

**NINETY-SIXTH ANNUAL MEETING  
of the  
ALABAMA ACADEMY OF SCIENCE, INC.**



**Meeting Jointly With**

**ALABAMA JUNIOR ACADEMY OF SCIENCE GORGAS  
SCHOLARSHIP COMPETITION**

**February 20-22, 2019**

**TUSKEGEE UNIVERSITY  
Tuskegee, AL**

**[www.alabamaacademyofscience.org](http://www.alabamaacademyofscience.org)**

**<http://alabamajunioracademyofscience.org>**

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

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97 <sup>th</sup> Annual Meeting (2020).....	Inside Back Cover
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## TUSKEGEE UNIVERSITY

OFFICE OF THE PRESIDENT

February 20, 2019



Dear AAS Members and Guests,

I am happy to welcome the members and guests of the Senior and Junior Academies of Science for the 96<sup>th</sup> Annual Meeting of the Alabama Academy of Science (AAS), at Tuskegee University.

We are excited to host Alabama's most influential science community, including researchers, teachers, industrialists, clinicians, scholars, and educators. Our students, faculty, and staff have been preparing for your visit, and we hope that our efforts will meet your needs during your time with us.

Our University is committed to creating new knowledge and contributing to the scientific community through presentations and publications. We emphasize making an intentional head-to-heart connection for our students, which is at the core of our pedagogy: applying knowledge to real-world situations. It is through application to practical problems that we prepare our students to contribute to the global scientific community.

I hope you enjoy your visit to Tuskegee University and explore our rich history by visiting the George Washington Carver Museum and the Legacy Museum, both of which are on campus.

Our best wishes to you for a successful conference.

Sincerely,

Lily D. McNair, Ph.D.  
President  
Tuskegee University



## TUSKEGEE UNIVERSITY

### OFFICE OF THE PROVOST

Dear AAS, AJAS, and Gorgas Participants:

I would like to extend a warm welcome to all participants for the **96<sup>th</sup> Annual Meeting of the Alabama Academy of Sciences** to be convened on the Tuskegee University campus. We are deeply honored to be given the opportunity to serve as host for this stellar group which includes research investigators, faculty, students, parents, and community leaders. Over the years, Tuskegee University has partnered with the Academy to convene and organize the annual meeting. Through the convening of the 96<sup>th</sup> Annual Meeting, we will continue to promote awareness of science throughout the state of Alabama while engaging the next generation of science researchers.

Tuskegee University is an appropriate partner for this event in that the university has been at the forefront in scientific research and education and thus has been committed to creating and enhancing ground-breaking initiatives that foster scientific research education experiences in the future generation of scientists. Founded in 1881 as a state-related institution of higher learning, Tuskegee University has developed an environment that promotes the discovery of new knowledge in all disciplines and strives for the intellectual pursuit through innovative research programs. Following the legacy of Dr. George Washington Carver, our research initiatives at the University are designed to improve the conditions of the global society and to advance humankind. We have continued with this mission of research through our programs in cancer, agricultural, environmental science, health sciences and disparities, physics, engineering and bioinformatics research, all of which are undergirded by bioethics tenets.

We look forward to interacting with this distinguished group and sharing our intellectual research capacity at this Annual Meeting of the Alabama Academy of Sciences. It is our pleasure to provide you every courtesy while visiting our campus. Please feel free to contact the Chairs of the Local Arrangements Committee—Dr. P.C. Sharma and Dr. A. Kumar, for any assistance that you may need.

Thank you again for your participation in this Annual Conference. We look forward to networking with the community of researchers and hope this leads to future collaborations with faculty and students. I hope you have an engaging and provocative time at the conference and enjoy your visit on the campus of Tuskegee University.

Sincerely,

Roberta M. Troy, PhD  
Interim Provost and Vice President for Academic Affairs



Channapatna Prakash, Dean

COLLEGE OF ARTS & SCIENCES  
OFFICE OF THE DEAN

November 2, 2018

Hello AAS Participants!

On behalf of the College of Arts and Sciences at Tuskegee University, I heartily welcome all the members of the Alabama Academy of Science, the Junior Academy and the Guests to the historic Tuskegee University campus. It's my privilege to be a part of tradition of excellence in science that dates back to the early 1900 in Alabama. We appreciate all of you for promoting the science in the state of Alabama. We at the College of Arts and Sciences at Tuskegee University support your efforts.

Science has contributed immensely to improve the quality of life for all in the past century. Scientific query and innovation will continue to play a major role as we move forward in the 21<sup>st</sup> century. We are at an exciting time in science as new knowledge is added every day at a dizzying rate. Novel scientific innovations are being developed that hold promise to transform lives in an unprecedented manner. Science combined with meaningful public policies offer the best hope for humanity in addressing many daunting challenges facing the humanity such as global climate change, food insecurity, health disparities and environmental problems.

I hope you will learn much about the historic role Tuskegee University has played in promoting science while on our campus here and also learn about the pivotal role played by our university in molding the history of our country.

We wish you a wonderful time of learning while you are here at Tuskegee University.

Sincerely,

Channa Prakash, Ph. D.

Dean, College of Arts and Sciences  
Professor, Genomics and Biotechnology



## ALABAMA ACADEMY OF SCIENCE, INC

Colleagues,

Welcome to the 96<sup>th</sup> meeting of the Alabama Academy of Science. It is a privilege to serve as the Academy's President and to preside over this annual meeting.

In 1924, forty charter members gathered in Mobile, AL, to organize the Alabama Academy of Science. Together we will spend this three-day meeting learning about research conducted by scientists from across our state. College undergraduates, graduate students, and faculty will present their noteworthy findings in oral and poster presentations. Exceptional high school students who are involved in scientific research will also present their work in the Alabama Junior Academy of Sciences and the highly respected Gorgas Scholarship Competition.

I encourage you to attend as many presentations as possible, and ensure that some of the presentations you attend are across disciplines so as to experience the breadth of work being accomplished by scientists from Alabama. Much of what happens at this meeting occurs during the breaks between the sessions when we fulfill one of the major objects of the Academy: to increase cooperation and fellowship among its members. I would like to recognize the dedication of the trustees, executive committee members, and section chairs. I am also grateful for the tireless effort of the AAS Executive Director, Dr. Larry Krannich, without whom this meeting would not happen.

Finally, it is also a privilege to extend a welcome from our gracious hosts here at the Tuskegee University and the local arrangements committee who have worked diligently to prepare for our arrival. I sincerely hope that you enjoy your time at the meeting and that you join us again next year.

Sincerely,

Drew Hataway, Ph.D.  
President, Alabama Academy of Science

PRESIDENT • Drew Hataway  
Department of Biological and Environmental Sciences • Samford University  
Birmingham, AL 35229 • (205)726-4190  
Email: rahatawa@samford.edu

## **LOCAL ARRANGEMENTS COMMITTEE**

The Academy expresses its appreciation to the Tuskegee University and the Local Arrangements Committee for planning and hosting this 96<sup>th</sup> Annual Meeting.

