students and scientists of Alabama.

Sincerely,

J. Jeffrey Morris
University of Alabama at Birmingham
2022-2023 President, Alabama Academy of Science

<p>Department of Biology 464 Campbell Hall 1300 University Boulevard 205.934.9685 Fax 205.975.6097</p>	<p>http://www.uab.edu/biology Mailing Address: CH 464 1720 2ND AVE S BIRMINGHAM AL 35294-1170</p>
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Samford University

800 Lakeshore Drive
Birmingham, AL 35229
samford.edu

Office of the President

Greetings and welcome to Samford University!

On behalf of Samford's board of trustees, faculty, staff, and students, it is a special honor to host the Alabama Academy of Science and Alabama Junior Academy of Science members and guests on our campus.

The beauty of Samford's grounds and the outstanding quality of its facilities are inspiring, but our greatest asset lies within the hearts and minds of our students. Samford's learning environment enriches the spiritual, intellectual, and social development of our community members. Samford University is ranked 1st in the nation for student engagement by *The Wall Street Journal* (2022). Student engagement assesses how challenged and inspired students feel inside and outside the classroom, as well as the breadth of opportunities students have that enrich their full experience at the university.

Samford's character is rooted in strength and leadership. Samford's 181-year history is one of academic excellence. Samford increases its impact on the world by graduating students capable of addressing the most profound challenges facing today's society. Samford's strong character positions us as a place of hope and as a guiding light for future generations of thoughtful and inspiring leaders.

Samford's students and faculty are actively pursuing research and scholarship in a variety of STEM-related areas. Only last year, Sydney Bottcher, a chemistry and biochemistry double major, earned a Goldwater Scholarship, one of the nation's oldest and most prestigious academic honors. Engineering-physics alumna Brittney Terry was named a National Science Foundation Graduate Research Fellow and a GEM/Intel Fellow. Math and computer science alumnus Justin Young was one of only 54 students in the U.S. selected as a Fellow of the Phi Kappa Phi national honor society. And Samford partners with the National Science Foundation through the university's STEM Scholars program which enables academically talented and financially at-risk transfer students from local community colleges complete Samford degrees in the STEM disciplines.

We are grateful for the opportunity to host this significant and historic gathering at Samford, and I personally send my best wishes and prayers for a successful conference.

Sincerely,

Beck A. Taylor, Ph.D.
President





Samford University

Office of the Provost and Vice President for Academic Affairs

800 Lakeshore Drive
Birmingham, AL 35229
205-726-2718 office
205-726-4053 fax
samford.edu

March 8, 2023

Dear Alabama Academy of Sciences attendees and guests:

On behalf of Samford University, we welcome you and are honored to host the 100th annual meeting. I am exceedingly grateful for the good work that this organization has done over the last century to promote science education at all levels in the state of Alabama.

With programs available across all fields in STEM education, Samford is a natural fit to host this important meeting. With nearly 6,000 students from 48 states, Samford continues to be one of the premier liberal arts institutions in the country. As the #1 rated university in Alabama and the top university in the country for student engagement, as determined by the *Wall Street Journal* and *Times Higher Education*, we have much to celebrate and much still to do.

We encourage you to explore the vibrant city of Birmingham and our beautiful campus. We hope that you find your time here at Samford to be productive and enjoyable working toward your goals of the mission and purpose in the field of science.

All the best,

J. Michael Hardin, Ph.D.
Provost and Vice President for Academic Affairs





February 18, 2023

Greetings

Congratulations to the Alabama Academy of Science on your 100th meeting! I hope your time on our campus will be filled with excitement, learning, encouragement, and inspiration. Thank you for your dedication to advancing the state of Alabama in science. Through the organization's scholarship, education, and advocacy work, our state continues to grow knowledge in this area.

I am pleased to see your focus this year on increasing diversity and recognizing under-represented scientist and educators for their scientific contributions. At Samford, we continue to implement our diversity initiatives through our Diversity Action Plan. Very similar to Alabama Academy of Science's support of diversity initiatives, our goal is to engage the Samford community in multicultural curricular and co-curricular development while promoting a variety of campus events that enhance cross-cultural initiatives and celebrate diversity and inclusion while promoting respect for others.

While on our campus, please be sure to visit William Self Propst Hall. It is the home of our biology, chemistry, and physics departments. It also houses the Christenberry Planetarium and the conservatory. On the opposite end of the campus, you will find our Reconciliation Memorial pictured on the cover of your program book. The memorial is erected to honor the many contributions of the African Americans who built and sustain the institution's mission.

I wish you well on a successful conference. The planning committee, successfully lead by Dr. Ellen Buckner, has an excellent program prepared for this centennial meeting. Enjoy your time on our campus. Welcome!!!

A handwritten signature in black ink that reads "Denise J. Gregory". The signature is fluid and cursive, with the first name "Denise" being the most prominent.

Denise J. Gregory Ph.D.
Associate Provost Student Success and Diversity
Associate Professor Chemistry



Office of the Dean

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Birmingham, AL 35229
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samford.edu/pharmacy
samford.edu

Greetings, Alabama Academy of Science and Alabama Junior Academy of Science participants!

On behalf of the faculty, staff, students, and alumni of Samford University's McWhorter School of Pharmacy, I'm thrilled to welcome you to this meeting. We are delighted to have you in the College of Health Sciences and honored to host Alabama's oldest science organization.

The College of Health Sciences has a 100-year history of academic excellence and leadership in healthcare education. It comprises four schools: School of Health Professions, Moffett and Sanders School of Nursing, McWhorter School of Pharmacy, and School of Public Health. In 2016, the College of Health Sciences moved to its current location on the east side of campus. The renovated facilities provide state-of-the-art learning spaces, including a 22,000-square-foot Experiential Learning and Simulation Center designed to foster interprofessional education.

The McWhorter School of Pharmacy was founded in 1927. As a top-ranked pharmacy school, we focus our time on helping students to become exceptional pharmacists. This work includes our nationally-known "Practice and Team Ready" curriculum and a variety of ways for students to personalize their training, including six joint degrees and study abroad opportunities. Beginning last year, pharmacy students interested in research careers can now complete a research concentration as part of their Doctor of Pharmacy curriculum.

Please enjoy your visit to Samford University's College of Health Sciences. We're pleased you're participating in the 100th Annual Meeting of the Alabama Academy of Science held jointly with the Alabama Junior Academy of Science. We stand ready to support you during your visit, and I wish you a productive meeting.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael A. Crouch".

Michael A. Crouch, Pharm.D., M.B.A., FASHP
Fred E. McWhorter Dean and Professor





CITY OF BIRMINGHAM

MAYOR RANDALL L. WOODFIN

PUTTING PEOPLE FIRST



March 8-10, 2023

Dear Friends,

On behalf of the City of Birmingham, it is an honor to welcome you to the Magic City to celebrate the 100th Annual Meeting of the Alabama Academy of Sciences. For those visiting Birmingham for the first time, I hope you will find that our city is focused on putting people first. For those familiar with Birmingham, please know that we celebrate "being home" with you.

The 100th Annual Meeting of the Alabama Academy of Sciences is a joint meeting held with the Alabama Junior Academy of Science and Gorgas Scholarship Competitions for high school students, granting thousands of dollars in scholarships based on their original scientific work. The 100th theme is "Celebrating Mentoring" and will feature partnerships and collaborative work by Alabama scientist, educators, and students.

The 100th Annual Meeting of the Alabama Academy of Sciences highlights noted Alabama scientists and educators from underrepresented minorities and their work that contributes to improving health disparities and achieving educational excellence. As we celebrate such a momentous milestone of the Alabama Academy of Sciences, we must pause and think of the contributions and achievement of the past.

As mayor of the City of Birmingham, I want to thank you for dedicating yourselves to the development of interest in scientific matters in the state of Alabama and providing scholarships to our youths.

You have my best wishes for a successful 100th Annual Meeting of the Alabama Academy of Sciences.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Woodfin".

Randall L. Woodfin,
Mayor, City of Birmingham

Resolution in Honor of the 100th Anniversary of the AAS



NAAS

NATIONAL ASSOCIATION OF ACADEMIES OF SCIENCE

A Resolution in Recognition of 100 Years of Distinguished Service by the Alabama Academy of Science

Whereas, the Alabama Academy of Science began meeting in 1924 and has since met annually to support the sciences in the State of Alabama;

Whereas, the Alabama Academy of Science hosts annual meetings which are the only general science meetings in the State of Alabama, bringing together scientists, teachers, and students in all fields for increased cooperation and fellowship among its members;

Whereas, the Alabama Academy of Science publishes the Journal of the Alabama Academy of Science, now in its 91st volume, consisting of peer reviewed articles from researchers or research located in Alabama or immediately surrounding areas;

Whereas, the Alabama Academy of Science renders public service in scientific matters; through public policy engagement, curriculum consultation, science education, collaboration, mentorship, and support of student achievement

Whereas, the Alabama Academy of Science supports and organizes the Alabama Junior Academy of Science, the Gorgas Scholarship Competition, Science Fairs and Science Olympiads to promote the interest in and study of science by the youth of Alabama; and participates in national competitions including ISEF, JSHS, and Science Olympiad.

Whereas, the Alabama Academy of Science provides for and awards scholarships to deserving young scientists of Alabama; connecting with additional scholarships offered through Alabama Colleges and Universities.

Whereas, the Alabama Academy of Science is and has been an active member of the National Association of Academies of Science and the American Association for the Advancement of Science.

Now, therefore, be it resolved, that the National Association of Academies of Science honors and recognizes the Alabama Academy of Science for 100 years of outstanding service to the people of Alabama.

Be it further resolved that this Resolution is saved in the permanent minutes of the Academy,

As adopted on this 3th day of February, 2023 by the National Association of Academies of Science



Email

admin@academiesofscience.org



Phone

859.227.2837



URL

<https://academiesofscience.org>

LOCAL ARRANGEMENTS COMMITTEE

The Academy expresses its appreciation to Samford University, College of Health Sciences, and the Local Arrangements Committee for planning and hosting this 100th Annual Meeting.

Chairperson
Dr. Ellen Buckner

University Liaison Officers
Dr. Brad Bennett
Dr. Denise Gregory

AAS Program Coordinator
Dr. Wes Johnson

AJAS/Gorgas Program Coordinator
Dr. Mark Caulkins

Food/ Hospitality
Mr. Lee Martin, Aramark
Dr. Renee DeHart
Mr. Withrow Newell

Audio/Visual/Technical Support
Dr. Terri Cahoon
Mr. Chad Owens
Mr. Chris Roper
Mr. Adam Lee

Student Assistance
Dr. Kwadwo Antwi-Fordjour
Sarah Westmoreland
Zachary Overton
Kendall Bearden
Dylan Lee

Posters & Panel
Dr. Michael Kendrach
Dr. Suresh Mathews
Mr. Jonathan Parker
Dr. Georges Adunlin
Dr. Cheryl Cropp
Dr. Lee Hardin

Printing/Signage
Ms. Lisa Dodd (Print Shop)

Speaker Coordination/Banquet Program
Dr. Courtney Haun
Dr. Ron Hunsinger

Promotions/Publicity
Mr. Eric Holsomback
Mr. Frank Ruggiero

Registration/Staff Assistance
Ms. Melanie Cox
Ms. Catherine Williams
Ms. Anita Morgan
Ms. Emily Womack
Ms. Roz Sewell
Ms. Becky Morgan
Ms. Rhonda Brazil
Ms. Kristen Eads
Ms. Kim Kirkland

Budget & Financial
Ms. Lesley Parrish
Mr. Peyton Huston

100th Anniversary Program Manager
Ms. Nora Whitten

GENERAL INFORMATION

- Registration badges will be required for admission to paper/poster scientific sessions (including all presenters), the Thursday evening Sci-Mix, and the banquet. Registration link: <https://www.alabamaacademyofscience.org/aasajas-registration-form/> Tickets for the Joint AJAS/AAS banquet may be purchased at the registration desk until all tickets are gone.
- At least one of the authors of a presented paper or poster must be a member of the Academy. Membership payment must be made at <http://www.alabamaacademyofscience.org/join-aas-2/> and is separate from registration payment.
- Computers will be provided where needed for presentations (PCs for PowerPoint). If presenters bring their own, they are responsible for their computer.
- Parking is in the designated space (College of Health Sciences [CHS] Parking Lot) (map attached). You do not need a parking pass.
- A map of the Samford-CHS campus can be found on the back outside cover of the program booklet. Please be aware that events are at two different locations: Main Campus (Thursday evening Sci-Mix & Banquet) as well as the CHS (Thursday Day and Friday Day).

LOCAL RESOURCES

On-campus police, fire, medical service:

- | | |
|---|----------------|
| ● All Emergencies (Fire, Ambulance, Police) | 911 |
| ● Samford Public Safety | (205) 726-2020 |
| ● The HUB: Samford Information Center | (205) 726-2407 |
| ● Title IX Coordinator/Sexual Assault Counselor | (205) 726-2837 |

Off-campus emergencies (Police, Fire, Medical) 911

- | | |
|-------------------------------|----------------|
| ● Homewood Police Department: | (205) 332-6200 |
|-------------------------------|----------------|

POSTER PRESENTATION INFORMATION

Alabama Academy of Science Poster set-up begins at 7:30 AM Thursday, March 9th in the **CHS Lobby (College of Health Sciences)**. **AAS Posters are available for viewing on Thursday from 8:00 AM until 4:00 PM according to the Sections' schedule below.** Each poster is allotted **4' (horizontal) x 3' (vertical) of display space on mobile bulletin boards.** Pushpins will be available however, authors are encouraged to bring what they need. Authors for the section posters should be present for discussions with viewers and competition judges at the designated times below. **All posters should be removed at the conclusion of the session, and all must be removed by 4:30 PM.**

Gorgas Scholars and Junior Academy Posters may be set up beginning at 4:00 PM Thursday March 9 in the Howard Room (Main Campus) for the Sci-Mix. On Friday, March 10, Gorgas Posters should be set up at 7:30 AM in Room 1249 CHS (College of Health Sciences). Each poster is allotted **4' (horizontal) x 3' (vertical) of display space.** Posters will be available for public viewing in the **Sci-Mix from 5:00 – 6:15 PM on Thursday (Sci-Mix),** prior to the joint banquet.

POSTER VIEWING TIMES CHS Lobby

ALL Poster Authors are encouraged to be present from 11:00-11:45 AM and 1:30-2:00 PM

NOTE: Posters for AAS may be set up in the **College of Health Sciences Lobby** beginning at 7:30 AM, Thursday, March 9th. Locate posters by cards on poster boards indicating Section and Poster # in the program booklet (e.g. Section V-10).

All Senior Academy posters must be removed by 4:30 PM

Sci-Mix (AJAS and Gorgas)

5:00-6:15 Howard Room, University Center

ORAL PAPER PRESENTATION INFORMATION

All presentation rooms are equipped with monitor screens and laptop computers. Samford faculty or staff will serve in each room for access to technology, PowerPoint, etc. Presenters are asked to bring their **Windows compatible (PowerPoint, Word, etc.) presentations pre-loaded on a USB-A thumb drive.** If presenters log into their email to download presentations, their email will show up on the screen for all to see. All thumb drives are to be removed at the conclusion of the presentation.