### **Local Arrangements Chairs:**

Dr. P. C. Sharma, Board of AAS Trustees, Professor of Physics, Tuskegee University

Dr. Akshaya Kumar, Associate Professor of Physics, Tuskegee University

### **University Liaison Officers**

Dr. Marcia Martinez, Head of Biology Department, Tuskegee University

### **AAS Program Coordinators**

Dr. P. C. Sharma, Member, Board of AAS Trustees, Professor of Physics, Tuskegee University;

Dr. Adrienne Ludwick, Board of AAS Trustees, Emeritus Professor, Tuskegee University

Dr. Herman Windham, Head of Mathematics Department, Tuskegee University

### **AJAS/ Gorgas Coordinators**

Dr. Adrienne Ludwick, Board of AAS Trustees, Emeritus Professor, Tuskegee University,

Dr. Akshaya Kumar, Associate Professor of Physics, Tuskegee University,

Dr. Mohamed O. Abdalla, Associate Professor of Chemistry, Tuskegee University

### **Promotions & Publicity**

Mr. Michael Tullier, Director, Marketing and Communications, Tuskegee University

### **Signage Committee**

Dr. Sheritta Fag Bodun, Biology Department, Assistant Professor, Tuskegee University;

Dr. Archana Sharma, Assistant Professor, Biology Department, Tuskegee University

### **Poster Coordinator**

Dr. Alfred Tcherbi-Narteh, Assistant Professor of Material Science, Tuskegee University

### **Audio Visual and Venue Management**

Dr. Wayne Barr, Department of Music and Fine Arts, Tuskegee University

### **Registration**

Dr. P. C. Sharma, Board of AAS Trustees, Professor of Physics;

Dr. Z. Chen, Associate Professor & Head of Physics, Dr. Chitra Nayak, Assistant Professor of

Physics,; Dr. Moses Ntam, Associate Professor of Physics; Mrs. Diane Stinson, Office Manager, Physics Department, Tuskegee University

### **Parking Coordinator**

Dr. M. L. Burns, Professor of Physics, Tuskegee University

Dr. Marisol Alcantara, Assistant Professor of Physics, Tuskegee University

## GENERAL INFORMATION

- Registration badges will be required for admission to paper/poster scientific sessions, Thursday evening Sci-Mix, and the banquet.
- Applications for membership and payments of annual dues will **not** be accepted at registration. Payment must be made at <http://www.alabamaacademyofscience.org/join-aas-2/> and is separate from registration payment. At least **one of the authors of a presented paper or poster must be a member** of the Academy.
- The **paper or poster presenter must be registered for the meeting** and wear the registration badge.
- Tickets for the Joint AJAS/AAS banquet may be purchased at the registration desk until 9:30 AM Thursday.
- The Section Chairs and presenters are responsible for their computers.
- Parking is in the designated space (map attached). You do not need a parking pass.
- A map of the Tuskegee campus can be found on the outside back cover of the program booklet. Also, a map of the Tuskegee campus can be found at <https://www.tuskegee.edu/Content/Uploads/Tuskegee/files/CampusParking2.pdf>

## LOCAL RESOURCES

### On-campus police, fire, medical service:

- All Emergencies (Fire, Ambulance, Police):..... 911
- Tuskegee University Police Department: .....(334) 727-8757
- Chief of Police, Patrick Mardis, Tuskegee University.....(334) 727-8757
- Title IX Coordinator/Sexual Assault Counselor, Tiyahri Wilson-Chesson (334)4218720



## POSTERS

Alabama Academy of Science Poster set-up begins at 7:30 AM Thursday, February 21<sup>st</sup> in the Atrium and Ballroom Foyer. **AAS Posters are available for viewing on Thursday from 8:00 AM until 3:00 PM.** Each poster is allotted **4' (horizontal) x 3' (vertical) of display space.** Authors for the section posters should be present for discussions with viewers and competition judges as designated by section chairs. **All posters must be removed by 3:30 PM.**

**Gorgas Scholars and Junior Academy Posters** may be set up beginning at **4 PM Thursday in the Atrium and Ballroom Foyer.** Each poster is allotted **4' (horizontal) x 3' (vertical) of display space.** Posters will be available for viewing in the **Sci-Mix from 5:30 – 6:45 PM on Thursday,** prior to the joint banquet, **in the Atrium and the Ballroom Foyer,** adjacent to the banquet location in Ballroom.

### Poster Viewing Times

#### ***Thursday: Ballroom Corridor***

<i>Biological Sciences, I</i> .....	1:30 AM – 3:30 PM
<i>Chemistry, II</i> .....	10:30 AM – 12:00 Noon
<i>Physics and Mathematics III</i> .....	11:30 AM – 1:00 PM
<i>Engineering &amp; Computer Science, IV</i> .....	11:30 AM – 1:00 PM
<i>Social Sciences, V</i> .....	1:00 PM– 3:00 PM
<i>Anthropology, VI</i> .....	11:30 AM – 12 Noon
<i>STEM Education, VII</i> .....	1:30 PM– 2:00 PM
<i>Environmental and Earth Sci., VIII</i> .....	1:00 PM– 2:00 PM
<i>Health Sciences, IX</i> .....	11:00 AM – 12:00 Noon
<i>Bioethics and History &amp; Philosophy of Science</i> .....	3:00 PM– 3:30 PM

**NOTE:** Posters may be set up in the **Atrium and Ballroom Foyer** beginning at 7:30 AM, Thursday, February 21<sup>st</sup>. Locate posters by cards on poster boards indicating Section and Poster # in program booklet (eg. V-10).

**All Senior Academy posters must be removed by 3:30 PM for Sci-Mix Setup at 4:00 PM.**

**Program of the Alabama Academy of Science  
February 20-22, 2019  
Kellogg Hotel and Conference Center (KHCC)  
Tuskegee University  
Wednesday, February 20, 2019**

4:00 – 5:30 PM	Registration .....	Continuing Education Foyer
6:00 – 7:00 PM	Executive Committee Dinner .....	Meeting Rooms F&G
7:00 – 9:00 PM	Executive Committee Meeting .....	Meeting Rooms F&G

**Thursday, February 21, 2019**

7:00 AM – 3 PM	Registration .....	Continuing Education Foyer
7:00 AM – 3 PM	Silent Auction .....	Ballroom A <sub>2</sub>

**8:00 AM – Noon: Academy of Science Program Paper Sessions** (All rooms are in KHCC)

8:00 AM	Health Sciences (Section IX) .....	Meeting Room A
8:00 AM	Biological Sciences I (Section I) .....	Meeting Rooms F&G
9:00 AM	Physics and Mathematics (Section III) .....	Meeting Room B
9:00 AM	Engineering and Computer Science (Section IV).....	Meeting Room B
9:30 AM	Bioethics, History and Philosophy of Science (Section X).....	Ballroom A <sub>3</sub>
10:00 AM	Chemistry (Section II) .....	Meeting Room D
10:00 AM	Social Sciences I (Section V) .....	Meeting Room E
10:30 AM	Anthropology (Section VI).....	Meeting Room D