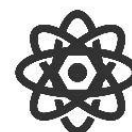
**Program of the Alabama Academy of Science
Wednesday, March 8, 2023
100th Anniversary Celebration (separate tickets)
“A Celebration of Science & Mentoring”
5:00-6:30 PM Vulcan Museum & Tower (included in ticket)
6:30 BBQ Supper & Recognitions
Gardner Award, Mason Award, Carmichael Award, AAS Fellows
Inaugural Adriel D. Johnson Sr. Mentoring Award
Recognition of 100th Anniversary Sponsors**

**Diamond Sponsor
The Broadcom Foundation**

**Gold Sponsors
Ellen & Richard Buckner
Dr. Wayne Finley**

**Silver Sponsors
Donna Cleveland
The E.O Wilson Foundation
Southern Research Institute
Emmanuel and Karol Waddell**

**Donors
Matthew Edwards
Adriane Ludwick
Ping Zhao**



**Southern
Research**
MOVING SCIENCE



**Registration materials for pre-registrants will be available
in the College of Health Sciences Lobby from 3:00-4:30, Wednesday, March 8.**

Thursday, March 9, 2023
College of Health Sciences, Samford University

7:00 AM – 3:00 PM Registration CHS Lobby

7:30 AM AM **Poster Set-Up (Morning Session); Take down at 11:45 AM**
CHS Lobby

8:00 – 11:45 AM **Academy of Science Program Paper Sessions**

Biological Sciences (Section I)	CHS 1409
Chemistry (Section II)	CHS 1215
Physics and Mathematics (Section III); Society Physics Students	CHS 1464
Engineering and Computer Science (Section IV)	CHS 1460
Health Sciences (Section IX); Neurosciences	CHS 2206

8:00 – 11:45 AM **Poster Viewing (Morning Session)**
CHS Lobby

Biological Sciences (Section I)
 Chemistry (Section II)
 Physics and Mathematics (Section III); Society Physics Students
 Engineering and Computer Science (Section IV)
 STEM Education
 Health Sciences (Section IX)

11:00 – 11:45 AM **Poster Authors Present** **CHS Lobby**

12:00 Noon **AAS Photo** **CHS Atrium**

12:15 PM **Pick Up Box Lunch** **CHS Balcony**

12:30 – 1:15 PM ***Health Disparities Panel Presentation*** **CHS 1222**
“The Science of Health Disparities Research”

PANELISTS: Samford Health Economics & Outcomes Research Group

- Lakesha Kinnerson (School of Public Health)
- Lan Bui (McWhorter School of Pharmacy)
- Andrea Bowens (School of Health Professions)
- Lee Hardin (Moffett & Sanders School of Nursing)
- Rachel Bailey (School of Public Health)
- Georges Adunlin (McWhorter School of Pharmacy)

MODERATOR: Cheryl Cropp (McWhorter School of Pharmacy)

1:15 PM PM **Poster Set-Up (Afternoon Session); Take down by 4:30 PM**
CHS Lobby

Afternoon sessions (continued to next page)

1:30 – 4:30 PM	<i>Academy of Science Program Paper Sessions</i>	
	Biological Sciences (Section I)	CHS 1409
	Social Sciences (Section V) & Anthropology (Section VI)	CHS 1214
	STEM	
	Education	CHS 1460
	Environmental & Earth Science (Section VIII)	CHS 1215
	Health Sciences (Section IX); Neurosciences (SPECIAL D)	CHS 2206
	Bioethics, History & Philosophy of Science (Section X)	CHS 1118
	Alabama Honors Scholars (SPECIAL A)	CHS 1213
	Material Science/Engineering Graduate Students Symposium	
only)	SPECIAL C (Business Mtg	
	CHS 1117	
1:30 – 2:15 PM	Poster Authors Present	CHS Lobby
	1:30 – 4:00 PM	Poster Viewing (Afternoon Session)
	Biological Sciences (Section I)	
	Social Sciences (Section V) & Anthropology (Section VI)	
	Environmental & Earth Science (Section VIII)	
	Health Sciences (Section IX); Neurosciences	
	Bioethics, History & Philosophy of Science (Section X)	
	Alabama Honors Scholars (Special Section A)	
	Material Science/Engineering Graduate Students Symposium (SPECIAL C)	
4:30 PM	AAS/AJAS Joint Annual Business Meeting	CHS 1222
5:00 – 6:15 PM	Sci-Mix/Viewing of AJAS & Gorgas Scholars' Posters	Howard Room
		University Center
6:30 PM	Joint AJAS/AAS Banquet	The Caf, University Center

Improving Brain Health in Alabama: A Neuroscientist's Perspective

Banquet speaker: Dr. Sharlene Newman

University of Alabama, Professor College of Engineering and
Professor of Psychology and Executive Director, Alabama Life Research Institute

Guests of Honor:

Dr. Marci Johns, Senior Associate Provost

Dr. Denise Gregory, Assoc Provost for Student Success/Diversity

Presided by: Dr. Jeffrey Morris, President, AAS

Timmy Hughes, Wetumpka High School and Makaila Jennings, Homeschool

Co-Presidents, AJAS

PROGRAM OF THE ALABAMA JUNIOR ACADEMY OF SCIENCE

March 9-10, 2023

University Center, Howard Room & The Caf

College of Health Sciences (CHS)

Thursday, March 9, 2023

4:00 – 5:00 PM	Registration Howard Room	
4:00 – 5:00 PM	Poster Set-up and Orientation	Howard Room
5:00 – 6:15 PM	“Sci Mix” Viewing of AJAS and Gorgas Scholars’ Posters	Howard Room
6:30 PM	Joint AJAS/AAS Banquet	The Caf, University Center

Improving Brain Health in Alabama: A Neuroscientist's Perspective

Banquet speaker: Dr. Sharlene Newman

University of Alabama, Professor College of Engineering and
Professor of Psychology and Executive Director, Alabama Life Research Institute

Guests of Honor:

Dr. Marci Johns, Senior Associate Provost

Dr. Denise Gregory, Assoc Provost for Student Success/Diversity

Presided by: Dr. Jeffrey Morris, President, AAS

Timmy Hughes, Wetumpka High School and Makaila Jennings, Homeschool
Co-Presidents, AJAS

ALABAMA JUNIOR ACADEMY OF SCIENCE
March 9-10, 2023
Samford University
College of Health Sciences

Friday, March 10, 2023

Breakfast on your own; hotel and town locations

7:00 AM	Registration	CHS Lobby
7:30 AM	Paper Reading Orientation	CHS 1222
7:30 AM	AJAS Judges Orientation	CHS 1460
8:00 AM	Paper Competition	
	Life Sciences	CHS 1116
	Physical Science	CHS 1117
	Engineering and Mathematics and Computer Science	CHS 1464
	Environmental Science, Earth Science, and Space Science	CHS 1460
	Medicine and Health, Behavioral, and Social Sciences	CHS 1213
8:00 AM	Prepare for AJAS 2024 (Mentoring Workshop for Future Competitions, Dr. Mark Jones, AJAS Director)	CHS 1222
11:30 AM	Elections and Business Meeting	CHS 1222
12:00 Noon	AJAS-Gorgas Group Photo	CHS Lobby
12:00 Noon	Lunch; Box Lunches	CHS Balcony
	Lunch Speaker	CHS 1222

“Science: A Journey for Me, A Space for Us”

Arrix Ryce BS, MS, MD(c)

2010 Gorgas Winner and Emory University School of Medicine Candidate

1:15 PM	AJAS Paper Competition Finals	CHS 1222
2:55 PM	AJAS Judges meeting	CHS 1460
3:15 PM	Awards Reception, Joint AJAS/Gorgas	CHS 1222

PROGRAM OF THE GORGAS SCHOLARSHIP COMPETITION

March 9-10, 2023

**Samford University
College of Health Sciences**

Thursday, March 9, 2023

4:00 - 5:00 PM	Registration	Howard Room
4:00 - 5:00 PM	Poster Set-up & Orientation	Howard Room
5:00 - 6:15 PM	“Sci-Mix”: Viewing of AJAS and Gorgas Scholars’ Posters	Howard Room
6:30 PM	Joint AJAS/AAS Banquet	The Caf, University Center

Improving Brain Health in Alabama: A Neuroscientist's Perspective

Banquet speaker: Dr. Sharlene Newman
University of Alabama, Professor College of Engineering and
Professor of Psychology and Executive Director, Alabama Life Research Institute

Guests of Honor: TBA

Dr. Marci Johns, Senior Associate Provost
Dr. Denise Gregory, Assoc Provost for Student Success/Diversity

Presided by: Dr. Jeffrey Morris, President, AAS
Timmy Hughes, Wetumpka High School and Makaila Jennings, Homeschool
Co-Presidents, AJAS

GORGAS SCHOLARSHIP COMPETITION

March 9-10, 2023

**Samford University
College of Health Sciences**

Friday, March 10, 2023

Breakfast on your own; hotel and town locations

7:00 AM	Registration	CHS Lobby
7:00 – 8:00 AM	Set Up Science Exhibits/Display/Poster/Orientation	CHS 1249
7:15 – 8:00 AM	AJAS Paper Reading Orientation (for dual competitors)	CHS 1222
7:15 – 8:00 AM	Gorgas Judges Orientation	CHS 1460
8:45 – 9:45 AM	Demonstrations for Judges	CHS 1249
10:00 AM – Noon	Individual Interviews with Judges, conducted with posters	CHS 1249
12:00 Noon	AJAS-Gorgas Group Photo	CHS Lobby
12:00 Noon	Lunch; Box Lunches	CHS Balcony
	Luncheon Speaker	CHS 1222

“Science: A Journey for Me, A Space for Us”

Arrix Ryce BS, MS, MD(c), 2010 Gorgas Winner

Emory University School of Medicine Candidate for the MD Degree

12:00 – 1:00 PM	Gorgas Judges Executive Session	CHS 1249
1:15 PM	AJAS Paper Competition Finals	CHS 1222
2:30 – 3:15 PM	Afternoon Break	CHS Lobby
2:55 PM	Remove Posters and Displays	CHS 1249
3:15 PM	Awards Reception, Joint AJAS/Gorgas.	CHS 1222

The Alabama Science Scholar Talent Search and Gorgas Scholarship Competition are supported and administered by the Alabama Academy of Science, Inc.

The Gorgas Scholarship Competition website,
<http://alabamajunioracademyofscience.org/home/gorgas-scholarship-competition/>,
contains detailed information on the annual competition and awards available
to winners and finalists.

ACADEMY SCIENTIFIC SESSIONS

SECTION I. BIOLOGICAL SCIENCES Paper Session I

Thursday Morning – CHS 1409

Grover Brown, Presiding

1. 8:30 ***u** Feeding Response of Zebrafish to a Gel-based Formulated Diet. *Logan Holfelder*, University of Alabama at Birmingham; Sophie Chehade, UAB; Nicole Conner, UAB; Michael Williams, UAB; Mickie Powell, UAB; Stephen Watts, UAB.
2. 8:45 ***g** Improving Rainbow Trout *Oncorhynchus mykiss* Growth Performance Through Optimization of Diet-Epigenetic Interactions. *Khalid Freij*, University of Alabama at Birmingham; Peggy Biga, University of Alabama at Birmingham; Beth Cleveland, National Center for Cool and Cold Water Aquaculture, Agricultural Research Service (ARS-USDA).
3. 9:00 ***u** Survivorship of Sea Urchin *Lytechinus variegatus* Larvae Using Novel Microculture Methods. *Sydney Helton*, University of Alabama at Birmingham; Sophie Chehade, UAB; Logan Holfelder, UAB; Victoria Gibbs, UAB; Stephen Watts, UAB.
4. 9:15 ***g** Macronutrient Limitations Affect Body Metrics and the Gut Microbiome in Zebrafish, *Danio rerio*. *George Green*, University of Alabama at Birmingham; Michael Williams, UAB; Sophie Chehade, UAB; Jonathan Flowers, UAB; Casey Morrow, UAB; Addison Lawrence, Texas A&M; Asim K. Bej, UAB; Stephen A. Watts, UAB.
5. 9:30 **Break**
6. 10:00 ***u** Effect of Rapamycin on the Life Span of *Drosophila melanogaster*. *Azriel Boles*, University of South Alabama; Lauren Jackson, University of South Alabama; Isha Patel, University of South Alabama; Robin Mockett, PhD, University of South Alabama.
7. 10:15 ***u** Pinecones, an Undescribed Habitat for Arboreal Tardigrades. *Christa Terry*, University of North Alabama; Glenn Marvin, University of North Alabama; Paul Davison, University of North Alabama.
8. 10:30 ***g** The im-PORE-tant Role of Eggshell Pores in Thermal Tolerance of Avian Embryos. Wonil Choi, Auburn University; Haruka Wada, Auburn University.
9. 10:45 ***g** Breeding Ecology and Habitat Selection of Cerulean Warblers (*Setophaga cerulea*) in Bankhead National Forest. *Thomas Thompson*, Alabama A&M University; Yong Wang, Alabama A&M; Andrew Cantrell, Alabama A&M.

SECTION I. BIOLOGICAL SCIENCES Paper Session II
Thursday Afternoon – CHS 1409
Grover Brown, Presiding

10. 2:00 *g Low Protein Diet Improves Early Blastema Formation in the Zebrafish, *Danio rerio*. *Jonathan Flowers*, University of Alabama at Birmingham; Jami de Jesus, University of Alabama Birmingham; George Green, University of Alabama Birmingham; Logan Holfelder, University of Alabama Birmingham; Anna Thalacker-Mercer, University of Alabama Birmingham; Stephen Watts, University of Alabama Birmingham.
11. 2:15 *u Prostate Cancer Disparities: Understanding the Role of Race and Socioeconomic Factors in Alabama. *Anish Boyella*, Alabama State University; Ram Alagan, Alabama State University; Seela Aladuwa, Alabama State University; Manoj Mishra, Alabama State University.
12. 2:30 *g Predator Removal Impacts of Diamondback Terrapin Nests in Cedar Point Marsh, Dauphin Island. *Forrest Collins*, University of Alabama at Birmingham; Thane Wibbels, UAB; Ken Marion, UAB; Catherine Sirgo, UAB; Andrew Coleman, Talladega College; Taylor Roberge, Springfield College.
13. 2:45 *g Development of a Novel IMTA System Containing Oysters, Sea Urchins, and Mollies. *Raven Edwards*, University of Alabama at Birmingham; Jami de Jesus, University of Alabama at Birmingham (UAB); Michael Williams, University of Alabama at Birmingham (UAB); Stephen Watts, University of Alabama at Birmingham (UAB).
14. 3:15 AFM and the Structure of Conifer Pit Membranes. *Roland Dute*, Auburn University.
15. 3:30 Investigating the Dynamic Cross Correlation Results from Molecular Dynamics Simulation: The Story of Two Undergraduates Characterizing Variants of Uncertain Significance. *Cynthia Stenger*, University of North Alabama; Sara Cline, Athens State University; Michele Morris, HudsonAlpha Institute for Biotechnology; Luke Terwilliger, University of North Alabama; Camille Greer, Athens State University.
16. 3:45 *u Socioeconomic Status and Available Healthcare in Rural Alabama and their Effects on Time of Diagnosis and Mortality in Breast Cancer Patients. *Allison Stegall*, Huntingdon College; Ram Alagan, Alabama State University; Seela Aladuwa, Alabama State University; Manoj Mishra, Alabama State University.

SECTION I. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

*u or *g Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION I. BIOLOGICAL SCIENCES Poster Session I
Thursday Morning – CHS Lobby

17. ***g** Identification of Two Novel Bacteriophages from Freshwater Environmental Samples. *Melissa Walker*, University of Alabama at Birmingham; James Jeffrey Morris, University of Alabama at Birmingham.
18. ***u** Investigation of Gene Transfer Between Environmental and Clinical Bacterium. *Isabella Parkhurst*, University of Alabama at Birmingham; Anuradha Goswami, University of Alabama at Birmingham; J. Jeffrey Morris, University of Alabama at Birmingham.
19. ***g** Taxonomic Composition of the Phycosphere Microbiome In Diverse Phytoplankton Stock Cultures. *Saleh Aljalal*, University of Alabama at Birmingham; Kellen Cowen, University of Alabama at Birmingham.
20. ***g** Taxonomic Composition of the Phycosphere Microbiome In Diverse Phytoplankton Stock Cultures. *Kellen Cowen*, University of Alabama at Birmingham; Salah Aljalal, UAB.
21. ***u** The H284Y Variant of TCF4 and its Expression in Pitt-Hopkins Syndrome. *Macee Glick*, Jacksonville State University; Dr. Jenna Ridlen, Jacksonville State University.
22. ***g** Genetic Analysis of a Hereditary Gingival Fibromatosis Associated *SOS-1* Missense Variant of Uncertain Significance in *Caenorhabditis elegans*. *Himani Patel*, Jacksonville State University; Ashley Turner Ph.D., Jacksonville State University.
23. ***u** Genetic Assessment of Familial Hemiplegic Migraine Type 1-associated **CACNA1A** Variants of Uncertain Significance in *C. elegans*. *JoAnna LaPoint*, Jacksonville State University; Ashley Turner.
24. ***u** The Structural and Functional Effects of Four Missense Variants, L154P, L161R, D162N, and D162G, Among The LEP Protein of The Leptin Gene Within Humans. *Madeleine Ash*, Birmingham-Southern College; Kevin Drace, BSC.
25. ***u** Investigation of E200G, R612H, Y657H, H1286Y, and A2108P on F8 Protein. *Olivia Morris*, University of North Alabama.
26. ***u** Investigation of TCOF1 Variations: An Insight to Treacher Collins Syndrome. *Hunter Ballard*, Jacksonville State University; Alyssa Jones, Jacksonville State University.
27. ***u** Observation of Endogenous Gene Activity in Cells without Direct Tagging in *C. elegans*. *Matthew Thomley*, University of South Alabama; Ryan Littlefield, University of South Alabama.
28. Blank. Poster moved.
29. ***u** Investigating the Potential Roles for the Parkinson Disease Risk Gene CD38 In The Brain. *Louis Ramirez*, University of Alabama at Birmingham; Laura McMeekin, UAB; Rita

Cowell, UAB; Alana Colafrancesco, UAB; Michelle Olsen, UAB; Jamil Saad, UAB; Frances Lund, UAB.

30. ***u** The Role of MeCP2 in Motor Learning in a Mouse Model of Rett Syndrome. *Kian Kolahdouzan*, University of Alabama at Birmingham.
31. ***g** Exploratory Analysis of Cancer Clinical Samples using the New Web-based SEAS Software. *Samuel Bharti*, University of Alabama at Birmingham; Thanh M Nguyen, University of Alabama at Birmingham; Zongliang Yue, University of Alabama at Birmingham; Christopher D Willey, University of Alabama at Birmingham; Jake Y Chen, University of Alabama at Birmingham.
32. ***g** Protein O-GlcNAcylation is Important for Vascular Calcification in Diabetes. *Yong Sun*, University of Alabama at Birmingham; Chang Hyun Byon, Pathology; Jack M Heath, Pathology; Xia Mao, Pathology; Xinyang Zhao, Biochemistry; Hui Wu, Dentistry; Yabing Chen, Pathology.
33. ***g** The Distinction of Homologous miRNA-Binding Sites Between Human Oncogenes and Human Cellular Entry Receptor Genes. *Summer Weeks*, Troy University; Robert Kaltenbach, Troy University; Jahnavi Raval, Troy University; Siegfried B. Harden, Troy University; Alexander Kofman, Troy University.
34. ***g** Effects of a Long-term Chronic Methionine Restriction (MR) Diet Feeding in the Gut Microbiota Composition and Physiology in Male Mice. *Akash Nagarajan*, University of Alabama at Birmingham; Liou Sun, UAB; Tate Lasher, UAB; Casey Morrow, UAB.
35. ***g** Natural Genetic Variation and Sex Regulate Diet-Dependent Lifespan Extension Under Methionine-Restricted Conditions in *Drosophila melanogaster*. *Joshua Smith*, University of Alabama at Birmingham; Steven Austad, University of Alabama at Birmingham; Jessica Hoffman, University of Alabama at Birmingham.
36. ***g** Examining the Presence and Distribution of a Potent Neurotoxin in Rock Rattlesnakes (*Crotalus lepidus*). *N. Jade Mellor*, University of Alabama at Birmingham; Rhett Rautsaw, Clemson University; Edward Myers, Clemson University; Mark Margres, University of South Florida; Kenneth Wray, Florida State University; Darin Rokyta, Florida State University; Christopher Parkinson, Clemson University.
37. ***g** Effect of Lifelong Methylmercury on Circulating Estrogen Levels in a Model Songbird. *Cara Brittain*, Auburn University; Mary Mendonca, Auburn University; Dan Cristol, William & Mary; Haruka Wada, Auburn University.
38. ***g** Characterizing the Reproductive System in Two Invasive *Avrainvillea* populations. *Brinkley Thornton*, University of Alabama at Birmingham; Melissa Harris, University of Alabama at Birmingham; Heather Spalding, College of Charleston; Rachael Wade, University of British Columbia; Stacy Krueger-Hadfield, University of Alabama at Birmingham.
39. ***g** 12-oxophytodienoic Acid is a Key Hormone Signal Priming Induced Systemic Resistance in Plants Against a Range of Microbial Pathogens and Insect Pests. *Ashna Adhikari*, Auburn University; Sang-Wook Park, Auburn University.
40. ***g** Using Species Distribution Models to Predict Genetic Isolation of a High-elevation Stream Specialist Damselfly (Odonata, Calopterygidae: *Hetaerina vulnerata* Hagen in Selys,

1853) in the southwestern U.S. *Austin Biddy*, University of Alabama at Birmingham; Nancy McIntyre, Texas Tech University.

SECTION I. BIOLOGICAL SCIENCES Poster Session II
Thursday Afternoon – CHS Lobby

41. ***u** Investigating the Impact of Mining Effluence and Beaver Activity on Settlement Ponds at Camp McDowell (Winston County, AL). *Liz Beaumont*, Samford University; Riley Lovejoy, Samford University.
42. ***u** A Preliminary Developmental Toxicity Comparison of Methylene Blue and Phloxine B to *Xenopus* embryos. *Kritika Maharjan*, Jacksonville State University; Dr. James Rayburn, Jacksonville State University.
43. ***u** Honey and Cinnamon: An Investigation of Their Antimicrobial Activity. *Johana Villavicencio*, Birmingham-Southern College.
44. ***u** Acorn Weevils Do Not Vary In Size From Red Oak to White Oak Sections. *F. Joseph Kelly*, Samford University; Micah Gaddy, Samford University; Jacob Compton, Samford University; John Eric Herrington, Samford University; Malia Fincher, Samford University.
45. ***u** Red vs White: A Scientific Review on Weevil Infestation Rates Among Different Species of Acorns. *Luke Dart*, Samford University; Jacob Ginn, Samford University; Nour Tayara, Samford University; Henry Alperin, Samford University; R. Malia Fincher, Samford University.
46. ***g** Do Herbivores Lead to the Maintenance of ‘Isomorphic’ Algal Life Cycles? *Alexis Oetterer*, University of Alabama at Birmingham; John Lewis, Virginia Institute of Marine Science Eastern Shore Laboratory; Charles Amsler, University of Alabama at Birmingham; April Blakeslee, East Carolina University; Amy Fowler, George Mason University; Stacy Krueger-Hadfield, University of Alabama at Birmingham.
47. ***u** Characterizing the Reproductive System of *Fucus vesiculosus* along the Eastern Shore of Virginia. *Sarah Thornton*, University of Alabama at Birmingham; Stacy Krueger-Hadfield, University of Alabama at Birmingham.
48. ***g** The Reproductive System of a Cryptogenic Macroalgal Invader in the Papahānaumokuākea Marine National Monument. *Taylor Williams*, University of Alabama at Birmingham; Stacy Krueger-Hadfield, University of Alabama at Birmingham; Kristina Hill-Spanik, College of Charleston; Randall Kosaki, Papahānaumokuākea Marine National Monument; Solenn Stoeckel, Université de Rennes; Heather Spalding, College of Charleston.
49. ***g** Amplicon Sequencing to Detect a Microscopic Life Cycle Stage. *Sarah Shainker-Connelly*, University of Alabama at Birmingham; Morgan Vis, Ohio University; Guido Bonthond, University of Oldenburg; Michael Crowley, University of Alabama at Birmingham; Stacy Krueger-Hadfield, University of Alabama at Birmingham.
50. Acquisition and Subsequent Rapid Loss of Antibiotic Resistance in a Probiotic. *Brad Bennett*, Samford University; Olivia Love, Samford University; Bryce Pierce, Samford

University; Nicholas Hammond, Samford University; Kwadwo Antwi-Fordjour, Samford University; Drew Hataway, Samford University.

51. ***u** Understanding How the HA-CD44 Pathway Alters Chemoresistance in Response to Mechanical Stimulation. *Allyson Criswell*, University of Alabama at Birmingham; Maranda Tidwell, Department of Biomedical Engineering; Mary Kathryn Sewell-Loftin, Department of Biomedical Engineering.
52. ***g** Recognizing Eating Disorders in Collegiate Athletes with Stress-Related Bone Injuries. *Jessica Cushing-murray*, Alabama College of Osteopathic Medicine; Ronda Carter, Alabama College of Osteopathic Medicine; Julia Alexander, Alabama College of Osteopathic Medicine.
53. ***g** Consequences of Both Common and Uncommon Complications of Uncontrolled Hypertension. *Jessica Cushing-murray*, Alabama College of Osteopathic Medicine; Erika Haviland, Alabama College of Osteopathic Medicine; Evans Kyei-Nimako, North Alabama Medical Center.
54. ***u** Gene Variant TNFAIP3 and its Phenotypic Expression in Classic Hodgkin's Lymphoma. *BriAnn Buford*, Jacksonville State University.
55. ***g** The striatum of the LEW.1WR1 rat with metabolic syndrome and systemic inflammation does not appear to display central insulin resistance. *Victoria McConnell*, MS, MD, Sharifa Love-Rutledge, PhD.
56. ***u** Molecular Characterization of Potential Bioelectricity-Producing Bacteria from Sediments Microbial Fuel Cell. Katrina Vance, Auburn University in Montgomery; Meghan Frazier, Auburn University at Montgomery; Daveenyah Primm, Auburn University at Montgomery; Olivia Taylor, Auburn University at Montgomery; JoAnna Sheffield, Auburn University at Montgomery; Joy Odoms, Auburn University at Montgomery; Benedict Okeke, Auburn University at Montgomery

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SECTION II. CHEMISTRY Paper Session
Thursday Morning – CHS Lobby
Stephen Slauson, Presiding

1. 10:00 Study of Near Infrared Spectroscopy as a Quantitative Method for Monitoring Polyethylene Content in Recycled Polypropylene. *Pixiang Wang* and Shaoyang Liu, Troy University.

SECTION II. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

SECTION II. CHEMISTRY Poster Session
Thursday Morning – CHS Lobby

2. ***u** Metal-Organic Frameworks: Sorbents for Electrochemical Detection and Removal of Heavy Metal Ions in Contaminated Water. *Elizabeth Ford* and Md Humayun Kabir, University of North Alabama.
3. ***u** Improving the Photovoltaic Performance of Dye-Sensitized Solar Cells using Ni-doped MoSe₂/GO Counter Electrode. *Abbey Steadman*, Md Abu Shohag, and Md Humayun Kabir, University of North Alabama.
4. ***u** 4-Methyl-Dihydropyridine Diels Alder Reaction. *Maranda Thomas* and Stephen Slauson, Jacksonville State University.
5. ***u** Synthesis and Characterization of Fatty Acid Methyl Ester Biodiesel Fuels from Acorn Biowaste. *Alexander Waller* and Md Humayun Kabir, University of North Alabama.
6. ***u** Homoepibatidine Derivatives: Exploring the 3-Position. *Evan Hester, Christian Sears*, Donna Perygin, and Stephen Slauson, Jacksonville State University.
7. ***u** Nitrile Homoepibatidine: A Possible Solution to the Opioid Crisis. *Noha Al-Saadi*, Donna Perygin, and Stephen Slauson, Jacksonville State University.
8. ***u** Environmental Contaminant Sensing using Metal-Organic Frameworks-Based Sensors. *Sarah Clouse* and Md Humayun Kabir, University of North Alabama

SECTION II. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

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**SECTION III – PHYSICS AND MATHEMATICS AND SPECIAL SECTION E. SOCIETY
OF PHYSICS STUDENTS Paper Session**

Thursday Morning – CHS 1464

Presiding: Matthew E. Edwards, Ronald Mel Blake and Byunghoon Lee

1. 8:00 The Sun and a Tale of Two Eclipses. Mitzi Adams, Marshall Space Flight Center
Mitzi Adams, Marshall Space Flight Center, Huntsville, Al
2. 8:15 *u Calculating the Effects of Longitudinal Magnetic Field Gradient on Electron Spin.
Ashik Kannan, Troy University; James Sanders, Troy University
3. 8:30 *u Optical trapping with a new optical tweezers using a water-immersion objective
lens. *Hung Lam*, University of North Alabama; D. Brian Thompson, University of North
Alabama.
4. 8:45 *u A Modified Czochralski Method for Growth of Cesium Hexachlorohafnate
Scintillator Crystals. *Jordan Drake*, Alabama A&M University; Stephen Babalola, Alabama
A&M University; Elijah Adedeji, Alabama A&M University; Angel Sumlin, Alabama A&M
University [SPECIAL SECTION E. SOCIETY OF PHYSICS STUDENTS].
5. 9:00 Pulses of Josephson Junctions and Superconducting Quantum Computers. *Tianxi
Zhang*, Alabama A&M University; Cornelius Salonis, Alabama A&M University; Maria
Dudley, Alabama A&M University
6. 9:15 *u Role of Fear in an Eco-Epidemiological Model. Sarah Westmoreland, Samford
University; Kwadwo Antwi- Fordjour, Samford University; Kendall Bearden, Samford
University.
7. 9:30 Society of Physics Student Introduction & Discussion. Mel Blake, University of North
Alabama, Faculty Advisor, & Zone 6 Counselor (former), Society of Physics Students
[SPECIAL SECTION E. SOCIETY OF PHYSICS STUDENTS].
8. 10:00 *u Statistical Analysis and Modeling of Success of ‘Saturday Night Live’ Sketches.
Merritt Cahoon, Samford University; Mingwei Sun, Samford University.
9. 10:15 *u Hubbard U Parameters for Rare-Earth Metals from First Principles. *Logan
Burnett*, University of Alabama at Birmingham; Cheng-Chien Chen, University of Alabama
at Birmingham.
10. 10:30 Harmonious and Equitably Harmonious Labelings of Disjoint Unions of Path. *Ken
Roblee*, Troy State University and Atif Abueida, Troy State University.

SECTION III. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

**SECTION III – PHYSICS AND MATHEMATICS AND SPECIAL SECTION E. SOCIETY
OF PHYSICS STUDENTS Poster Session**

Thursday Morning – CHS Lobby

11. *u Semi-Supervised Process for Analysis of the Big Five Personality Traits. *Callie Ware*,
Samford University; Mingwei Sun, Samford University.
12. *g Investigating Optimal Polyvinylidene fluoride (PVDF) Concentrations for its
Applications as Efficient Smart Material. *Angela Davis*, Alabama A&M University and
Padmaja (Paddy) Guggilla, Alabama A&M University.
13. *g Black Holes Quantum Unruh Effect and Blackbody Radiation. *Maria Dudley*, Alabama
A&M University; Tianxi Zhang, Alabama A&M University.

14. *u Thermodynamic Study of the Formation of Cesium Hexachlorohafnate from Melt. *Jordan Drake*, Alabama A&M University; Stephen Babalola, Alabama A&M University; Elijah Adedeji, Alabama A&M University; Angel Sumlin, Alabama A&M University [SPECIAL SECTION E: SOCIETY OF PHYSICS STUDENTS].
15. *u Modeling Allee Effect in an Aggregated Eco-epidemiological Model. *Zachary Overton*, Samford University; Dylan Lee, Samford University; Kwadwo Antwi-Fordjour, Samford University.
16. *g A comparative study of europium doped materials for white light generation. *Yannik Palmer-Tesema*, Alabama A&M University; Rami Bommareddi,
17. *u Quantum Modeling for Diproton Decays of Radioactive Proton-Rich Heavy Nuclei. *Cornelius Salonis*, Alabama A&M University; Tianxi Zhang, Alabama A&M University.
18. *u “Out of Sight, Out of Mind” Comparing Deaf and Hard Hearing (DHH) Child’s Response to Parental American Sign Language (ASL) Delivery and ASL Recommendation Systems. Merritt Cahoon, Samford University, Ekram Hossain, University of Rochester, Zhen Bai, University of Rochester.
19. *g A Piezo-Pyro-Photoelectric Power Harvesting Flag using Smart Materials. *James Sampson*, Alabama A&M University; Ashok Batra, Alabama A&M University, Amari Williams, Alabama A&M University; Destinee Simmons, Alabama A&M University, F. Coggins, Alabama A&M University; Mohan Aggarwal, Alabama A&M University.
20. The Importance Of Hilbert Space and Its Application In Quantum Physics and Quantum Computing. *Matthew Edwards*, Alabama A&M University; Angela Reedy, Alabama A&M University; Albert Osei, Oakwood University.
21. Lithospheric location closest to the center of the Earth. *Arjun Tan*, Alabama A&M University.
22. Investigative analysis of Russia’s direct-ascent Anti-satellite test against its orbiting Cosmos 1408 satellite. *Arjun Tan*, Alabama A&M University.
23. Investigative analysis of the Yun-Hai satellite fragmentation in orbit by accidental collision with an orbital debris. *Arjun Tan*, Alabama A&M University.
24. A Graphical Understanding of How to travel Backwards in time; and How Going Backwards in Time May Lead to a New Future in a Parallel Spacetime Dimension. *Paul Hall*, Tuskegee University.
25. The How To Of Plotting Hall's Omega Graph. *Paul Hall*, Tuskegee University.
26. A Deductive Argument for Why the Speed of Light is Slower than the Total Velocity of its Corresponding Electromagnetic Wave. *Paul Hall*, Tuskegee University.

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SECTION IV. ENGINEERING AND COMPUTER SCIENCE Paper Session
Thursday Morning – CHS 1460
Heejoon Park, Presiding

1. 9:00 *g Systematic Investigation of PFOS Adsorption from Water by Metal Organic Frameworks, Activated Carbon, Metal Organic Framework@Activated carbon, and Functionalized Metal Organic Frameworks *Jasneet Pala, Tin Le, Medha Kasula, Milad Esfahani*, University of Alabama
2. 9:30 Biofilm Formation Influences the Wettability and Settling of Microplastics. *Amber Pete*, University of North Alabama; *Philip Brahana, Mustapha Bello, Michael Benton, Bhuvnesh Bharti*, Louisiana State University

11:30 BUSINESS MEETING [Elect Vice-Chair with term ending 2023-24]

*u or *g Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION IV. Engineering and Computer Science Poster Session
Thursday Morning – CHS Lobby

3. *u Improved detection of urea by a SPR biosensor using Electric bias. *Sidney Heinrich*, University of North Alabama; *Ravi Gollapalli*, University of North Alabama.
4. *g Novel Method for Diabetes Prediction Using Machine Learning. *Kyla Gabriel*, University of Alabama at Birmingham
5. *g Effect of Low Temperature Plasma Treatment on Fish Scale Powder-Filled Linear Low Density Polyethylene Films.. *Matthew Bonzu Ackah*, Vijaya Rangari Tuskegee University.
6. *u Conversion of a MATLAB Code to Python: Increasing Accessibility to Surface Plasmon Resonance Biosensing Studies. *Reece Phillips*, Puneet Paul, *Ravi Gollapalli* University of North Alabama.
7. *u Increasing Oil Degradation by Marine Bacteria. *Lauren Mays*, *Amber Pete* University of North Alabama; *Michael Benton, Bhuvnesh Bharti* Louisiana State University.
8. Engineered Biofilm Sandwich for cellulosic-biomass degradation. *Heejoon Park*, University of North Alabama; *Ross Carlson*, Montana State.
9. *u Improving a Spatial Atomic Layer Deposition (ALD) Prototype Using A Gear Drive System and Programmable Logic Control (PLC) System. *Ronnie Myers*, *Jacob Lynch*, *Anna Warner*, *Emerson Miller*, *Caedmon Jones*, *Dongqing Pan* University of North Alabama.
10. *g Nanoplastics Removal from Water Based on the Liquid-Liquid Extraction Method. *Ashish Srivastava*, *Milad Esfahani* University of Alabama.
11. *g A Comprehensive Solution for Outage Prediction, System Demand Analysis, Asset

Management & Development of a Power Failure Risk Index. *Selami Buzluk*, Rouzbeh Nazari, Abi Giglou University of Alabama at Birmingham.