10:00 AM	Coffee Break	Continuing Education Foyer
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**AAS Posters**

7:30 -11:30 AM	Poster Set-Up (All Sections) .....	Atrium and Ballroom Foyer
7:00 AM –3 PM	Silent Auction .....	Ballroom A <sub>2</sub>

8:00 AM–2:30 PM	Poster Viewing (All Sections).....	Atrium and Ballroom Hallway (All posters must be removed by 3:30 PM)
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Authors present:

10:30 AM – Noon	.....	Chemistry (Section II)
11:00 AM – Noon	.....	Health Sciences (Section IX)
11:30 AM – 1:00 PM	.....	Physics and Mathematics (Section III)
11:30 AM – 1:00 PM	.....	Engineering and Computer Science (Section IV)
11:30 AM – Noon	.....	Anthropology (Section VI)
1:00 PM– 2:00 PM	.....	Environmental and Earth Science (Section VIII)
1:00 PM– 3:00 PM	.....	Social Sciences (Section V)
1:30 AM – 3:00 PM	.....	Biological Sciences (Section I)
1:30 PM– 2:00 PM	.....	STEM Education (Section VII)
3:00 PM– 3:30 PM	.....	Bioethics and History & Philosophy of Science (Section X)

12:00 Noon	Group Photograph AAS .....	Auditorium Foyer /Stairs
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Noon – 1:00 PM Lunch .....Ballroom Hallway & Ballroom C  
 Noon – 12:30 PM Trustees Lunch..... Ballroom A<sub>1</sub>  
 12:30 – 1:00 PM AAS/AJAS Joint Annual Business Meeting .....Meeting Rooms F&G

**1:00 – 5:00 PM: Academy of Science Program Sessions**

*All Rooms are located in Kellogg Hotel & Conference Center (KHCC)*

1:00 PM Bioethics & History & Philosophy of Science (Section X) .....Ballroom A<sub>3</sub>  
 2:00 PM Environmental and Earth Science (Section VIII)..... Meeting Room D  
 2:00 PM STEM Education (Section VII) ..... Meeting Room B  
  
 4:45 – 5:30 PM AJAS, Gorgas, and other students meet with Dr. Wineland..... Rooms F&G  
  
 5:30 – 6:45 PM Sci-Mix/Viewing of AJAS & Gorgas Scholars’ Posters.....Atrium /  
 Ballroom Foyer  
  
 7:00 PM Joint AJAS/AAS Banquet ..... Ballrooms A, B & C

Banquet speaker: Dr. David J. Wineland, Nobel Laureate in Physics

**"Superposition, Entanglement, and Raising Schrodinger's Cat"**

Guest of Honor: Honorable Dr. Lily D. McNair, President  
 Tuskegee University

Presided by: Dr. Drew Hataway, President, AAS  
 Samford University  
 Noel Lange and Ritikraj Arya, Co-Presidents, AJAS

**Program of the Alabama Academy of Science  
February 20-22, 2019  
Kellogg Hotel and Conference Center (KHCC)  
Tuskegee University**

**Friday, February 22, 2019**

7:30 – 8:00 AM	AJAS Judges Orientation .....	Meeting Room A
7:30 – 8:00 AM	Gorgas Judges Orientation .....	Meeting Room A
9:30 AM	Reception / Coffee Break.....	Ballroom Foyer
9:45 – 10:45 AM	General Lecture: .....	Ballroom B&C
	Dr. David J. Wineland .....	Ballroom B&C
	Nobel Laureate - Physics	
	“Optical Atomic Clocks”	
11:00 – 11:45 AM	Dr. Lily D. McNair, President, Tuskegee University: Luncheon for the Nobel Laureate, Dr. David J. Wineland (by invitation only).....	Private Dining Room
Noon – 1:00 PM	Keynote Speaker: Dr. Rosianna R. Gray..... University of Alabama, Birmingham	Ballroom B&C
	“Metacognition: Learning how to learn for success in college and beyond”	

**ALABAMA JUNIOR ACADEMY OF SCIENCE**

**February 21-22, 2019**

**Kellogg Hotel and Conference Center**

**Tuskegee University**

**Thursday, February 21, 2019**

12:30 -1:00 PM	Joint AAS/AJAS Business .....	Meeting Rooms F&G
4:00 – 5:00 PM	Registration .....	Continuing Education Foyer
4:00 – 5:00 PM	Poster Set-up.....	Atrium / Ballroom Foyer
4:45 – 5:30 PM	AJAS, Gorgas, and other students meet with Dr. Wineland.....	Rooms F&G
5:00 PM	AJAS Orientation .....	Meeting Room A
5:30 – 6:45 PM	“Sci-Mix”: Viewing of AJAS and Gorgas Scholars’ Posters .....	Atrium & Ballroom Foyer
7:00 PM	Joint AJAS/AAS Banquet.....	Ballrooms A, B & C

Banquet speaker: Dr. David J. Wineland, Nobel Laureate in Physics

*"Superposition, Entanglement, and Raising Schrodinger's Cat"*

Guest of Honor: Honorable Dr. Lily D. McNair, President  
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Samford University  
Noel Lange and Ritikraj Arya, Co-Presidents, AJAS

# ALABAMA JUNIOR ACADEMY OF SCIENCE

February 21-22, 2019

Kellogg Hotel and Conference Center

Friday, February 22, 2019

Breakfast on your own; hotel and town locations

7:00 AM	Registration .....	Continuing Education Foyer
7:30 AM	Paper Reading Orientation .....	Meeting Room B
7:30 AM	AJAS Judges Orientation .....	Meeting Room A
8:00 AM	Paper Competition	
	Life Sciences .....	Meeting Room A
	Physical Science .....	Meeting Room D
	Engineering, Mathematics and Computer Science.....	Meeting Room E
	Environmental Science, Earth Science, and Space Science.....	Meeting Room F
	Medicine and Health, Behavioral, and Social Sciences.....	Meeting Room G
8:00 AM	Prepare for AJAS 2019 (Mentoring Workshop for Future Paper Competitions, Dr. Mark Jones, State AJAS Director).....	Ballroom A <sub>2</sub>
9:30 AM	Reception / Coffee Break .....	Ballroom Foyer
9:45 – 10:45 AM	General Lecture: Dr. David J. Wineland .....	Ballrooms B&C
	Nobel Laureate - Physics	
	“Optical Atomic Clocks”	
11:30 AM	Elections and Business Meeting .....	Ballrooms B&C
12:00 Noon	AJAS-Gorgas Group Photo .....	Booker T. Washington Statue
12:00 Noon	Lunch; Box Lunches .....	Ballroom Foyer
Noon-1:00 PM	Luncheon Speaker: Dr. Rosianna R. Gray .....	Ballrooms B&C
	University of Alabama, Birmingham	
	“Metacognition: Learning how to learn for success in college and beyond”	
1:15 PM	AJAS Paper Competition Finals.....	Ballrooms B&C
2:45 - 3:30 PM	Afternoon Break.....	Continuing Education Foyer
2:55 – 3:15 PM	AJAS Judges meeting .....	Meeting Room E
3:15 PM	Awards Reception, Joint AJAS/Gorgas .....	Ballrooms B&C