12. Implementing Gamification in Online Asynchronous Engineering Graduate Courses. *Md Abu Shohag*, University of North Alabama.
13. ***u**“Out of Sight, Out of Mind” Comparing DHH Child’s Response to Parental ASL Delivery and ASL Recommendation Systems. Merritt Cahoon, Samford University; Ekram Hossain, Zhen Bai, University of Rochester.
14. ***g** Effect of Shielding Gas on L-PBF process stability. *Andrii Shmatok*, Auburn University

**u* or **g* Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION V. SOCIAL SCIENCES and SECTION VI. ANTHROPOLOGY Paper Session
Thursday Afternoon – CHS 1116
Dr. Cynthia Lovelace, Presiding

1. 1:30 *g Does Cellphone Banking Change Lives? Fintech, Poverty, and Remittances in Kenya. Derick Adu, Auburn University; Valentina Hartarska, Auburn University
2. 1:50 Recognizing an Artificial Collection Bias in the Sterkfontein Cercopithecoid Sample. Jason Heaton, Birmingham-Southern College
3. 2:10 Primates, Pets, and Perceptions: Refining descriptions of captive primates to improve conservation outcomes. Sherrie Alexander, University of Alabama at Birmingham
4. 2:30 Rituals of Reconciliation: The Use of Peaceful Interactions to Repair Relationships. Renee Gainer, University of Alabama at Birmingham

SECTION VI. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

SECTION V. SOCIAL SCIENCES and SECTION VI. ANTHROPOLOGY Poster Session
Thursday Afternoon – CHS Lobby

5. *g A confirmatory factor analysis of the Broad Autism Phenotype Questionnaire. Hayley Mullinax, University of South Alabama; Ryan Haik, University of South Alabama; Devin Dickinson, University of South Alabama; Lisa Turner, University of South Alabama.
6. *g Testing the Interpersonal Theory of Suicide. Boriana Lassiter, University of South Alabama; Jack Shelley-Tremblay, University of South Alabama.

**u* or **g* Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION VII. STEM EDUCATION Paper Session
Thursday Afternoon – CHS 1213
Dr. Samiksha Raut, Presiding

1. 1:30 Expert-Led Module Improves Non-STEM Undergraduate Perception of and Willingness to Receive COVID-19 Vaccines. Christina Morra, University of Alabama at Birmingham; Sarah J. Adkins-Jablonky, Alabama College of Osteopathic Medicine; M. Elizabeth Barnes, Middle Tennessee State University; Obadiah J. Pirlo, University of Alabama at Birmingham; Sloan E. Almekhi, University of Alabama at Birmingham ; Bianca J. Convers, University of Alabama at Birmingham; Samiksha A. Raut, University of Alabama at Birmingham.
2. 1:45 Transition of a Hybrid Course-based Undergraduate Research Experience (CURE): Lessons from the GENE-CURE. Ashley Turner, Jacksonville State University; Natalie Forte, Jacksonville State University; Virginia Veasey, University of Alabama at Birmingham; Bethany Christie, Jacksonville State University; Amira Carter, Jacksonville State University; Marli Hanks, Jacksonville State University; Alan Holderfield, Jacksonville State University; Taylor Houston, Jacksonville State University; Anil Challa, University of Alabama at Birmingham, Shiv Nadar Institute of Excellence (Deemed to be University).
3. 2:00 HBCU STEM Student Retention Enhancement through Mentoring Strategies: Exploring the role of leadership - Fayequa Majid, Alabama A&M University; Raziq Yaqub, Alabama A&M University; Shushannah Smith, Oakwood University; Sonya Good, Texas Southern State University; Matthewos Eshete, Mississippi Valley State University
4. 2:15 Teaching About Light Pollution: Curriculum by a Southeast Collaboration. Michelle Wooten, University of Alabama at Birmingham; Mel Blake, University of North Alabama; Tom English, Guilford Technical Community College
5. 2:30 *g “EmpowHER”-ing the next generation of girls in STEM. Cara Brittain, Auburn University; Jessica Gilpin, ; Mary Lou Ewald
6. 2:45 *u STEM in Elementary Education. Ellie Lunsford, Samford University
7. 3:00 *u Benefits of STEM Education. Hannah Pulley, Samford University; Gracie Patterson, Samford University
8. 3:15 *u The Indispensable Need For Introducing STEM in Early Education. Rileigh Dietter, Samford University
9. 3:30 *u Playing with STEM. Maggie Johnson, Samford University
10. 3:45 Development of an on-line general chemistry course for high school and undergraduate classes. Brian Burnes, Mississippi University for Women.
11. 4:00 Using Themes to Teach General Biology to Non Science Majors in an Engaging Format with Improved Student Outcomes. Diann Jordan, Alabama State University

SECTION VII. BUSINESS MEETING [Elect Section Officers]

SECTION VII. STEM EDUCATION Poster Session
Thursday Morning – CHS Lobby

12. ***u** Importance of STEM Education. Betsy Walker, Samford University; Bailey Rogers, Samford University.
13. ***u** STEM through Play. Margaret Ann Sanders, Samford University
14. ***u** Women in Stem. Anna Beaudry, Samford University; Grace Davis, Samford University; Haley Galbreath, Samford University
15. ***u** Stem in Early Childhood Education Caroline Thompson, Samford University
16. ***u** STEM in Early Childhood Education. Marigrace Dunn, Samford University
17. ***u** STEM Cafe!. Lindsey Brewer, Samford University; Meera Money
18. ***u** STEM in SPED. Hallie Mullen, Samford University; Caroline Bechtold, Samford University
19. ***u** PBL. Why is it important with STEM education? McKenna Ratliff, Samford University; Katie Hoaglund, Samford; Olivia Conklin, Samford; Jordan Gaddy, Samford; Kari Jergunson, Samford
20. ***u** Literature in STEM Maddie Neas, Samford University, Julie Clevenger, Kari Jurgenson
21. ***u** STEM vs. STEAM. Carson Osborne, Samford University
22. ***u** The Strength of STEM. Grace Patterson, Samford University; Hannah Pulley, Samford
23. ***g** Impact of ct of Professional Development Workshops on Increasing Plant Biology the Curriculum. Sloan Almekhmi, University of Alabama at Birmingham; Regina Bedgood, UAB; Katie Busch, UAB; Karolina Mukhtar, UAB
24. ***u** STEM Education at Home. Luci Sobanski, Samford University, Kari Jurgenson, Samford University
25. ***u** STEM Education in Early Childhood. Melissa Goolsby, Samford University
26. ***u** Analyzing the impact of cultural competency training of Learning Assistants in a large enrollment STEM gateway course. Jordin Payton, University of Alabama at Birmingham; Mallorie Turner, University of Alabama at Birmingham; Christina Morra, University of Alabama at Birmingham; Samiksha Raut, University of Alabama at Birmingham

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SECTION VIII. ENVIRONMENTAL AND EARTH SCIENCE Paper Session

Thursday Afternoon – CHS 1118

Jonghwa Oh & Shaoyang Liu, Presiding

1. 1:30 ***u**_Catalysis of the Chemical Recycling of Polyethylene Terephthalate (PET) with Metal-organic Framework Compounds Derived from Waste Water Bottles. Meet Chapani, Troy University; Somayeh Mohammadi, Troy University; Mojtaba Enayatinook, Troy University; Zhiyong Wang, Troy University.
2. 1:45 ***g**_Investigation of factors affecting the PFOS adsorption on conventional adsorbent Activated Carbon, MIL-101 (Cr) MOF, MIL-101 (Cr)@Activated Carbon MOF, and MIL-101 (Cr)-NH₂MOF. Jasneet pala, University of Alabama; Tin Le, University of Alabama; Medha Kasula, University of Alabama.
3. 2:00 ***u**_Growth-drought relationships of two southern pine species in northern Alabama. Austen Johnson, Alabama A&M University; SHAIK HOSSAIN, Alabama A&M University; KOZMA NAKA, Alabama A&M University.
4. 2:15 ***g**_Upcycling of PVC Based Waste Products to Electrospun Membranes for Water Treatment. Atta Ur Razzaq, University of Alabama; Milad Rabbani Esfahani, University of Alabama.
5. 2:30 ***g**_Plasma Modified Electrospun IR Reflective Coating for Thermal Regulative Textiles. RENJITH RAJAN PILLAI, University of Alabama at Birmingham; Kannatassen Appavoo, UAB; Claudiu Lungu, UAB; Vinoy Thomas, UAB.

SECTION VIII. BUSINESS MEETING [Elect a Vice-Chair, term ending 2023-24]

SECTION VIII. ENVIRONMENTAL AND EARTH SCIENCE Poster Session
Thursday Afternoon – CHS Lobby

6. Light Pollution and What You Can Do About It. Mel Blake, University of North Alabama; Michelle Wooten, UAB; Tom English, GTCC; Martha Leake, Valdosta State; Dan Caton, Appalachian State.
7. *g The Characteristics of Hand-transmitted Vibration(HTV) from an Electric-powered Grass Trimmer. SEUNGHYEON YANG, University of Alabama at Birmingham; Nathan Chen, University of Alabama at Birmingham; Jonghwa Oh, University of Alabama at Birmingham.
8. *g Nanoplastics Removal from Water Based on the Liquid-Liquid Extraction Method. Ashish Srivastava, University of Alabama; Dr. Milad Esfahani, The University of Alabama.
9. *g Systematic Investigation of PFOS Adsorption from Water by Metal Organic Frameworks, Activated Carbon, Metal Organic Framework@Activated carbon, and Functionalized Metal Organic Frameworks. Jasneet pala, University of Alabama; Tin Le, University of Alabama; Medha Kasula, University of Alabama.
10. *u Monitoring Calcium Carbonate Content in Recycled Polypropylene with Raman Spectrometry. Dayne Long, Troy University; Pixiang Wang, Troy University; Shaoyang Liu, Troy University.
11. *g Development of Dual-Air Purifying Respirators Using Wet-Laid Activated Carbon Fiber Sorbent: Fabrication and Testing. David McMahan, University of Alabama at Birmingham; Jonghwa Oh, University of Alabama at Birmingham; Claudiu Lungu, University of Alabama at Birmingham.
12. *g Upcycled Polyvinyl Chloride (PVC) Electrospun Nanofibers from Waste PVC Pipe for Water Treatment. Atta Ur Razzaq, University of Alabama; Milad Rabbani Esfahani, University of Alabama.
13. *g Occupational Exposure to Hand-transmitted Vibration (HTV) during Electric-powered Grass Trimmer Cutting Operation: Laboratory Simulation. Nathan Chen, University of Alabama at Birmingham; Seunghyeon Yang, Department of Environmental Health Sciences, University of Alabama at Birmingham, Birmingham, AL, USA; Jonghwa Oh, Department of Environmental Health Sciences, University of Alabama at Birmingham, Birmingham, AL, USA.

*u or *g Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Paper Session AM

Joint with

SPECIAL SECTION D. NEUROSCIENCES BIOLOGICAL

Paper Session

Thursday Morning – CHS 2206

Mark Caulkins and Katelynn Corder-Greer, Presiding

1. 8:00 Cadaver Anomalies in Peripheral Upper Extremity Nerves. *Mark Caulkins*, Nicholas B. Washmuth, William Scogin. Samford University.
2. 8:15 Cadaver Anomalies in Forearm Musculature. *Mark Caulkins*, Nicholas B. Washmuth, William Scogin. Samford University.
3. 8:30 Focused Assessment with Sonography in Trauma. *Donna Cleveland*. University of South Alabama.
4. 8:45 Burnout, Resilience, and Mindfulness in Health Care Workers in a Medically Underserved Region During COVID-19. *John Shelley-Tremblay*, Binata Mukerjee, William Barber. University of South Alabama.
5. 9:00 Promoting Self-Care Utilizing a Second Victim Peer Support Program. *Amy Davis*, Donna J. Copeland. University of South Alabama.
6. 9:15 ***u** Interventions That Enhance Hip Fracture Recovery in Patients Over Sixty: A Systematic Review. *Ethan Ferguson*, Victoria K. Gibbs. Birmingham Southern College.
7. 9:30 ***u** Treatment Options for Physical Symptoms of Parkinson's Disease: A Systematic Review. *Rileigh Mitcham*. Birmingham Southern College; Dr. Victoria Gibbs. Birmingham Southern College.
8. 9:45 New Technologies for Increasing Capacity of Primary Healthcare Providers: Virtual Telemonitoring with an Echo. *Bettina Riley*, Rebecca M. Thomas, Caleb Howard. University of South Alabama.

10:15 BUSINESS MEETING [Elect Vice-Chair with term ending 2024-25]

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SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Paper Session PM

Joint with

SPECIAL SECTION D. NEUROSCIENCES BIOLOGICAL

Paper Session

Thursday Afternoon – CHS 2206

Mark Caulkins and Katelynn Corder-Greer, Presiding

9. 2:15 A Structural Equation to Predict Healthcare Worker Burnout: The risk for young workers. *John Shelley-Tremblay*, Binata Mukerjee, Elly Trepman, William Barber. University of South Alabama.
10. 2:30 *g Novel Case of *Providencia rettgeri* Osteomyelitis Presenting in the Frontal Bone: A Case Report. [SPECIAL SECTION D. NEUROSCIENCES] *Sydney Grubb*, Keana-Kelley Swanner, Carlos Cebollero. Alabama College of Osteopathic Medicine, and Tallahassee Memorial Hospital.
11. 2:45 Behavioral deficits in an aged *Drosophila* model of Alzheimer's disease response to long-term ACE inhibition in a sex-specific manner. [SPECIAL SECTION D. NEUROSCIENCES] *Patricia Jumbo-Lucioni*, Amal Nasher, Sameekshya Mainali, Lori Coward, Gregory Gorman, Stanislava Chtarbanova, Jessica Hoffman. Samford University, University of Alabama, and Augusta University.
12. 3:00 *g Necrotizing Fascitis Presenting as Generalized Weakness, Malaise, and Acute Kidney Injury. *Laurence Stolzenberg*, Alexis Koch, Austin Huang, Mohammad Usman, Jason Seale. Alabama College of Osteopathic Medicine.
13. 3:15 *g Transgenic model for Stochastic Expression in *C. elegans* Neurons. [SPECIAL SECTION D. NEUROSCIENCES] *Jean-Pierre Arditi*, Ryan Littlefield. University of South Alabama.
14. 3:30 *g 65-Year Old Woman with No Menopause and Family History of No Menopause: A Case Study. *Keana-Kelley Swanner*, Braden Richmond. Alabama College of Osteopathic Medicine.
15. 3:45 Examining Neural Substrates of Emotion Processing: The Effect of Psychopathic Traits on Event-related Potential Independent Component Amplitude in College Students. [SPECIAL SECTION D. NEUROSCIENCES] *Emmy Ruff*, Jack Shelley-Tremblay. University of South Alabama.
16. 4:00 Pharmacological Amelioration of Hypersplenism in Non-Hodgkin's Lymphoma: A Cadaveric Case Study. *Ronald Hunsinger*, Mark Caulkins, Jayson Halliday. Samford University & Auburn University.

BUSINESS MEETING: SPECIAL SECTION D: NEUROSCIENCES

*u or *g Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Poster Session AM
Joint with
SPECIAL SECTION D. NEUROSCIENCES BIOLOGICAL
Poster Session
Thursday Morning – CHS 2206

1. ***g** Minimizing the Environmental Impact of Anesthesia. *Ann Marie Gieger*, Terri M. Cahoon. Samford University.
2. ***g** A look at excess deaths due to stroke in the state of Alabama. *Michael Enst*, Andrew Harbin. Alabama College of Osteopathic Medicine.
3. ***g** Medicare Spending on Lipid Lowering Medications from 2016-2020. *Bradley Perkins*, Zoe Leuthner, Ashley Calise. Alabama College of Osteopathic Medicine.
4. ***g** Trends and Associated Costs of Medicare Prescriptions for Major Anticoagulant Medications from 2016-2020. *Zoe Leuthner*, Bradley Perkins. Alabama College of Osteopathic Medicine.
5. ***g** Thoracoabdominal Anomalies found in Student Cadaveric Dissections. Whee Nguyen, Hartley Allen, Lauren Boag, Peighton Cumbie, Julianna Mack, Wes Johnson, Paul Harrelson, William Scogin, Nicholas B. Washmuth, Mark Caulkins. Samford University.
6. ***g** Large Diaphragmatic Hernia in Student Dissected Cadaver. *Tien-Huy Nguyen*, Hartley Anderson, Lauren Boag, Peighton Cumbie, JJ Mack, Wes Johnson, Paul Harrelson, William Scogin, Nicholas Washmuth, Mark Caulkins. Samford University.