# GORGAS SCHOLARSHIP COMPETITION

February 21-22, 2019

Kellogg Hotel and Conference Center

Tuskegee, University

Thursday, February 21, 2019

4:00 – 5:00 PM	Registration .....	Continuing Education Foyer
4:30 - 5:15 PM	Gorgas Orientation .....	Meeting Room B
4:45 – 5:30 PM	AJAS, Gorgas, and other students meet with Dr. Wineland.....	Rooms F&G
4:00 – 5:30 PM	Poster Set-up.....	Atrium and Ballroom Foyer
5:30 – 6:45 PM	“Sci-Mix”: Viewing of AJAS and Gorgas Scholars’ Posters .....	Atrium & Ballroom Foyer
7:00 PM	Joint AJAS/AAS Banquet.....	Ballrooms A, B & C

Banquet speaker: Dr. David J. Wineland, Nobel Laureate in Physics

*"Superposition, Entanglement, and Raising Schrodinger's Cat"*

Guest of Honor: Honorable Dr. Lily D. McNair, President  
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Presided by: Dr. Drew Hataway, President, AAS  
Samford University  
Noel Lange and Ritikraj Arya, Co-Presidents, AJAS

## **GORGAS SCHOLARSHIP COMPETITION**

**February 21-22, 2019**

**Kellogg Hotel and Conference Center**

**Tuskegee University**

**Friday, February 22, 2019**

Breakfast on your own; hotel and town locations

7:00 AM	Registration.....	Continuing Education Foyer
7:30 AM	Gorgas Judges Orientation .....	Meeting Room A
7:00 – 8:45 AM	Set Up Science Exhibits/Display/Poster/Orientation.....	Atrium
8:45 – 9:45 AM	Demonstrations for Judges .....	Atrium
10:00 AM – Noon	Individual Interviews with Judges will be conducted at the poster presentation sites.....	Atrium
12:00 Noon	AJAS-Gorgas Group Photo .....	Booker T. Washington Statue
12:00 Noon	Lunch: Box Lunches .....	Ballroom Foyer
Noon – 1:00 PM	Keynote Speaker: Dr. Rosianna R. Gray..... University of Alabama, Birmingham	Ballrooms B&C
	<i>“Metacognition: Learning how to learn for success in college and beyond”</i>	
12:00 – 1:00 PM	Gorgas Judges Executive Session.....	Meeting Room B
1:15 PM	AJAS Paper Competition Finals.....	Ballrooms B&C
2:45 - 3:30 PM	Afternoon Break.....	Continuing Education Foyer
2:55 PM	Remove Posters and Displays.....	Atrium
3:15 PM	Awards Reception, Joint AJAS/Gorgas .....	Ballrooms B&C

The Alabama Science Scholar Talent Search and Gorgas Scholarship Competition is supported by the Alabama Power Foundation, Incorporated, 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.



**SECTION I – BIOLOGICAL SCIENCES**  
**Paper Session I**  
**Thursday Morning, 8:00 AM – 12:20 PM**  
**KHCC Rooms F&G**  
**Gordon MacGregor & Brad Bennett, Presiding**

1. 8:00 AM Discovering of Novel Anti-Toxoplasmosis Drug Combinations. *Daniel Abugri* and Aarian Huffman, Tuskegee University.
2. 8:20 AM \*\*g Functional Analysis of Thymic Nurse Cells in Lupus Prone Mice. *Montessa Mitchell* and E'Lashae Richards Scott, Sheryce Henley, Edeoba W. Edobor and Marcia Martinez, Tuskegee University.
3. 8:40 AM \*\*g Intrathymic Nurse Cell Transplant Reduces Morbidity and Mortality in SLE-Prone Mice. *Michael Henderson*, Sheryce Henley and Marcia Martinez, Tuskegee University.
4. 9:00 AM \*\*u Cytotoxicity and Complexity of the Venom from *Ctenus hibernalis*. *Jonathan Berkuta*, Brad C. Bennett, and Robert A. Hataway, Samford University.
5. 9:20 am \*\*u An In-depth Examination of the Black Belt Ticks and the Pathogens They Harbor. *Anna Holycross* and Tracy Keener, University of West Alabama.
- 9:40 AM **COFFEE BREAK**
6. 9:50 AM \*\*u Lab Animals and Human Diets: What Can We Learn? *Anna Grace Ballard*, Sophie Bru, Benjamin Marsh, Jarod Lowe, Michael Williams, Chloe Childress, and Stephen Watts, University of Alabama at Birmingham.
7. 10:10 AM Urban Turtle Project: Documenting Turtle Populations of Birmingham Urban Waterways. *Andrew Coleman*, Hueytown High School.
8. 10:30 AM \*\*g Effects of Chemical Dispersant (Corexit 9500A) on the Histology and Ion Transport Function of Blue Crab (*Callinectes sapidus*) Gills. *Amanda Weiner*, Megan Roegner, and R. Douglas Watson, University of Alabama at Birmingham.
9. 10:50 AM \*\*u Edible Oleogels: Bioaccessibility of Retinyl Palmitate. *Isaiah Byrd*, University of West Alabama; Nuria Acevedo, Iowa State University.
- 11:10 AM COFFEE BREAK/**  
**BUSINESS MEETING (Elect Vice-Chair for 2019-2021)**
10. 11:20 PM \*\*u Annelid Worms Living In Toxic Hydrogen Sulfide. *Shelby Lauzon*, Judson College, and David Johnson, Samford University.
11. 11:40 PM Polyparasitism in the Blood of the Tufted Titmouse (*Baeolophus bicolor*) and Northern Cardinal (*Cardinalis cardinalis*). *Kayla Fast*, University of West Alabama.
12. 12:00 PM \*\*u Sodium Fluoride Potentiated Luteolin as Potential Anti-*Toxoplasma gondii* Agent. Shacoya Mack, Danielle Worrell, and Daniel A. Abugri, Tuskegee University.

13. 12:00 pm \*\*u First Evidence of Striped Bass Natural Reproduction in the Tennessee River. *Karen M. Inouye*, Samford University; Anthony S. Overton, Samford University and Alabama A&M University; and Douglas A. Smith, Alabama A&M University

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

## SECTION I – BIOLOGICAL SCIENCES

### Poster Session

#### Thursday Afternoon

#### KHCC Atrium and Ballroom Foyer

Authors Set-up: Begins at 7:30 AM

Authors Present: 1:30 PM– 3:30 PM

Gordon MacGregor & Brad Bennett, Presiding

14. \*\*u The Effects of Exercise of Memory: the Brain-Body Connection. *Shelby Perez*, Faulkner University.
15. \*\*u Preliminary Dietary Analysis of Female Alabama Map Turtles. *Reagan Redwine*, Andrew Coleman, Hueytown High School.
16. \*\*u *In Vitro* Interaction of Tannic Acid and Sulfadiazine against *Toxoplasma gondii*. *Joy Massey*, Daniel Abugri, and Aarin Hoffman, Tuskegee University.
17. \*\*u Anti-Proliferation Activity of Hydroquinine combination with Genistein against *Toxoplasma Gondii*. *Carlyn Logwood* and Daniel Abugri, Tuskegee University.
18. \*\*g Nutrient Impacts on Larval Settlement of the Upside-Down Jellyfish. *Lindsay MacMillan* and Dustin Kemp, University of Alabama at Birmingham.
19. \*\*g RD29A and RD29B are Putative Drought Tolerance Genes Which do not Compromise Plant Growth. *Sangwook Park*, Auburn University.
20. \*\*g Roles of cyclophilin 20-3 in optimizing plant fitness. *Izailda Barbosa Dos Santos*, Anna Moye, and Sang Wook Park, Auburn University.
21. \*\*u Molecular modeling of the cI repressor of bacteriophage  $\epsilon 34$ . *Brooks Ryan*, Doba Jackson, Ebony Echols, Lauren McGee, and Logan Gildea, Huntingdon College; and Robert Villafane, Alabama State University.
22. \*\*u Discovery of Novel Bacteriophage *OKaNui*. *Kaitlyn Mayfield*, Kayla Fast, Tracy Keener, and Michael Sandel, University of West Alabama.
23. \*\*u Biotic and Abiotic Factors Affecting the Distribution of Carrion Beetles in a Large Urban Park in Alabama. *Erik Johansen*, John Bryant, Neilly Ficken, Madeline Fric, Grant Gentry, Hannah Harper, Luke McKay, Bella McLay, and Madeleine Mitchell, Samford University.
24. \*\*u Effect of Tannin on Weevil Populations across Oak Species. *Merrilea Duke*, Johnny Herbert, Erin Prester, and Malia Fincher, Samford University.
25. \*\*u The effects of stress on *Streptomyces* pigmentation. *Zeenia Punjani*, Kristi Martin, Sarah Adkins, and Jeffery Morris, University of Alabama at Birmingham.

26. \*\*u An Investigation into Effects of Artificial Sugar in Mice. *Alexandra Selico-Dunn*, Faulkner University.
27. \*\*u *NiaP*, a putative vitamin B3 transporter, in bacteria. *Shannon Gilstrap*, Katie Burelle, Kloe Freeman, and Brad Bennett, Samford University.
28. \*\*u Expression of Recombinant Tamm-Horsfall Protein in Kidney Cells for Large Scale Isolation and Purification. *Valentyna Trull*, Judson College; Kaice LaFavers and Tarek El-Achkar, Indiana University School of Medicine.
29. \*\*u Discovery, Isolation, and Characterization of Mycobacteriophage *Candle*. *Emma Ryan*, Kayla Fast, Tracy Keener, and Michael Sandel, University of West Alabama.
30. \*\*u The Adventures of Discovering a Bacteriophage: *Sumter*. *Garren Granec*, Kayla Fast, Tracy Keener, and Michael Sandel, University of West Alabama.
31. \*\*u Discovery and Purification of the Bacteriophage *Chip*. *Anna Morse*, Tracy Keener, Kayla Fast, and Michael Sandel, University of West Alabama.
32. \*\*u Environmental Analysis of Freetown Creek in Perry County. *Quenteeria Mooney* and Kristopher McConnell, Judson College.
33. \*\*g Bringing back longleaf pine: Are threatened avian species responding? *Natalie Harris*, Robert Gitzen, and William Gulsby, Auburn University.
34. \*\*u Isolation and Characterization of *Corynebacterium xerosis* Lysogens. *Sristi Das* and Denise Monti, University of Alabama at Birmingham.
35. \*\*g Chemical response of loblolly pine (*Pinus taeda* L) to *Leptographium terebrantis*. *John Mensah*, Auburn University; Mary A. Sword Sayer, USDA Forest Service; Ryan L. Nadel, Auburn University; George Matusick, New York City Department of Environmental Protection; and Zhaofei Fan and Lori G. Eckhardt, Auburn University.
36. The Effect of Nitrotyrosine on Skeletal Muscle Growth and Differentiation. *Mattye Crowder* and Mary Anne Garner, Judson College.
37. \*\*u Characterization of 513 novel, putative small RNAs (sRNAs) in carbon-starved *Salmonella enterica* serovar typhimurium. *Donavon Dahmer*, University of South Alabama.
38. \*\*u Sex Ratio Produced in Kemp's Ridley Recovery Program at the Padre Island National Seashore During the 2017 Nesting Season. *Elizabeth Bradley* and Thane Wibbels, University of Alabama at Birmingham.

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

**SECTION II – CHEMISTRY**  
**Paper Session**  
**Thursday Morning, 10:00 AM**  
**KHCC Room D**  
**Christopher Stopera, Presiding**

1. 10:00 AM    **\*\*u** Recovery of Precious Metals Using Organic Reduction Agents. *Kayla Herren*, Chris Loveless, Jan Gryko, Jacksonville State University.

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

**SECTION II – CHEMISTRY**  
**Poster Session**  
**Thursday Morning**  
**KHCC Atrium and Ballroom Hallway**  
**Authors Set-up: Begins at 7:30 AM**  
**Authors Present: 10:30 AM – Noon; Viewing and Judging**  
**Christopher Stopera, Presiding**

2.            **\*\*u** Recovery of Silver from Silver Waste. *Zora Rich*, Jade Stanley, Marilyn Tourne, Tuskegee University.
3.            **\*\*g** Synthesis and Characterization of Amino Acid modified Carbon Nanodots. *Garfield Grimmitt*, Willard E. Collier, Taylor Williams, Brianna Tibbs, Tiyon Carter, Tuskegee University.
4.            **\*\*u** Ultraviolet Spectroscopy Configurations. *Keenan Sparks*, Lauren Wigginton, University of North Alabama.
5.            **\*\*u** Formulation of an *Aloe Vera* Gel-Based Skin Care Product using All-Natural Ingredients. *Marissa Jones*, Willard E. Collier, Tuskegee University.
6.            **\*\*u** The Use of *Aloe Vera* Leaf Extract for the Synthesis Of Silver Nanoparticles. *Nathalie Momplaisir*, Mohamed O. Abdalla, Mohamed A. Abdalla, Tuskegee University.
7.            **\*\*u** Constructing A Three Component Mannich Reaction Using a Silver Tetranitrile Complex. *Quentoria Walton*, Morgan Fair, and Mohamed A. Abdalla, Tuskegee University.
8.            **\*\*u** Synthesis and Characterization of the Zinc and Manganese Complexes of 5,10,15,20-tetra[3,4-dibenzyloxyphenyl]porphyrin. *Erin Hutchens*, Andrew Ezell, Hayes Palacio, and Prakash Bharara, University of Montevallo; Qiaoli Liang, University of Alabama; and Cynthia Tidwell and Trever Tidwell, University of Montevallo.