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SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Poster Session PM
Joint with
SPECIAL SECTION D. NEUROSCIENCES BIOLOGICAL
Poster Session
Thursday Afternoon – CHS 2206

7. ***g** Forearm Muscle Anomalies in Student Cadaveric Dissections. *Peyton Thetford*, JT Austin, Madeline Brandon, Joshua McCool, Seth Ford, Wesley Calhoun, Kathleen McKeon, Maegan Powell, William Scogin, Nicholas B. Washmuth, Mark Caulkins. Samford University, Andrews Sports Medicine & Orthopaedic Clinics.

8. Alabama farmers' markets and purchase of fruits and vegetables. *Suresh Mathews*, Morgan Gaddy. Samford University.

9. ***g**. Cadaver Anomalies in Peripheral Upper Extremity Nerves. *Cassidy Romans*, Hannah Capps, Jamie Holmes, Kate Johnson, Cristina Pfister, Alex Robinson, William Scogin, Nicholas B. Washmuth, Mark Caulkins. Samford University.

10. Implementing a Sepsis Bundle in Intensive Care. *Lee Hardin*. Samford University.

11. ***g** Preoperative Opioid Education. *Hunter Tinnell*, Lisa Herbingier. Samford University.

12. ***g** Non-Pharmacologic Preoperative Anxiolysis. *Abigail Brady*, Lisa Herbingier. Samford University.

13. ***u** Increasing the Number of Dormant *Bacillus cereus* Spores Promotes Greater Attachment to Radiation Therapy Thermoplastic Immobilization Mask Material. *Dev Mehta*, Terry Ravine. University of South Alabama.

14. ***g** A Multi-Criteria Decision Framework for the Selection of Cancer Treatment: Practical Implications. *Lauren Shouse*, Jordan Skiera, Georges Adunlin. Samford University.

15. ***g** Opioid-Related Overdose Deaths in the South Region of the U.S. From 2013 to 2020. *Jordan Skiera*, Jonathan Thigpen Samford University & McWhorter School of Pharmacy.

16. ***g** The Use of Acupuncture for Cervical Ripening and Induction of Labor. *Makayla Chalacoff*, Wes Johnson. Samford University.

17. ***g** An Analysis of Health Outcomes in Rural Appalachian Regions with Geographical Access to Healthcare Facilities. *Baylee Salyers*, Wes Johnson. Samford University.

18. ***g** Development of Novel Doxycycline Topical Formulations to Combat Methicillin Resistant *Staphylococcus Aureus*. *Jay Olivet*, John Arnold. Samford University.

19. ***g** Patient Opinions and Side Effects Before and After General Anesthesia for Surgery. *Mohammad Usman*, Laurence Stozenberg, Austin Huang, Martin Clemmons, Justin Hovey, Gordon MacGregor. Alabama College of Osteopathic Medicine.

20. ***g** Survey investigating the impact of the Covid-19 pandemic on the public's perception of healthcare professionals. *Laurence Stolzenberg*, Mohammad Usman, Austin Huang, Gordon MacGregor. Alabama College of Osteopathic Medicine.

21. ***g** Social Vulnerability Related to Rural Disparities in Colorectal Cancer Mortality in Florida. *Allejandro Arroyo Rodriguez*, Cassie Odahowski, Chris Emrich. Alabama College of Osteopathic Medicine.

22. ***u** An Analysis of Cognitive Ageing in *Drosophila Melanogaster*. *Julia Sruiell*, Katelynn Corder, Samford University. [SPECIAL SECTION D. NEUROSCIENCES]

23. ***g** Oral Supplementation With 1,2,3,4,5-Penta-O-Galloyl- β -D-Glucose Confers Locomotion Advantages in a *Drosophila melanogaster* model of Alzheimer's Disease. *Ezaldean Kahil*, Anisha Jackson, Patricia Jumbo-Lucioni. Samford University. [SPECIAL SECTION D. NEUROSCIENCES]

24. ***g** Deciphering the Reality behind CBD Supplementation in a Pre-clinical Model of Alzheimer's Disease. *Visha Patel*, Mason Snell, Lori Coward, Gregory Gorman, Patricia Jumbo-Lucioni. Samford University and University of Alabama at Birmingham. [SPECIAL SECTION D. NEUROSCIENCES]

25. ***g** Skull Lesions in Student Cadaveric Dissection. *Sharyl Payne*, Katherine Hodge, Leece Lemerond, Alexis Rich, Sarah Ward, Kelly Atkins, Heather Hallman, William Scogin, Nicholas B. Washmuth, Mark Caulkins. Samford University. [SPECIAL SECTION D. NEUROSCIENCES]

26. ***g** Investigation of BMAA Modulation of A β -mediated Neurodegeneration in transgenic *Caenorhabditis elegans*. *Tanner Vandever*, Alexis Petty, Elise Patrick, Ashley Turner. Jacksonville State University. [SPECIAL SECTION D. NEUROSCIENCES]

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**SECTION X. BIOETHICS AND HISTORY AND PHILOSOPHY OF SCIENCE Paper
Session
Thursday Afternoon – CHS 1222**

1. 2:00 The Ethics of Reproductive Choice: Health and Medical Implications. *Bettina H. Riley*, University of South Alabama. briley@southalabama.edu; Ellen Buckner, Samford University.
 2. 2:15 Philosophy versus Science: Does Knowing Philosophy Make a Scientist a Better Scientist or Does Knowing Science Make a Philosopher a Better Philosopher? *Dennis Sansom*, Samford University. dlsansom@samford.edu
 3. 2:30 Longtermism: Watch Out For This Philosophy. *Jim Bradley*, Auburn University. bradljt@auburn.edu
 4. 2:45 Obelisks: 4500-Year-Old Symbol of Mythology and Science. *Clark Lundell*, Auburn University. lundece@auburn.edu
 5. 3:00 *u Pad Mounted Transformer as an Engineered (left brain hemisphere related) Product. *Carter Schatt* and Kendal Sandusky, Auburn University. jcs0817@auburn.edu
 6. 3:15 *u Quay Sunglasses A Designed (corpus callosum related) Product. *Kevin Jones* and Emma Kimball, Auburn University. klj0044@auburn.edu
- 3:45 BUSINESS MEETING: Elect Section Chair / Vice-Chair 2023-24

**SECTION X. BIOETHICS AND HISTORY AND PHILOSOPHY OF SCIENCE Posters
Session
Thursday Afternoon – CHS Lobby**

7. 1:30 –2:15 Ethical Issues Involved in Organ Transplantation. *Shuntele Burns*, Alabama State University. sburns@alasu.edu

Special Sections for 100th Anniversary

- SPECIAL A. Alabama Honors Scholars
SPECIAL C. Material Science and Engineering Graduate Students Symposium
SPECIAL D. Neuroscience

SPECIAL SECTION A. ALABAMA HONORS SCHOLARS Paper Session
Thursday Afternoon – CHS 1213
Michael Sloane and Doug Marshall, Presiding

1. 2:15 ***u** Why Originalism? Anthony Venezia. University of Alabama at Birmingham.
2. 2:30 ***u** DNA Methylation of the AGTR1 Gene in a Hypertensive Population of Kenyans. *Michael Roque* and Nancy Rice, University of South Alabama.
3. 2:45 ***u** Genetically Modified Organisms (GMO's): Humanity's Solution to Rising Hunger Concerns. *Hannah Enskat*. University of Alabama at Birmingham.
4. 3:00 ***u** Social Determinants Associated with Illicit Substance Use and Treatment Seeking Behaviors in Females of Reproductive Age. *Alyssa Thompson, Kendall Willard and Holly Horan*. University of Alabama.
5. 3:15 ***u** Consistency and Academic Freedom. *Liberty Wigen*. University of Alabama at Birmingham.
6. 3:30 ***u** The Social Distribution of Direct and Indirect Exposure to Major Discrimination among Black Adults. *Curdajah Bonner*. University of Alabama at Birmingham.

SPECIAL SECTION A. BUSINESS MEETING

**u* or **g* Denotes presentation entered in student competition as an undergraduate or graduate student, respectively.

SPECIAL SECTION A. ALABAMA HONORS SCHOLARS Poster Session
Thursday Afternoon – CHS Lobby

7. ***u** *Pseudomonas aeruginosa* ExoY Does Not Affect ExoS/T-Induced Cytotoxicity in Pulmonary Microvascular Endothelial Cells. *Andrea Vavrinek*, Phoibe Renema, Terrence Ravine, and Troy Stevens. University of South Alabama.
8. ***u** Vascular Endothelial Growth Factor Impacts Blood-Brain Barrier Integrity During Group B *Streptococcus* Infection. *Alexandra Meyer, Natalie Alexander, and Brandon Kim*. University of Alabama.
9. ***u** Mapping Health Disparity and Socioeconomic Status in Geographic Information Systems: A Critical Perspective of Civil Rights Challenges in Alabama. *Eric Thompson, Oluwatosin Oyekeye*, Ram Alagan, Seela Aladuwaka, and Manoj Mishra. Alabama State University.
10. ***u** Developing and Testing a Novel Device for Detecting Peripheral Artery Disease Using Radio Frequency Energy. *Julia Nelson*, Connor Cobb, Joshua Keller, David Nelson and Michael Francis. University of South Alabama.
11. ***u** Characterization of SAP in Group B *Streptococcus* as a Novel Virulence Factor Contributing to Bacterial Meningitis. *Aidan Flanagan and Jacob Wood*. University of Alabama.
12. ***u** Virtual Young Teen Asthma & Wellness Camp (VYTAWC): A School-Based Expansion to Rural Underserved Counties to Address Health Disparities. *Hannah Wright*, LaBrenda Marshall, Mikiaha Dumas, Allison Jackson, and Ellen Buckner. Samford University.
13. ***u** Descriptive Representation in State Legislatures: Exploring the Educational Backgrounds of State Representatives and Senators. *Skylar Dykes*. University of South Alabama.
14. ***u** An Exploration Into the Sex-Based Venom Variation in the Texas Brown Tarantula (*Aphonopelma hentzi*). *Jorjia Elmore and Jason Strickland*. University of South Alabama.

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**SPECIAL SECTION C. MATERIAL SCIENCE AND ENGINEERING GRADUATE
STUDENTS SYMPOSIUM Poster Session
Thursday Afternoon – CHS Lobby**

1. ***g** Inconel 625 for Laser Powder Bed Fusion: Heat Treatment, Microstructure and Microhardness. Tahmina Keya, Auburn University; Ilias Bismukhametov, University of Alabama; Greyson Harvill, University of Alabama; Mohanish Andurkar, Kansas State University; Scott Thompson, Kansas State University ; Valentina O'Donnell, Kansas State University; John Gahl, University of Missouri.
2. ***g** Effect of Dispersion Homogeneity and Formulation on Mechanical and Electrical Properties of Liquid Metal Polymer Composites. Anh Hoang, University of Alabama; Amanda Koh, University of Alabama.
3. ***g** A Novel Magnetic Drug Screening Nanoplatfrom Based on Immobilized Transmembrane Proteins on Magnetic Superparticles. Shomit Mansur, University of Alabama; Yuping Bao, University of Alabama; Sadanandan Velu, University of Alabama at Birmingham; Jesse Horne, University of Illinois-Urbana Champaign.
4. ***g** Manufacturing and characterization of (PCL/GELMA) microstructure scaffolds for Periodontal tissue engineering applications. Rakesh Pemmada, and Vinoy Thomas, University of Alabama at Birmingham UAB.
5. ***g** The extended surface element integration method for the DLVO interaction energy of Janus superellipsoids with a planar wall.. Unmanaa Dewanjee, University of Alabama in Huntsville; Daniel Duke, University of Alabama in Huntsville; KaiLian Davis, University of Alabama in Huntsville; Isaac Torres-Díaz, University of Alabama in Huntsville.
6. ***g** Influence of ZrC Dispersion in the Grain Size Control of Additively Manufactured Molybdenum. Colton Gilleland, University of Alabama; Carly Romnes, University of Chicago- Urbana-Champaign; Omar Mireles, NASA Marshall Space Flight Center; Fernando Reyes Tirado, NASA Marshall Space Flight Center; Gregory Thompson, University of Alabama.
7. ***g** Synthesis and self-assembly of folate-conjugated block copolymers of poly(ethylene glycol) and poly(amino acid) and their targeting efficiency. Adekunle Titus Akinmola, University of Alabama in Huntsville; Carmen Scholz, The University of Alabama in Huntsville.
8. ***g** Incorporation of low temperature plasma treatment for the effective upcycling of high-density polyethylene (HDPE) wastes. Gautam Chandrasekhar, Tuskegee University; Vijaya Rangari, Tuskegee University Tuskegee University.
9. ***g** Synthesis of Poly(L-Lysine) Dendrigrft Modified with Simple Sugars. Felicia McCarty, University of Alabama in Huntsville.
10. ***g** A Brief Explanation and Effects of Reduced Carbon in Inconel 718. Joey Scott, University of Alabama in Huntsville; Judith Schneider, University of Alabama in Huntsville.
11. ***g** Elastic SEBS beads as additives to enhance the elasticity of iron-based Magnetorheological fluids. Sandhiya Thiagarajan, University of Alabama; Aubrey Dettman, The University of Alabama; Amanda S. Koh, The University of Alabama.
12. ***g** Evaluation of As-deposited Tensile Behavior and Microstructure of Additive Friction Stir Deposition 304L Stainless Steel. Jessica Lopez, University of Alabama; Malcolm Brady,

- Baylor University; Ning Zhu, Baylor University; Brian Jordon, Baylor University; Paul Allison, Baylor University.
13. ***g** Stabilization of Vacancy Ordered Transition Metal Carbides by Sputter Deposition. Haas Blacksher, University of Alabama; Michael Large, Alabama; Gregory Thompson, Alabama; Christopher Weinberger, The University of Alabama.
 14. ***g** Free-standing nanothin hydrogels. Maksim Dolmat, University of Alabama at Birmingham; Eugenia Kharlampieva, UAB; Veronika Kozlovskaya, UAB.
 15. ***g** Electrodeposition of Molybdenum from Water-in-Salt Electrolytes. Quanhong Liu, University of Alabama.
 16. ***g** Symmetry on the directed-assembly of binary suspensions of anisotropic particles. David Harris, University of Alabama in Huntsville; David Harris, The University of Alabama in Huntsville.
 17. ***g** Plasma/Ozone surface engineered peek implants for enhanced bio interactions. Chandrima Karthik, University of Alabama at Birmingham; Vinoy Thomas, University of Alabama at Birmingham.
 18. ***g** Investigation Into Low-Defect Molybdenum Produced by Continuous and Pulsed Laser. Ernest Porterfield, Auburn University; Barton Prorok, Auburn University
 19. ***g** Simulation of Magnetic Hysteresis in Cobalt-Based Metal Amorphous Nanocomposites. Kayla Cole-Piepk, University of Alabama; Prabandha Nakarmi, University of Alabama; Alicia Koenig, University of Alabama; Tim Mewes, University of Alabama; Gregory Thompson, University of Alabama; Ronald Noebe, NASA Glenn Research Center; Alex Leary, NASA Glenn Research Center.
 20. ***g** Development of metal additive manufacturing processes for bi-metallic components. Michael Santangelo, University of Alabama in Huntsville.
 21. ***g** Nano-twin stability effects on strength of Cu-Al alloys via in-situ cryogenic indentation. Jarod Robinson, University of Alabama; Eric Homer, BYU; Gregory Thompson, UA .
 22. ***g** Plasma Modified Electrospun IR Reflective Coating for Thermal Regulative Textiles. Renjith Rajan Pillai, University of Alabama at Birmingham; Kannatassen Appavoo, UAB; Claudiu Lungu, UAB; Vinoy Thomas, UAB.
 23. ***g** Investigation of Morphology Effects on Cubic Hydrogel Particles for Drug Loading. Daniel Inman, University of Alabama at Birmingham; Veronika Kozlovskaya, University of Alabama at Birmingham; Sarah Nealy, University of Alabama at Birmingham; Pavel Nikishau, University of Alabama at Birmingham; Jongwha Oh, University of Alabama at Birmingham ; Claudiu Lungu, University of Alabama at Birmingham; Eugenia Kharlampieva, University of Alabama at Birmingham.
 24. ***g** Phase and Microstructure Evolution of Composite Metallic/Carbide Laminates under Thermal Loads. Michael Large, Gregory Thompson University of Alabama; Carter Stotts, Christopher Weinberger Colorado State University.