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

**SECTION III. PHYSICS AND MATHEMATICS**  
**Joint with**  
**SECTION IV. ENGINEERING AND COMPUTER SCIENCE**  
**Paper Session**

**Thursday Morning, 9:00 – 11:30 AM**

***KHCC Room B***

**Mel Blake and Brian Toone, Presiding**

1. 9:00 AM \*\*u Measuring Viscosity with A Damped Harmonic Oscillator. *Donavan Ebersole*, Ty Naquin and James Sanders, Troy University.
2. 9:20 AM \*\*u The Effects of Impact Velocity on Imparted Impulse. *H C Regan Bhatta*, Pawan Khanal, and James Sanders, Troy University.
3. 9:40 AM \*\*u Sound Intensity Measurements to Meter Scales. *Sebastian Lee*, Victoria Colvin and James Sanders, Troy University.
4. 10:00 AM \*\*g Analytical solution of the Nonlinear Klein Gordon equation using Perturbation method. *Samuel Uba* and Matthew Edwards, Alabama A&M University.
5. 10:20 AM \*\*u Mapping Sound Waves in GNU OCTAVE. *Caroline Howell* and James Sanders, Troy University.
6. 10:40 AM \*\*g Characterization of Electron Trapping at Dielectric/4H-SiC. *Isanka Udayani Jayawardhena* and Sarit Dhar, Auburn University.
7. 11:00 AM \*\*g Principles of Design Secure Strategy for IoT. *Mohammad Alhefdi*, Murat M. Tanik, University of Alabama at Birmingham. (SECTION IV. ENGINEERING AND COMPUTER SCIENCE)

11:20 AM BUSINESS MEETING: Elect a Section III. Vice-Chair for the 2019-2021 term

**SECTION III – PHYSICS AND MATHEMATICS**  
**Joint with**  
**SECTION IV. ENGINEERING AND COMPUTER SCIENCE**  
**Poster Session**  
**Thursday Morning**  
***KHCC Atrium and Ballroom Foyer***  
**Authors Set-up: Begins at 7:30 AM**  
**Authors Present: 11:30 AM –1:00 PM**  
**Mel Blake and Brian Toone, Presiding**

8. \*\*u A New Equation to Predict the Phonon Thermal Conductivity of Pure Intrinsic Semiconductors. *Clay Thompson*, Ayinde Chad, and Prakash Sharma, Tuskegee University.
9. \*\*u Luminescence of Rare Earth Doped Glass. *Malcolm Johnson*, Prakash Sharma and Akshaya Kumar, Tuskegee University.
10. Cumulative Distribution and Cluster Analysis of Continents and Islands. *Arjun Tan*, Alabama A&M University.
11. Groups, Clusters and Cluster Analysis of the Greatest Barbadian Cricketers. *Arjun Tan*, Alabama A&M University.
12. Magnetic Flux Emergence, Interchange Reconnection, Flux Cancellation, and Blow-out Eruptions in a Small Coronal Hole. M. L. Adams, NASA/Marshall Space Flight Center ; R.L. Moore, NASA/Marshall Space Flight Center and University of Alabama in Huntsville; and N.K. Panesar, NASA/Marshall Space Flight Center, Huntsville, AL
13. \*\*u Multispectral Illumination System Based on the Induced Wavelength Shift in an Array Of Fiber Bragg Gratings (FBG). *Jennifer Olszyna*, Dylan McKelvey, and Ravi Gollipalli, University of North Alabama. (SECTION IV. ENGINEERING AND COMPUTER SCIENCE)
14. \*\*u Development of a Novel Spatial Atomic Layer Deposition System for Fast Film Deposition. *Tingyi Wei* and Dongqing Pan, University of North Alabama. (SECTION IV. ENGINEERING AND COMPUTER SCIENCE)

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

**SECTION V – SOCIAL SCIENCES**  
**Paper Session**  
**Thursday Morning 10:00 AM – 12:00 Noon**  
**KHCC Room E**  
**Susan D. Herring, Presiding**

1. 10:00 AM Addiction's Personal and Societal Costs. *Susan Herring* and Bryan Kennedy, Athens State University.
2. 10:20 AM Long-term Effects of Harsh Childhood Environment on the Mental and Physical Health of Children and Adults. *Thomas Pieplow*, Bryan Kennedy, and Susan Herring, Athens State University.
3. 10:40 AM Multigenerational Workplaces. *Beverly J. Myers*, Stillman College.
4. 11:00 AM Hiking Fears Scale: Scale Validation Study. *Richard Hudiburg*, Evelyn Swinney, Claire Martin, Sierra Hill, Madelyne Barnard, Micaela Rabl, and Larry Bates, University of North Alabama.
5. 11:20 AM Price/Cost Analysis and Negotiation Strategy: What Role Does This Play in the Acquisition and Contract Management Field? *Charles Roberts*, Bryan Kennedy, and Susan Herring, Athens State University.

**SECTION V – SOCIAL SCIENCES**  
**Poster Session**  
**Thursday Afternoon**  
**KHCC Atrium and Ballroom Foyer**  
**Authors Set-up: Begins at 7:30 AM**  
**Authors Present: 1:00-3:00 PM; Viewing and Judging**  
**Susan D. Herring, Presiding**

6. \*\*u A Summary of Available Data on Child Abuse for the Nation, Alabama, and Pike County. *Courtney Batchelor* and Christopher Bradley, Troy University.
7. \*\*g Complex Relationships Between Heart Rate Variability, Anxiety, and Cognitive Intra-Individual Variability. *Claire Demming*, Melissa Myers, Benjamin Hill, and John Shelley-Tremblay, University of South Alabama.
8. \*\*g The Brain in Love: Self-Differentiation in Association with Relationship Quality. *Reagan Thomas*, Jack Shelley-Tremblay, and Harvey Joanning, University of South Alabama.
9. Nondirective Play Therapy for Children Who Experience Adverse Childhood Experiences. *Beverly Myers* and Sandra Jemison, Stillman College.
10. Communication and Collaboration in a Multigenerational Workforce. *Beverly Myers*, Stillman College

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

**SECTION VI – ANTHROPOLOGY**  
**Paper Session**  
**Thursday Morning, 10:30 – 11:30 AM**  
***KHCC Room D***  
**Jason Mann, Presiding**

1. 10:30 AM Phylogenetic implications of the body shape of StW 573, an early *Australopithecus* from Sterkfontein, Member 2 (~3.67 Ma). *Jason Heaton*, Birmingham-Southern College.
2. 10:50 AM \*\*u Study of cultural interaction through artifacts at trash site. *Alagappan Ramanathan*, Troy University.
3. 11:20 AM \*\*u A Preliminary Report on a LASER Guided Archaeological Survey in the Talladega National Forest. *Zachary Smith*, Troy University.