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BUSINESS MEETING: Room 1117

AJAS & Gorgas Student Sections

ALABAMA JUNIOR ACADEMY OF SCIENCE

Mark Jones, State Director, Presiding Posters at Sci-Mix Session

Thursday Evening, 5:00 PM– 6:15 PM

Howard Room, University Center

Engineering/Mathematics

1. *Naeim Mahjouri, *Designing a Hybrid 3D-Printed Piezoelectric Wheel for Energy Harvesting and Storage in Electric Vehicles*, Auburn High School, Auburn
2. *Anna Bekah Cress, *Frequency Modulated Continuous Wave RADAR for Blind Navigation*, Libertas Classical Community, Decatur
3. *Shreya Sunil, *Plasma Surface Engineered Kink-Free Electrospun Vascular Graft with Additive Manufacturing*, James Clemens High School, Madison
4. Benjamin Tzou, *Reducing Energy Consumption by Applying Thermoelectric Generators to Batteries and Motors in Electric Vehicles*, Auburn High School, Auburn
5. Jordan Jennings, *Applying Magnetic Induction Using Rotating Magnetic Field to Non-ferromagnetic Thermal Conductive Materials to Create a Sustainable Heating Element*, Key Destiny Homeschool, Huntsville
6. Conrad Feng and Noah Lowry, *CFNN: Detection of Cervical Spine Fractures with Resource Efficient Convolutional Neural Networks*, Alabama School of Fine Arts, Birmingham
7. Nicole Sazonov, *Generation of Microrhythm in Digital Music Tracks Using a Neural Network*, Alabama School of Fine Arts, Birmingham
8. Andrew, Powell, *Hydrogen Full Cell*, Wetumpka High School, Wetumpka
9. Matthew Wood and Allan Yuan, *Maze Generation Using Two Different Methods*, Hoover High School, Birmingham
10. Will, Bao, *Resolving Warping in 3D Printing via Analysis of Potential Solutions*, Auburn High School, Auburn

Environmental

1. Mustafa Gurbuz, *Cleaning Up the World's Oceans with ROV-mounted Laser Imaging*, Northridge High School, Tuscaloosa
2. Parker Thompson, *Exploring the Effects of Scented Air Freshener Products on Indoor Air Quality*, Wetumpka High School, Wetumpka
3. Eva Ledvina, *How Temperature Has Affected Ruby-throated Hummingbird Fall Migration from 2017 to 2022*, Jefferson County International Baccalaureate, Irondale
4. Aanchal Behara, *Impacts of Ocean Acidification and Elevated Temperatures on Acosta assimilis: Mass, Shell Transparency, Scarred Structures, Perforation, and Corrosion*, Alabama School of Fine Arts, Birmingham
5. David Pinkston, *Managing Phosphorus Levels in Water to Prevent Eutrophication*, Wetumpka High School, Wetumpka
6. Whitley Shull, *Removing the Green Pest*, Wetumpka High School, Wetumpka
7. Jayden Mooneyham and Aiden Khansaheb, *The Effect of changing the Angle on a Solar Powered Water Heater*, Hoover High School, Hoover

8. Damian Reese, *The Effect on Air Quality on School from Nearby Roads*, Hoover High School, *Hoover*
9. Kevin Yan, *Utilizing Convolutional Neural Networks, Deep Learning, and Computer Vision in a Novel Approach to Banana Disease Management*, Auburn High School, *Auburn*
10. Lauren Lee and Jaiden Lee, *When is Water Good Enough?* Alabama School of Fine Arts, *Birmingham*

Life Science

1. *Eshika Kudaravalli, *Any Fin Is Possible with Zebrafish: The Investigation of Hsa21 Genes Relevant to Down Syndrome*, Hoover High School, *Hoover*
2. *Sanjana Chada, *Changes in Gut Microbiome Correlate with Lung Morbidity and Mortality Post-Toxic Gas Exposure*, Alabama School of Fine Arts, *Birmingham*
3. *Jacob Norrell, *Combating the Global Food Crisis with Rhizobium-Legumes Symbiosis*, Wetumpka High School, *Wetumpka*
4. William Pate, *Cleaner Surface, Safer Student*, Wetumpka High School, *Wetumpka*
5. Sophia Guo and David Wang, *Investigating Probiotic Growth Stimulating Effects of Certain Prebiotics*, Alabama School of Fine Arts, *Birmingham*
6. Syeda Fatima, Isaiah Mockerman and Syed Rizvi, *Leaf Pack*, Hoover High School, *Hoover*
7. Afra Oduk, *Microbial Life Near the Cahaba River*, Hoover High School, *Hoover*
8. Emma Kate Hawie, *The Basic Banana*, Providence Classical School, *Huntsville*
9. Ashu Anand and Martin Vizzina, *The Effects of Light Radiation on Planarian Regeneration Time*, Alabama School of Fine Arts, *Birmingham*

Medicine Health and Behavioral Science

1. *Ryan Debrow, *How to Treat Dandruff Using Artificial Intelligence*, Alabama School of Fine Arts, *Birmingham*
2. *Mayu Nakano, *Novel Proteogenomics-Guided Precision Oncology Roadmap Targeting Chemoresistance in Triple-Negative Breast Cancer*, Indian Springs School, *Indian Springs School*
3. John Belew, *An Introspection on the Meat Industry and Finding Alternatives*, Wetumpka High School, *Wetumpka*
4. McNair Shah, *ASAC: Articulatory Synthesis Using Actor-Critic*, Alabama School of Fine Arts, *Birmingham*
5. Monisha Bommur, *Caffeine and Ethanol effect on Planarian Regeneration*, Alabama School of Fine Arts, *Birmingham*
6. Rachel Allen, *External Feedback and the Effect on Adolescent Mentality*, Elmore County High School, *Eclectic*
7. Hayden McKenzie, *How Do Different Iron Levels Affect Luminol Luminosity?* Wetumpka high, *Wetumpka*
8. Annie Bao, *Human Community Characteristics Predict Cat Adoption*, Auburn Junior High School, *Auburn*
9. Charles Stokes, *The Effects of VR, and How It Affects You*, Wetumpka High School, *Wetumpka*
10. Timothy Hughes, *Visually "Cone"ceived*, Wetumpka High School, *Wetumpka*

Physical Science Earth and Space Science

1. *Daniel Zhao, *Lan-DLE: Uncertainty-Aware Autonomous Landing of Fixed-Wing Aircraft with Deep Learning Ensembles*, Alabama School of Fine Arts, Birmingham
2. Jackson Rodriguez, *Can LIDAR Effectively Navigate an Active Environment?* Wetumpka High School, Wetumpka
3. Joshua Minnon, *Decay in Motion*, Libertas Classical Community, Decatur
4. Makaila Jennings, *Does the Color of an Astronomical Body Affect the Observation of Decreasing Intensity with the Transit Photometry Method?* Key Destiny Homeschool, Huntsville
5. Ray Unger, *Martial Artist vs. Sports: Who Has Higher Force?* Wetumpka High School, Wetumpka
6. Lillian Vilardi, *Plastic in the Roof*, Wetumpka High School, Wetumpka
7. Levi Gels, *Solar Power*, Hoover High School, Hoover
8. Abby Gobbels, *The Effect of the Amount of Ground Cover on the AQI and CO2 Levels*, Hoover High School, Hoover
9. Tripp Henderson, *Use of Light Diffraction in Primitive Quantum Computation*, Indian Springs School, Pelham

*Gorgas Finalist

GORGAS SCHOLARSHIP COMPETITION

Sci-Mix Session

Howard Room, University Center

Thursday Evening, 5:00 PM– 6:15 PM

Ellen Buckner, Presiding

1. *Sanjana Chada*, Changes in Gut Microbiome Correlate with Lung Morbidity and Mortality Post Toxic-Gas Exposure. Alabama School of Fine Arts, [Teacher-Sponsor: Hungsin Chin].
2. *Anna Bekah*, Cress Frequency Modulated Continuous Wave RADAR for Blind Navigation. Libertas Classical Community, [Teacher-Sponsor: Jared Cress].
3. *Ryan Debrow*, How To Treat Dandruff Using Artificial Intelligence. Alabama School of Fine Arts, [Teacher-Sponsor: David Kwong].
4. *Eshika Kudaravalli*, Any Fin Is Possible With Zebrafish: The Investigation of Hsa21 Genes Relevant to Down Syndrome. Hoover High School, [Teacher-Sponsor: Janet Ort].
5. *Emma Kuehl*, The Effects of Population Density on Microplastics. Fairhope High School, [Teacher-Sponsor: Mary Stuart].
6. *Naeim Mahjouri*, Generating Energy from Wheel Motion by Designing a Hybrid 3D-Printed Triboelectric Nanogenerator. Auburn High School, [Teacher-Sponsor: Mark Jones].
7. *Emma McGowan*, A Study of the Pollen Content found in Honey Acquired from both Local Beekeepers and Grocery Stores. Fairhope High School, [Teacher-Sponsor: Mary Stuart].
8. *Mayu Nakano*, Novel Proteogenomics-Guided Precision Oncology Roadmap Targeting Chemoresistance in Triple-Negative Breast Cancer. Indian Springs High School, [Teacher-Sponsor: Tessa Magnuson].
9. *Jacob Norrell*, Combating the Global Food Crisis with Rhizobium-Legumes Symbiosis. Wetumpka High School, [Teacher-Sponsor: Virginia Vilardi].
10. **Ashwin Prabhakar*, A Low-Cost Portable and Modular Single-Shot Hyperspectral Imaging System for Characterization of Materials. Bob Jones High School, [Teacher-Sponsor: Jessye Gaines].
11. *Shreya Sunil*, Plasma Surface Engineered Kink-Free Electrospun Vascular Graft with Additive Manufacturing Reinforcement. James Clemens High School, [Teacher-Sponsor: Kathryn Weir].
12. *Daniel Zhao*, Lan-DLE: Uncertainty-Aware Autonomous Landing of Fixed-Wing Aircraft Using Deep Learning Ensembles. Alabama School of Fine Arts, [Teacher-Sponsor: Cecil Flournoy].

*Regeneron National Semi-Finalist

OBJECTIVES OF THE ALABAMA ACADEMY OF SCIENCE

The objectives of the Academy are to:

- Promote the development of interest in scientific matters in the state,
- Provide means for publication of papers and abstracts,
- Provide opportunity for increased cooperation and fellowship among its members,
- Cooperate with other organizations having similar aims,
- Render public service in scientific matters,
- Promote the interest in and study of science by the youth of Alabama,
- Provide for and award scholarships to deserving youth of Alabama.

In fulfilling these objectives, the Academy is devoted to nearly all aspects of science and science education.

EDUCATIONAL ACTIVITIES OF THE ACADEMY

The Academy sponsors

- Alabama Junior Academy of Science, a statewide organization of high school science clubs
- Junior Science and Humanities Symposium, an activity supported by the United States Army, U.S. Navy, U.S. Air Force, and the U.S. Coast Guard
- Seven Regional Science Fairs at which high school students exhibit the results of their research or study projects. Regional Finalists compete in the Alabama State Science & Engineering Fair. Winners go to the International Science and Engineering Fair (ISEF)
- Science Olympiads in which regional winners compete at the state level. Alabama winners go to the National Competition.
- Visiting Scientist Network in which volunteer members, upon invitation by a teacher, go to high schools to present talks, demonstrations, or workshops
- Travel grants to enable students to attend the annual meetings where they can present their research results in the Student Research Award Competition
- Research grants to enable students to carry out mentored research.

2023 NATIONAL JSHS COMPETITION

The 61st National Junior Science and Humanities Symposium will be held on April 12-15, 2023, in Virginia Beach, Virginia. The National JSHS brings together 245 high school students who qualify by submitting and presenting original scientific research papers in regional symposia held at universities nationwide. The AJAS State winners receive an expense-paid trip to compete at the National JSHS. ALAS State Director is Mark Jones, Auburn, AL jonesmt@troup.org;

2023 REGIONAL SCIENCE FAIRS

1. **Central Alabama Regional Science & Engineering Fair**, [web](#), March 4, 2023
Kevin Jarrett, coordinator
The University of Alabama at Birmingham
Community Outreach, 5th Fl., CHSB 19
933 19th Street South
Birmingham, AL 35294-2041
2. **West Alabama Regional Science Fair**, No Fair in 2023
3. **North Alabama Regional Science and Engineering Fair**, [web](#), March 1, 2023 In-person
Jacob Kerstiens, coordinator
jacob.kerstiens@uah.edu
The University of Alabama in Huntsville
College of Engineering
Huntsville, AL 35899
4. **Greater Eastern Alabama Regional Science and Engineering Fair**, [web](#), February 24, 2023
Dr. Marr Grilliot
GEARSEF Fair Coordinator
mgrillio@aum.edu
5. **Mobile Regional Science and Engineering Fair**, [web](#), March 3, 2023
Engineering@southalabama.edu
David T. Allison, Ph.D.
dallison@southalabama.edu
Department of Earth Sciences
136 LSCB, 307 N. University Blvd.
University of South Alabama
Mobile, AL 36688
6. **Alabama Science & Engineering Fair**, [web](#), April 1, 2023 In-person
Mary Lou Ewald Director, STEM Outreach Center |SCORE| AU-SIM |COSAM |131
SCC Bldg Auburn, AL 36849 Office: (334) 844-5745 | Cell: (334) 444-
1513|ewaldml@auburn.edu
Dr. Jessica Gilpin
Assistant Director
College of Sciences & Mathematics STEM Outreach
Auburn University, AL 36849
Office: (334) 844-5769
Email: gilpinja@auburn.edu

2023 INTERNATIONAL SCIENCE AND ENGINEERING FAIR

An activity of Regeneron Science Service, 1719 N Street, NW, Washington, DC 20036,
(202) 785-2255, FAX (202) 785-1243. <https://www.societyforscience.org/isef/>

The Regeneron 2023 ISEF will be held May 14-19, 2023 in Dallas, Texas

Dr. Virginia Vilardi, Regeneron/ISEF and State Coordinator, 1251 Coosa River Parkway,
Wetumpka H.S., 36092, (334) 799-0104, virginia.vilardi@elmoreco.com; vavilardi@gmail.com



ALABAMA SCIENCE OLYMPIAD 2023

The Alabama Science Olympiad site is at <https://scilympiad.com/al>. Individuals can visit the [Tournaments](#) page for details. The following is the listing of tournaments with hot links to the various sites:

Division AA – Elementary Schools (3 – 6 grades)

Elementary Science Olympiad at Jacksonville High School

Saturday, February 25th

Details at the <http://www.esoatjhs.org/> web site.

Elementary Science Olympiad in the Wiregrass

Saturday, March 18th

Auburn University

Saturday, March 25th

Divisions B (Middle School) and C (High School)

University of Alabama, Tuscaloosa

Saturday, March 4th

Link to additional <https://scienceolympiad.as.ua.edu/>

AMSTI-North Alabama Regional

Saturday, March 11th

Athens State University

University of Alabama at Birmingham

Saturday, March 4th

Link to additional <http://www.uab.edu/sthonors/scienceolympiad>

Invitational Tournament

Jefferson County Invitational

Open only to Jefferson County Schools

Saturday, February 4th (B & C Divisions)

Saturday, January 21st (AA Division)

State Tournaments

Auburn University

Division B and C State Olympiads

Saturday, April 22nd, 2023

Link to additional

https://auburn.edu/cosam/outreach/stem_outreach/programs/Science%20Olympiad/State%20Science%20Olympiad/index_state_science_olympiad.htm

National Science Olympiad Tournament

The Science Olympiad National Tournament for Divisions B and C will be hosted May 19-20, 2023, by Wichita State University in Wichita, Kansas.

State Director: Mary Lou Ewald, Director of Science and Math Outreach, 131 SCC Building, Auburn University, Auburn, AL 36849 (334) 844-5745, ewaldml@auburn.edu.

Alabama Science Olympiad web page:

<http://alabamaso.org/>.

National Science Olympiad web page:

<http://soinc.org/about>.

WILLIAM H. MASON SCIENCE TEACHER FELLOWSHIPS

The William H. Mason Science Teacher Fellowship Fund honors the late Dr. Mason's dedication and leadership in the Academy. Contributions may be made online on the Alabama Academy of Science website. Mickie Powell serves as Chair of the Mason Science Teacher Fellowship Committee, mpowell@uab.edu. Downloadable applications and further information can be found on the Academy web site, www.alabamaacademyofscience.org.