**SECTION VI – ANTHROPOLOGY**  
**Poster Session**  
**Thursday Morning, 11:30 AM -- Noon**  
***KHCC Atrium and Ballroom Foyer***  
**Jason Mann, Presiding**

4. \*\*u Faunal Analysis of a Sample from a Prehistoric Shell Midden in Dallas County along the Alabama River. *Riley Sombathy*, Bill Grantham, Jason Mann, and Johnathan Miller, Troy University.

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



**SECTION VII. STEM  
EDUCATION Paper Session  
Thursday Afternoon 2:00 – 4:40 PM  
KHCC Room B  
J. Wayne McCain, Presiding**

1. 2:00 PM Creating Podcasts for Public Education. *Mel Blake*, University of North Alabama.
  2. 2:20 PM **\*\*u** Assessing Student Perceptions of International Teaching Assistants. *Rachel Rock*, Sarah Adkins, Jeff Morris, and Samiksha Raut, University of Alabama at Birmingham.
  3. 2:40 PM **\*\*u** Malaysia Airlines Flight 370 – A Failure Of Risk Management? *Katherine Brewer*, Carter McCain, and J. Wayne McCain, Athens State University.
  4. 3:00 PM **\*\*u** STEMSAT1 - Radio Astronomy CubeSat, An Update. *Collin Rogers McCain*, Calhoun Community College; J. Wayne McCain, Athens State University.
  5. 3:20 PM **\*\*u** MARS Challenges - Insitu Plant Farming. *Amelia Claire McCain*, Athens Intermediate School; J. Wayne McCain, Athens State University.
  6. 3:40 PM Low-risk formative assessments as an early indicator of at-risk students in a Human Anatomy course. *Drew Hataway* and T.W. Woolley, Samford University; *Connie Hataway*, University of Alabama at Birmingham; and *Mary Anne Garner*, Judson College.
- 4:00 PM **BUSINESS MEETING: Elect a Section Vice-Chair for the 2019-2021 term**

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

**SECTION VII: STEM EDUCATION**  
**Poster Session**  
**Thursday**  
***KHCC Atrium and Ballroom Foyer***  
**Authors Set-up: Begins at 7:30 AM**  
**Authors Present. 1:30 – 2:00 PM, Viewing and Judging**  
**J. Wayne McCain, Presiding**

7. The Infrastructure of Health Informatics: Laying the Technology Foundation. *David Robbins*, Samford University.
8. \*\*g Introducing the Research on STEM Education Network. *Sarah Adkins*, Samiksha Raut, and Jeffrey Morris, University of Alabama at Birmingham.
9. \*\*u Reforming Peer-Led Learning Assistants Through Professional Development Training in a Freshman Introductory Biology Class. *David Verhine*, *Gabby Richards*, James Boyett, Sebastian Schormann, and Samiksha Raut, University of Alabama at Birmingham.

\*\*u or \*\*g denotes a paper or poster that entered in the student paper/poster competition.

**SECTION VIII – ENVIRONMENTAL AND EARTH SCIENCE**

**Paper Session**

***KHCC Room D***

**Thursday afternoon, 2:00 –4:00 PM**

**Steven Schultze, Presiding**

1. 2:00 PM Another Dam Project: Removing the Sucarnochee River Dam. *Brian Burnes*, Alabama Academy of Science.
2. 2:20 PM \*\*u Thunderstorm Development at the Sea and Bay Breeze Collision Point. *Ashlyn Shirey* and Sytske Kimball, University of South Alabama.
3. 2:40 PM \*\*u Identifying Sea and Bay Breeze Driven Convection and Common Locations for Initiation in Mobile County, Alabama. *Samantha Darring* and Sytske Kimball, University of South Alabama.
4. 3:00 PM Summer in the City: Heat Trends in Urban Alabama, 1957-2017. *Stephen Tsikalas*, Kennedy Delap, Jacksonville State University; Eastern Washington University.
5. 3:20 PM \*\*u Comparison of Peach Response to Weather in Alabama and Michigan. *Jerel Foreman* and Steven Schultze, University of South Alabama.
6. 3:40 PM \*\*u Results From Year Two of the South Alabama Hops Project. *Wayne Williams* and Steven Schultze, University of South Alabama.
- 4:00 PM **BUSINESS MEETING: Elect a Section Vice-Chair for the 2019-2021 term**

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

**SECTION VIII – ENVIRONMENTAL AND EARTH SCIENCE**

**Poster Session**

**Thursday Afternoon, 1:00 – 2:00 PM**

***KHCC Atrium and Ballroom Foyer***

**Authors Set-up: Begins at 7:30 AM**

**Authors Present: 1:00 – 2:00 PM; Viewing and Judging**

**Steven Schultze, Presiding**

7. **\*\*u** Dendroclimatic Relationships across the Geographical Range of Sugar Maple. *Kaylen Bendolph*, University of West Alabama; Carolyn Copenheaver, Virginia Tech; Ketia Shumaker, The University of West Alabama.
8. **\*\*g** A Meta-Analysis to Compare Solutions to Bird Window Collisions. *Jessica Colbaugh*, Robert Gitzen, and Christopher Lepczyk, Auburn University.
9. Warming Holes and Polar Jets: Teaching Climate Change in the Southeastern U.S. by Embracing the Regional Anomalies to Global Warming. *Gregory Buckley* and Melissa Moore-Driskell, University of North Alabama.
10. **\*\*u** Temporal Changes in the Relationship between Climate and Radial Growth of Sugar Maple. *Makael Harris* and Ketia Shumaker, The University of West Alabama; Carolyn Copenheaver, Virginia Tech.

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

**SECTION IX: HEALTH SCIENCES**  
**Paper Session**  
**Thursday Morning, 8:00 AM – 10:40 AM**  
**KHCC Room A**  
**Ronald N. Hunsinger, Presiding**

1. 8:00 AM Alabama Asthma Coalition (AAC): Education, Healthcare, & Advocacy through Statewide Partnerships. *Ellen Buckner*, Samford University; Linda Gibson, Auburn University.
2. 8:20 AM \*\*g Endothelial to Mesenchymal Transition in Pulmonary Arterial Hypertension. *Mayen Gonzalez*, Rebekah Morrow, Jonathan Brown, K. Adam Morrow, and Audrey Vasauskas, Alabama College of Osteopathic Medicine.
3. 8:40 AM \*\*g An ERP Study of the Neurophysiological Effects of Visual Word Recognition. *Donald Knapp*, and Jack Shelley-Tremblay, University of South Alabama.
4. 9:00 AM The Second Victim Phenomena: Supporting Labor & Delivery Nurses after a Severe Maternal Event. *Amy Davis*, University of South Alabama.
5. 9:20 AM \*\*g Improving Care for Pediatric Patients with Asthma in the Emergency Department: A Quality Improvement Project. *Ashleigh F. Bowman* and Lisa Dailey, University of South Alabama.
6. 10:00 AM Proposal for a Congregational Health Ministry in a Church of Christ. *Tameka Pritchett*, Samford University.
7. 10:20 AM Digital Breast Tomosynthesis: Out with the Old. In with the New. *Donna Cleveland*, University of South Alabama.