Fellowships have been awarded to these individuals for study at the indicated institutions:

1990 - 1991	Mrs. Amy Livengood Sumner, UAB
1991 - 1992	Mrs. Leella Holt, UNA
1992 - 1993	Mrs. Joni Justice Shanklee, Samford University
1993 - 1994	Jeffrey Baumbach, Auburn University
1994 - 1995	Not Awarded
1995 - 1996	Laura West Cochran, University of Montevallo
1996 - 1997	Tina Anne Beams, UA
1997 - 1998	Carole Collins Crabbe Clegg, UAB
1998 - 1999	Cynthia Ann Phillips, UNA
1999 - 2000	Ruth Borden, UAB
2000 - 2001	Amy K. Murphy, UAB, Karen L. Celestine, AL A&M
2001 - 2002	Jeannine Ott, Eubanks, Auburn University
2002 - 2003	Not Awarded
2003 - 2004	Kanessa Miller, Auburn University
2004 - 2005	Not Awarded
2005 - 2006	Mary Busbee, UAB, and Bethany Knox, UAB
2006 - 2007	Kelly Harbin, UAB
2007 - 2008	Michael Hallman, UA
2008 - 2009	Sherri Sanders Grosso, UNA
2009 - 2010	Not Awarded
2010 - 2011	Danielle Brooke Morlan, UWA
2011 - 2012	Cory Goble, University of Montevallo
2012 - 2013	Amber Foster, UA
2013 - 2014	Amy Bolding
2014 - 2015	Arpan Bosmia, UAB
2015 - 2016	Lacey McEwen, Samford
2016 - 2017	Tyler Rice, Auburn
2017 - 2018	Celia Dozier, Samford
2018 - 2019	Jacob Helf, Auburn
2019 - 2020	Joshua Evans, University of Montevallo
2022 - 2023	Jaclynne Alivia Carden, Auburn University

WRIGHT A. GARDNER AWARDEES

Recipients are selected for their Outstanding Contributions to Science

- 1984 Robert P. Bauman, Physics, University of Alabama at Birmingham
- 1985 Nolan E. Richards, Research Scientist, Reynolds Metals Company, Sheffield
- 1986 S. T. Wu, Mechanical Engineering and Aeronautic Research, University of Alabama in Huntsville
- 1987 Herbert H. Winkler, Microbiology, University of South Alabama
- 1988 Richard W. Compans, Microbiology and Senior Scientist, University of Alabama at Birmingham
- 1990 Max Cooper, Medicine and Immunology, University of Alabama at Birmingham
- 1991 Dan Urry, Biochemistry, University of Alabama at Birmingham
- 1992 Gail Cassell, Microbiology, University of Alabama at Birmingham
- 1994 Frank Rose, Electrical Engineering, Space Power Institute, Auburn University
- 1996 Prakash Sharma, Physics, Tuskegee University
- 1997 Robert E. Pieroni, Internal and Family Medicine, University of Alabama, Tuscaloosa
- 1998 Thomas J. Wdowiak, Physics and Space Exploration, University of Alabama at Birmingham
- 1999 Samuel B. Barker, Physiology, and Dean Emeritus, University of Alabama at Birmingham
- 2000 George Crozier, Dauphin Island Sea Lab, Mobile
- 2001 James B. McClintock, Biology, University of Alabama at Birmingham
- 2002 Sara C. & Wayne H. Finley, University of Alabama at Birmingham Medical School
- 2003 Leven S. Hazlegrove, Samford University, Executive Director, Alabama Academy of Science
- 2004 William J. Barrett, Southern Research Institute, Retired, Birmingham
- 2005 Eugene Omasta, Professor Emeritus, Troy University.
- 2006 Dan Holliman, Professor Emeritus, Birmingham Southern College
- 2007 No award
- 2008 No award
- 2009 No award
- 2010 No award
- 2011 J. Michael Wyss, Director of CORD, University of Alabama at Birmingham
- 2012 No award
- 2013 David B. Allison, Associate Dean for Science, School of Public Health, UAB, Birmingham.
Ram Gupta, Chemical Engineering, Auburn University.
- 2014 Arnold Luterman, Ripps-Meisler Professor of Surgery, University of South Alabama
- 2015 Shaik Jeelani, Chair, Department of Materials Science & Engineering; Tuskegee University
- 2016 Pradeep Lall, John and Anne MacFarlane Endowed Professor, Department of Mechanical Engineering, Director, NSF-CAVE3 Electronic Research Center, Auburn University.
- 2017 E. O. Wilson, University Professor Emeritus, Harvard University.
- 2018 No Award
- 2019 David J. Wineland, Nobel Laureate in Physics, University of Oregon.
- 2020 Jodi Singer, Director, NASA Marshall Space Center, Huntsville;
Richard Myers, Director and President, HudsonAlpha Institute for Biotechnology, Huntsville.
- 2021 Errol Derwin Crook, Professor and Chair, Abraham Mitchell Endowed Chair, Department of Internal Medicine, University of South Alabama
- 2022 Michael Saag, Professor & Associate Dean for Global Health, University of Alabama at Birmingham.

FELLOWS OF THE ALABAMA ACADEMY OF SCIENCE

- 2007 Ellen Buckner (University of Alabama at Birmingham), Leven Hazlegrove (Samford University), Richard Hudiburg (University of North Alabama), Larry Krannich (University of Alabama at Birmingham), Eugene Omasta (Troy University), Prakash Sharma (Tuskegee University).
- 2008 Ram B. Gupta (Auburn University), Harry O. Holstein (Jacksonville State University), Adriane G. Ludwick (Tuskegee University), Ken Marion (University of Alabama at Birmingham), Michael B. Moeller (University of North Alabama)
- 2009 Stephen A. Watts (University of Alabama at Birmingham) and Jane Nall (State Director, Science Olympiad Program)
- 2010 George Cline (Jacksonville State University), David H. Nelson (University of South Alabama), and Virginia Vilardi (State Coordinator, Science Fairs, Wetumpka High School)
- 2011 James T. Bradley (Auburn University), Anne Cusic (University of Alabama at Birmingham), James B. McClintock (University of Alabama at Birmingham)
- 2012 Benjamin J. Bateman (Troy University) and Edward E. Thomas (Auburn University)
- 2013 Safaa H. Al-Hamdani (Jacksonville State University) and Catherine D. Shields (Jefferson County International Baccalaureate School)
- 2014 Brian Burnes (University of West Alabama), Ronald N. Hunsinger (Samford University), and Pradeep Lall (Auburn University)
- 2015 Mickie Powell (University of Alabama at Birmingham) and David Brian Thompson (University of North Alabama)
- 2016 No award
- 2017 No award
- 2018 Mark Jones (J. F. Drake Middle School) and Akshaya Kumar (Tuskegee University)
- 2019 Lawrence J. Davenport (Samford University) and Puneet Srivastava (Auburn University)
- 2020 Mel Blake (University of North Alabama) and Arjun Tan (Alabama A&M University)
- 2021 No award
- 2022 Matthew Edwards (Alabama A&M University) and Courtney N. Haun (Samford University)

SECTION OFFICERS, 2022-2023

Section I: Biological Sciences:

- Chair: (2023) Andrew Coleman, 512 Scenic Circle, Trussville, AL 35173, acoleman@talladega.edu.
- Vice Chair: (2023) Grover Brown, Dept. of Biology, Jacksonville State University, Jacksonville, AL 36265, gjbrown@jsu.edu.

Section II: Chemistry:

- Chair: (2024) Stephen Slauson, Dept. of Chemistry and Geosciences, Jacksonville State Univ., Jacksonville, AL 36265, sslauson@jsu.edu.
- Vice Chair: (2024) Vacant

Section III: Physics and Mathematics:

- Chair: (2023) Matthew Edwards, Dept. of Physics, Alabama A&M University, Normal, AL 35762, matthew.edwards@aamu.edu.
- Vice Chair: (2023) Byunghoon Lee, Dept. of Mathematics, Tuskegee University, Tuskegee, AL blee@tuskegee.edu.

Section IV: Engineering and Computer Science:

- Chair: (2024), Heejoon Park, Dept. of Engineering Technology, University of North Alabama, Florence, AL 35632, hpark4@una.edu.
- Vice Chair: (2024) Ruigang Wang, Dept. of Metallurgical & Materials Engineering, The University of Alabama, Tuscaloosa, AL 35487, rwang@eng.ua.edu.

Section V: Social Sciences:

- Chair: (2023) Mohit Anand, Division of Business and Accounting, Miles College, Fairfield, AL 35064, manand@miles.edu.
- Vice Chair: (2023) Cynthia Lovelace, College of Business, Sanders Hall, 300 N. Beaty Street, Athens, Alabama 35611, Cynthia.Lovelace@athens.edu.

Section VI: Anthropology:

- Chair: (2023) Jason Heaton, Department of Biology, Birmingham Southern College, Birmingham, AL 35254, (205) 226-7816, jheaton@bsc.edu
- Vice Chair: (2023) Sherrie Alexander, Dept. of Anthropology, University of Alabama at Birmingham, Birmingham, AL 35294, sdalex@uab.edu

Section VII: STEM Education:

- Chair: (2022) Sami Raut, Dept. of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, sraut@uab.edu.
- Vice Chair: (2022). Vacant

Section VIII: Environmental and Earth Science:

- Chair: (2023) Jonghwa Oh, Environmental Health Science, UAB, School of Public Health, Birmingham, AL 35294, jonghwa@uab.edu
- Vice Chair: (2023) Shaoyang Liu, Dept. of Chemistry, Troy University, Troy, AL 36082, lius@troy.edu.

Section IX: Health Sciences:

- Chair: (2024) Donna Copeland, University of South Alabama, College of Nursing, Mobile, AL 36688, dcopeland@southalabama.edu.
- Vice Chair: (2024) R. Mark Caulkins, Physician Assistant Program, Samford University, Birmingham, AL 35229 (205) 726-4835, rcaulkin@samford.edu.

Section X: Bioethics and History and Philosophy of Science:

- Chair: (2022) Clark Lundell, Dept. of Industrial & Graphic Design, Auburn University, Auburn, AL 36849, lundece@auburn.edu.
- Vice Chair: (2022). VACANT

ELECTED OFFICERS, 2022-2023

President: J. Jeffrey Morris, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, (205) 934-9498, evolve@uab.edu.

President-Elect: Vinoy Thomas, Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, vthomas@uab.edu.

Second Vice-President: Matthew Edwards, Department of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu

Secretary: Malia Fincher, Department of Biology, Samford, **University**, 900 Lakeshore Dr., Birmingham, AL 35229, (205) 726-2928 rmfinche@samford.edu.

Treasurer: Bettina Riley, USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, briley@southalabama.edu.

Editor: Brian Toone, Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, brtoone@samford.edu.

Coordinator of the Junior Academy: Mark Jones, Auburn, AL jonesmt@troup.org; jonesm_s@knology.net

Associate Counselor to the Junior Academy: Ronald (Mel) Blake, Dept. of Physical and Earth Science, University of North Alabama, Florence AL 35632 (256) 765-4284 rmblake@una.edu.

Associate Counselor to the Junior Academy: VACANT.

Coordinator of State Science Fairs: Virginia Vilardi, Wetumpka High School, 1251 Coosa River Parkway, Wetumpka, AL 36092 (334) 799-0104, (334) 514-1770 virginia.vilardi@elmore.k12.al.us.

Coordinator of State Science Olympiad: Mary Lou Ewald, Director of Science and Math Outreach, 131 SCC Building, Auburn University, Auburn, AL 36849 (334) 844-5745, ewaldml@auburn.edu.

AAAS Representative: Stephen Watts, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170 (205) 934–2045, sawatts@uab.edu.

Executive Director: John Shelley-Tremblay, Department of Psychology, University of South Alabama, UCOM 1123, Mobile, AL 36688 (251) 460-6883, jstremblay@southalabama.edu

At Large Officers:

- Daniel Lerew, Southern Company, 501 12th Street South, Birmingham, AL 35217 (205) 994-0126, delerew@uab.edu
- Vineeth Vijayan, Alabama State University, Montgomery, AL, vineeth@uab.edu.
- (Vacant)

Graduate Student At Large Officers:

- Ranjith Pillai, Dept. of Materials Science & Engineering, University of Alabama at Birmingham, AL 35294, rrpillai@uab.edu.
- (Vacant)
- (Vacant)

TRUSTEES:

- Matthew Edwards, (2023) Dept. of Physics, Chemistry, & Math, Alabama A&M University, Normal, AL 35762 (256) 372-8119, Matthew.edwards@aamu.edu.
- Ken Marion, (2023) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170, kmarion@uab.edu.
- David Nelson, (2023) Department of Biology, University of South Alabama, Mobile, AL 36688 (252) 460-6331, dnelson@usouthal.edu.
- Prakash Sharma, (2023) Department of Physics, Tuskegee University, Tuskegee, AL 36088 (334) 727-8998, psharma@tuskegee.edu.
- Ellen B. Buckner, (2024) Moffett & Sanders School of Nursing, Samford University, (205) 726-2092 ellen.buckner@samford.edu
- Brian Toone, (2024) Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, brtoone@samford.edu.
- Stephen Watts, (2024) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170 (205) 934–2045, sawatts@uab.edu.
- Virginia Vilardi (2024) Wetumpka High School, 1251 Coosa River Parkway, Wetumpka, AL 36092 (334) 799-0104, virginia.vilardi@elmores.k12.edu.
- Larry Krannich, (2025) Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294 (205) 936-0823, krannich@uab.edu.
- Richard Hudiburg, (2025) Department of Psychology, University of North Alabama Box 5187, Florence, AL 35632 (256) 383-0443, rahudiburg@una.edu.
- Ron Hunsinger, (2025) Professor Emeritus, Samford University, Birmingham, AL 35229, (205) 540-6732 rnhusin@samford.edu.
- Adriane Ludwick, (2025) Department of Chemistry, Tuskegee University, Tuskegee, AL 36088, aludwick@tuskegee.edu.

APPOINTED COMMITTEES 2022-23

Archives

- VACANT

Auditing Senior Academy

- Budget and Finance Committee

Auditing Junior Academy

- Budget and Finance Committee
- Mark Jones, 655 Spencer Ave., Auburn, AL 36832, (334) 444-3099, jonesmt@troup.org.

Budget and Finance

- Trustee, Mark , (Chair) 2023, Dept. of Biology, Univ. of Alabama at Birmingham, Birmingham, AL, 35294-1170, , kmarion@uab.edu
- Trustee, Ellen Buckner, (2024) College of Health Sciences, School of Nursing, Samford University, Birmingham, AL, 35229, (205)726-2092(w); (205) 810-9877(c), ebuckne2@samford.edu; ebbuckner@gmail.com
- First Vice-President, Vinoy Thomas, Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, ythomas@uab.edu.
- Counselor to the Junior Academy, Mark Jones, (2024) 1233 Sanders St., Auburn. AL 36870, jonesmt@troup.org.
- President, J. Jeffrey Morris, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, (205) 934-9498, evolve@uab.edu.
- Treasurer, Bettina Riley, (2024) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL, 36532, (251) 517-5363, briley@southalabama.edu
- Secretary, Melia Fincher, (2024) Department of Biology, Samford University, Birmingham, AL, 35229, (205) 726-2928, rmfinche@samford.edu
- Executive Director, John Shelley-Tremblay, Department of Psychology, University of South Alabama, UCOM 1123, Mobile, AL 36688 (251) 460-6883, jstremblay@southalabama.edu

Editorial Board and Associate Journal Editors: (staggered 3-yr terms)

- John Shelley-Tremblay, (Acting Chair) (2022), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu
- Chitra Nayak, (2025) Dept. of Physics, Tuskegee Univ. Tuskegee, AL 36088, cnayak@tuskegee.edu
- Prakash Sharma, (2024) Department of Physics, Tuskegee University, Tuskegee, AL 36088, psharma@tuskegee.edu

Electronic Media: (3-yr terms)

- Diann Jordan, (2025) 915 South Jackson Street, Montgomery, AL 36101, djordan@alasu.edu
- Richard Hudiburg, Associate Editor, (2022) Department of Psychology, University of North Alabama, Box 5187, Florence, AL 35632, rahudiburg@una.edu
- Brian Toone, (2025) Dept. of Computer Science, Samford Univ., Birmingham, AL, 35229, (205) 726-2960, brtoone@samford.edu
- Jason L. Heaton, (2024) Dept of Biology, Birmingham Southern College, Birmingham, AL, jheaton@bsc.edu

Emmett B. Carmichael Award: (staggered 2-yr terms)

- Richard Hudiburg, Chair, (2023) Department of Psychology, University of North Alabama, Box 5187, Florence, AL 35632, rahudiburg@una.edu
- David Nelson, (2024) Department of Biology, University of South Alabama, Mobile, AL 36688, dnelson@usouthal.edu

- Brian Toone, (ex officio) Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, brtoone@samford.edu.
- Larry Davenport, (2023) Department of Biological Sciences, Samford University, Birmingham, AL 35229, ljdavenp@samford.edu

Gorgas Scholarship Program: (staggered 3-yr terms)

- Ellen Buckner, Co-chair, College of Health Sciences, School of Nursing, Samford University, Birmingham, AL 35229 (205) 910-9877 ebbuckner@gmail.com & ellen.buckner@samford.edu
- John Shelley-Tremblay, Co-chair, Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu
- Elizabeth Dobbins, (2023) Department of Biology, Samford University, Birmingham, AL 35229, egdobbin@samford.edu
- David H. Nelson, (2023) Department of Biology, University of South Alabama, Mobile, AL 36688, dnelson@southalabama.edu
- Prakash Sharma, (2025) Department of Physics, Tuskegee University, Tuskegee, AL 36088, psharma@tuskegee.edu.
- Lauren Rast Boban, (2025) Dept. of Physics, Univ. of Alabama at Birmingham, Birmingham, AL 35294, (205) 975-0219 laurenr@uab.edu.
- Mitzi Adams (2025) 320 Sparkman Drive, Huntsville, AL, 35805, mitzi.adams@nasa.gov

Junior Academy:

- Mark Jones, 1233 Sanders St., Auburn, AL 36870, jonesmt@troup.org.

Junior Academy Regional Counselors:

- Virginia Vilardi, Wetumpka High School, 1251 Coosa River Parkway, Wetumpka, AL 36092 (334) 799-0104, (334) 514-1770 virginia.vilardi@elmore.k12.al.us.

Local Arrangements at Samford University (2023 Annual Meeting)

- Ellen Buckner, College of Health Sciences, College of Health Sciences, Samford University, Birmingham, AL 35229 (205) 910-9877 ebbuckner@gmail.com & ellen.buckner@samford.edu.

Long Range Planning: (staggered 4-yr terms, committee elects chair)

- Akshaya Kumar (2025) Department of Physics, Tuskegee University, Tuskegee, AL 36088, (334) 727-8968, akumar@tuskegee.edu.
- Puneet Srivastava (2023) 200 Corley Building, Biosystems Engineering, Auburn AL 36849, srivapu@auburn.edu.
- Brian Toone, (ex officio) (2024) Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, brtoone@samford.edu.
- John Shelley-Tremblay, (2026), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu

Mason Scholarship: (staggered 3-yr terms)

- Mickie Powell (Chair) (2024) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294 mpowell@uab.edu
- Ronald Hunsinger (2023) 1070 Crest Rd., Leads, AL rnunsin@samford.edu
- Enrique Jackson (2025) Miles College, emj.academic.consulting@gmail.com; Enrique.m.jackson@nasa.gov
- Michael Hallman (2025) Alabama Dept. of Public Health, PO Box 303017, Montgomery, AL 36130, michael.hallman@adph.state.al.us, hallman.michael@gmail.com.
- R. Melvin Blake, (2023) Department of Physical and Earth Science, University of North Alabama, Florence, AL 35632, rdblake@una.edu

Membership and Development:

- Past President: John Shelley-Tremblay, (2026), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu.
- Active Past Presidents

Adriane G. Ludwick	1989-90
Ken R. Marion	1991-92
Michael B. Moeller	1992-93
Prakash Sharma	1993-94
Eugene Omasta	1994-95
Ellen B. Buckner	1997-98
Richard Hudiburg	2000-01
Stephen A. Watts	2002-03
Anne M. Cusic	2003-04
Larry Davenport	2005-06
David Nelson	2006-07
D. Brian Thompson	2009-10
Brian Burnes	2010-11
Mickie Powell	2011-12
Ronald N. Hunsinger	2012-13
Emanuel Waddell	2013-14
John McCall	2014-15
Brian R. Toone	2015-16
Akshaya Kumar	2016-17
Ketia Shumaker	2017-18
Nixon Mewabi	2018
Drew Hataway	2018-2020
Cameron Gren	2020-21
John Shelley-Tremblay	2021-22

Nominating:

- Matthew Edwards, Department of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu, and all Section Chairs

Place and Date of Meeting: (5 members, staggered 5-yr terms)

- Kenneth Roblee (Chair) (2027) Dept. of Mathematics, Troy University, Troy, AL 36082 kroblee@troy.edu.
- Donna Perygin (2026) Department of Chemistry and Geosciences, Jacksonville State University, Jacksonville, AL 36265, dperygina@jsu.edu.
- Larry Krannich, (2025) Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294, (205) 936-0823, krannich@uab.edu
- Manoj Mishra, (2027) Dept. of Biological Sciences, Alabama State University, Montgomery, AL 36104 (334) 229-5085 mmishra@alasu.edu.
- Itza Soloman (2024), University of Mobile, 5735 College Parkway, Mobile, AL 36613, sitza@umobile.edu.

Research: (5 members with staggered 5-yr terms)

- Brian Burnes, Chair (2024) bburnes01@gmail.com
- Ruigang Wang (2027) Dept. of Metallurgical & Materials Engineering, The University of Alabama, Tuscaloosa, AL 35487, rwang@eng.ua.edu

- Vinoy Thomas, (2026) Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, ythomas@uab.edu
- Bernece Herbert, (2023) Department of Community and Regional Planning, Alabama A&M University, Normal, AL 35762 (256) 372-4988, bernece.herbert@ammu.edu

Resolutions:

- Brian Burnes, Chair (2026) bburnes01@gmail.com

Science, Public Policy, and Public Relations: (staggered 4-yr terms)

- Scott Brande, co-Chair, (2025) Department of Geology, University of Alabama at Birmingham, Birmingham, AL 35294, sbrande@uab.edu
- Brian Burnes, co-Chair (2026) bburnes01@gmail.com
- Ellen Buckner, (2023), College of Health Sciences, School of Nursing, Samford University, Birmingham, AL 35229 (205) 726-2092(w); (205) 810-9877(c), ebuckne2@samford.edu; ebbuckner@gmail.com.
- Gregory Buckley (2023) Dept. of Physical and Earth Science, University of North Alabama, Florence, AL 25632, gbuckley@una.edu.
- James Bradley, (2024) Department of Biological Sciences, Auburn University, Auburn, AL 36849, bradljt@auburn.edu
- Marisol Alcantara Ortigoza (2025) Dept. of Physics, Tuskegee Univ., Tuskegee, AL 36088, malcantaraortigoza@tuskegee.edu

Steering:

- Immediate Past President, John Shelley-Tremblay, (2023), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu.
- President, J. Jeffrey Morris, (2023), Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, (205) 934-9498, evolve@uab.edu.
- Vice President, Vinoy Thomas, (2023) Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, ythomas@uab.edu
- Second Vice President, Matthew Edwards, (2023) Dept. of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu
- Secretary, Bettina Riley, (2024) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, briley@southalabama.edu.
- Treasurer, Malia Fincher, (2024) Department of Biology, Samford University, 900 Lakeshore Dr., Birmingham, AL 35229, (205) 726-2928 rmfinche@samford.edu

Wright A. Gardner Award: (4 members with staggered 2-yr terms)

- Prakash Sharma, Chair, (2022) Department of Physics, Tuskegee University, Tuskegee, AL 36088, psharma@tuskegee.edu
- Matthew Edwards, (2023) Dept. of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu
- Akshaya Kumar, (2023) Dept. of Physics, Tuskegee University, Tuskegee, AL 36088, akumar@tuskegee.edu.
- Vacant (2020)

PAST PRESIDENTS

<i>NAME</i>	<i>TERM</i>
Wright A. Gardner (2 terms)	1924-26
Stewart J. Lloyd	1926-27
John R. Sampey	1927-28
Walter C. Jones	1928-29
Fred Allison	1929-30
Emmett B. Carmichael	1930-31
George J. Fertig	1931-32
J.F. Duggar	1932-33
J.L. Brakefield	1933-34
Russell S. Poor	1934-35
A.G. Overton	1935-36
Walter B. Jones	1936-37
Roger W. Allen	1937-38
P.H. Yancey	1938-39
George D. Palmer	1939-40
C.M. Farmer	1940-41
Paul D. Bales	1941-42
W.M. Mobley	1942-43
E.V. Jones	1943-44
J.T. McKenzie	1944-45
J.M. Robinson	1945-46
James L. Kassner	1946-47
John Xan	1947-48
Eugene D. Emigh	1948-49
C.A. Basore	1949-50
Harold E. Wilcox	1950-51
Henry Walker	1951-52
John A. Fincher	1952-53
Joseph F. Volker	1953-54
William T. Wilks	1954-55
Ralph Chermock	1955-56
J. Allen Tower	1956-57
Howard Carr	1957-58
Herbert A. McCullough	1958-59
Samuel B. Barker	1959-60
James R. Goetz	1960-61
Paul C. Bailey	1961-62
Louis J. Eisele	1962-63
E. Carl Sensenig	1963-64
William J. Barrett	1964-65
James F. Sulzby, Jr	1965-66

David L. DeJarnette	1966-67
H. Ellsworth Steele	1967-68
Ruric E. Wheeler	1968-69
Wilbur B. DeVall	1969-70
W.L. Furman	1970-71
G.O. Spencer	1971-72
Joseph C. Thomas	1972-73
Robert T. Gudauskas	1973-74
Reuben B. Boozer	1974-75
Thomas E. Denton	1975-76
Urban L. Diener	1976-77
James C. Wilkes	1977-78
William F. Arendale	1978-79
Jack H. Moore	1979-80
Geraldine M. Emerson	1980-81
Kenneth Ottis	1981-82
Charles M. Baugh	1982-83
Raymond E. Isbell	1983-84
John F. Pritchett	1984-85
Stanley T. Jones	1985-86
Philip G. Beasley	1986-87
H. Dean Moberly	1987-88
Richard L. Shoemaker	1988-89
Adriane G. Ludwick	1989-90
Michael E. Lisano	1990-91
Ken R. Marion	1991-92
Michael B. Moeller	1992-93
Prakash Sharma	1993-94
Eugene Omasta	1994-95
Dan C. Holliman	1995-96
Thomas S. Jandebour	1996-97
Ellen B. Buckner	1997-98
Moore Asouzu	1998-99
Larry R. Boots	1999-00
Richard Hudiburg	2000-01
Roland Dute	2001-02
Stephen A. Watts	2002-03
Anne M. Cusic	2003-04
Ronald L. Jenkins	2004-05
Larry Davenport	2005-06
David Nelson	2006-07
George Cline	2007-08
Kenneth Roblee	2008-09
D. Brian Thompson	2009-10

Brian Burnes	2010-11
Mickie Powell	2011-12
Ronald N. Hunsinger	2012-13
Emanuel Waddell	2013-14
John McCall	2014-15
Brian R. Toone	2015-16
Akshaya Kumar	2016-17
Ketia Shumaker	2017-18
Nixon Mwebi	2018-18
Drew Hataway	2018-20
Cameron Gren	2020-21
John Shelley-Tremblay	2021-22

HOSTS FOR FUTURE ALABAMA ACADEMY OF SCIENCE MEETINGS

2024 – Jacksonville State University

The Local Arrangements Manual for planning Academy annual meeting can be found on the Academy website: www.alabamaacademyofscience.org.

ONE-HUNDRED & FIRST (101st) ANNUAL MEETING

of the

ALABAMA ACADEMY OF SCIENCE, INC.



JOINT MEETING

with the

ALABAMA JUNIOR ACADEMY OF SCIENCE

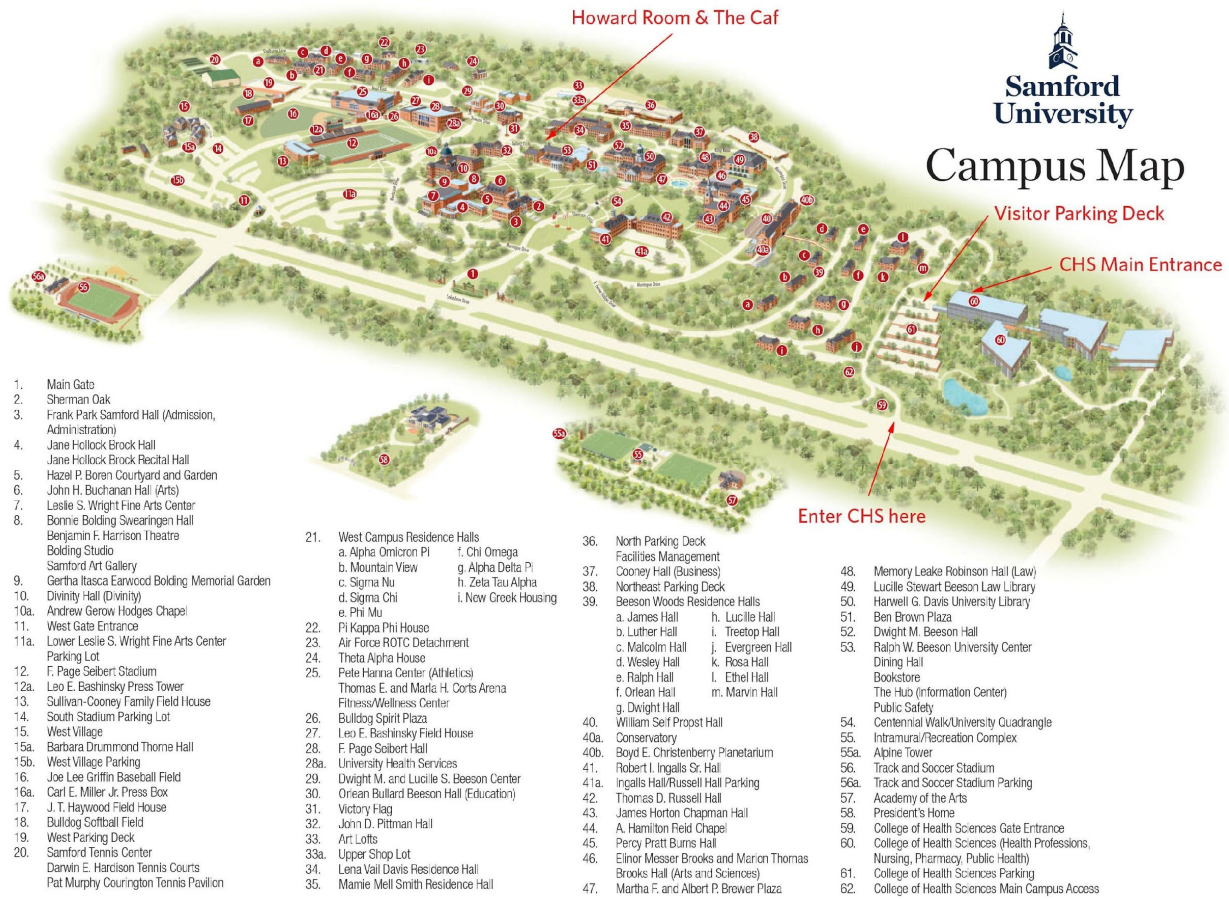
GORGAS COMPETITION AWARDS

28th and 29th of February and the 1st of March 2024

Jacksonville State University



CAMPUS MAP



Campus Map

1. Main Gate
2. Sherman Oak
3. Frank Park Samford Hall (Admission, Administration)
4. Jane Hollock Brock Hall
5. Hazel P. Boren Courtyard and Garden
6. John H. Buchanan Hall (Arts)
7. Leslie S. Wright Fine Arts Center
8. Bonnie Bolding Swearingen Hall
9. Benjamin F. Harrison Theatre
10. Bolding Studio
11. Samford Art Gallery
12. Gertha Itasca Earwood Bolding Memorial Garden
13. Divinity Hall (Divinity)
- 14a. Andrew Gerow Hodges Chapel
15. West Gate Entrance
- 16a. Lower Leslie S. Wright Fine Arts Center
17. Parking Lot
18. F. Page Seibert Stadium
- 19a. Leo E. Bashinsky Press Tower
20. Sullivan-Cooney Family Field House
21. South Stadium Parking Lot
22. West Village
- 23a. Barbara Drummond Thorne Hall
24. West Village Parking
25. Joe Lee Griffin Baseball Field
- 26a. Carl E. Miller Jr. Press Box
27. J. T. Haywood Field House
28. Bulldog Softball Field
29. West Parking Deck
30. Samford Tennis Center
31. Darwin E. Harcison Tennis Courts
32. Pat Murphy Courington Tennis Pavilion

21. West Campus Residence Halls
 - a. Alpha Omicron Pi
 - b. Mountain View
 - c. Sigma Nu
 - d. Sigma Chi
 - e. Phi Mu
22. Pi Kappa Phi House
23. Air Force ROTC Detachment
24. Theta Alpha House
25. Pete Hanna Center (Athletics)
26. Thomas E. and Maria H. Corts Arena
27. Fitness/Wellness Center
28. Bulldog Spirit Plaza
29. Leo F. Bashinsky Field House
30. F. Page Seibert Hall
- 31a. University Health Services
32. Dwight M. and Lucille S. Beeson Center
33. Orlean Bullard Beeson Hall (Education)
34. Victory Flag
35. John D. Pittman Hall
36. Art Lofts
- 37a. Upper Shop Lot
38. Lena Vail Davis Residence Hall
39. Mamie Mel Smith Residence Hall

36. North Parking Deck
37. Facilities Management
38. Cooney Hall (Business)
39. Northeast Parking Deck
40. Beeson Woods Residence Halls
 - a. James Hall
 - b. Luther Hall
 - c. Malcolm Hall
 - d. Wesley Hall
 - e. Ralph Hall
 - f. Orlean Hall
 - g. Dwight Hall
 - h. William Self Probst Hall
 - 40a. Conservatory
 - 40b. Boyd E. Christenberry Planetarium
 41. Robert I. Ingalls Sr. Hall
 - 41a. Ingalls Hall/Russell Hall Parking
 42. Thomas D. Russell Hall
 43. James Horton Chapman Hall
 44. A. Hamilton Field Chapel
 45. Percy Pratt Burns Hall
 46. Elinor Messer Brooks and Marion Thomas Brooks Hall (Arts and Sciences)
 47. Martha F. and Albert P. Brower Plaza

48. Memory Leake Robinson Hall (Law)
49. Lucille Stewart Beeson Law Library
50. Harwell G. Davis University Library
51. Ben Brown Plaza
52. Dwight M. Beeson Hall
53. Ralph W. Beeson University Center
54. Dining Hall
55. Bookstore
56. The Hub (Information Center)
57. Public Safety
58. Centennial Walk/University Quadrangle
59. Intramural/Recreation Complex
- 60a. Alpine Tower
61. Track and Soccer Stadium
- 62a. Track and Soccer Stadium Parking
63. Academy of the Arts
64. President's Home
65. College of Health Sciences Gate Entrance
66. College of Health Sciences (Health Professions, Nursing, Pharmacy, Public Health)
67. College of Health Sciences Parking
68. College of Health Sciences Main Campus Access