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

**SECTION IX: HEALTH SCIENCES**  
**Poster Session**  
**Thursday Morning**  
***KHCC Atrium and Ballroom Foyer***  
**Authors Set-up: Begins at 7:30 AM**  
**Authors Present: 11:00 AM - 12:00 Noon for Viewing and Judging**  
**Ronald N. Hunsinger, Presiding**

8. \*\*u Animal-Assisted Therapy Research for Children with Autism. *Caitlin Perry*, Faulkner University.
9. \*\*u Response of Athletes to Two Stretching Routines before Exertion. *Cody Parmer*, Faulkner University.
10. \*\*u Evaluation of Nurse's Knowledge and Confidence in Acute Psychiatric Care. *Chandler Jones*, Chrystal Lewis, and Sonia Smith, University of South Alabama.
11. \*\*u Skin to Skin Contact in the Sacred Hour of Neonatal Life. *Lauren Gardner*, Leigh A. Minchew, and Chrystal L. Lewis, University of South Alabama.

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

## SECTION X. BIOETHICS AND HISTORY & PHILOSOPHY OF SCIENCE

### Paper Session I

Thursday Morning, 9:30 AM – 12:00 pm

*KHCC Ballroom A<sub>3</sub>*

Clark Lundell, Presiding

1. 9:30 AM Fear to Fail, Fear to Share: Negative Effects of Social Media on the Design Student. *Benjamin Bush*, Auburn University.
2. 9:45 AM Reframing Opportunity in Research. *Christopher Arnold*, Auburn University.
3. 10:00 AM Who's Afraid of CRISPR Babies? *James Bradley*, Auburn University.
4. 10:15 AM Designing for Sustainability and Resilience. *Rusty Lay*, Auburn University.
5. 10:30 AM Experiencing the Power of Place. *Brian LaHaie*, University of Georgia; Clark Lundell, Auburn University.
6. 10:45 AM Functional Aesthetics. *Randall Bartlett*, Auburn University.
7. 11:00 AM Technology Tensions within Visual Arts Education. *David Smith*, Auburn University.
8. 11: 15 AM The Stranglehold of the 1910 Flexner Report. *Kenneth Nusbaum*, Clark Lundell, Auburn University.

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

## SECTION X. BIOETHICS AND HISTORY & PHILOSOPHY OF SCIENCE

### Paper Session II

Thursday Afternoon, 1:00 – 3:30 PM

*KHCC Ballroom A<sub>3</sub>*

Clark Lundell, Presiding

9. 1:00 PM **\*\*g** Alternative Agricultural Techniques for Decreasing Environmental Damage. *Justin Murphy*, Auburn University.
10. 1:15 PM **\*\*u** Boss Babies Taking Over the Market: Artful Objects at Influential Times. *Alexis Kennedy*, Auburn University.
11. 1:30 PM **\*\*u** Ball Bearing. *Josh Buchholz*, Auburn University.
12. 1:45 PM **\*\*u** Uomo Universale. *Jessica Elridge*, Auburn University.
13. 2:00 PM **\*\*u** Balance in Our Lives. *Alexandra Byrd*, Auburn University.
14. 2:15 PM **\*\*u** "Design" A Beautifully Functional Compromise. *Jonathan Funk*, Auburn University.
15. 2:30 PM **\*\*u** The Power of Color. *Logan Ellison*, Auburn University.

16. 2:45 PM CLIMATE: Waves, Trains, Surfers, Sunspots, Minima, History, Warming and Ocean Currents. *Clark Lundell*, Auburn University.

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

**SECTION X. BIOETHICS AND HISTORY & PHILOSOPHY OF SCIENCE**

**Poster Session**

**Thursday Afternoon**

***KHCC Atrium and Ballroom Hallway***

**Authors Set-up: Begins at 7:30 AM**

***Authors Present 3:00 – 3:30 pm, viewing and judging***

**Clark Lundell, Presiding**

17. 3:30 PM Disproportionate Effects of Climate Change on Poor and Minority Populations. *Shuntele Burns*, Alabama State University.



## ALABAMA JUNIOR ACADEMY OF SCIENCE

Mark Jones, State Director

Posters at Sci-Mix Session

Thursday Evening, 5:30 PM– 6:45 PM

KHCC Atrium & Ballroom Foyer

### Engineering/Mathematics

1. \*Colton Greene, Wind Tunnel Construction and Diecast Car Aerodynamics II, *Wetumpka High School*, Wetumpka
2. \*Peyton Crosby, Wireless Electricity: Simple, Yet Effective, *Wetumpka High School*, Wetumpka
3. Akshat Yaparla and Viraj Kacker, Non-Markovian Investigation of Entropy Production in an Isolated Quantum System, *Jefferson County International Baccalaureate School*, Irondale
4. Aniket Pant, Novel Applications of Machine Learning for the Analysis of Ultrafast Spectroscopic Data, *Jefferson County International Baccalaureate School*, Irondale
5. Ashraf Mansour, Designing an optimized electroencephalography (EEG) solution for machine operation, *Auburn High School*, Auburn
6. Braydon Noh, Flexible and High-Power Density Supercapacitor from Low-Cost and Simple Manufacturing Method, *Auburn High School*, Auburn
7. Louisa Forbes, The Investigation of Sustainable and Convenient Methods of Generating Biofuels, *W.P. Davidson High School*, Mobile
8. Arrington Harper, Detecting Hate Speech Using Part-of-Speech Tagging, *Alabama School of Fine Arts*, Birmingham

### Environmental

1. \*Haley Donovan, Achroia grisella as Effective Decomposers of Polyethylene, *Wetumpka High School*, Wetumpka
2. \*Noel Lange, Development of an Innovative Strategy to Protect the Aquatic Environment from Household Plastic Microfibers, *Auburn High School*, Auburn
3. Deanna Scopolites, Effects of pH on the Crassostrea virginica Population, *Murphy High School*, Mobile
4. Grace Greer, Microfilter, *Auburn Junior High School*, Auburn
5. Rance McElroy, Gulf Coast Decline, *Baker High School*, Mobile
6. Sejal Srivastava, Can Rhizobacteria Isolated from Soil Be Used as an Alternative for Commercial Fertilizers? *Auburn High School*, Auburn
7. Sydney Hamilton, Make Auburn Green Again, *Auburn Junior High School*, Auburn

### Life Science

1. \*Garrison Clark, Recipe for Success: Creatine Monohydrate, *Wetumpka High School*, Wetumpka
2. \*Isabella Elortegui, The Effects of Psychological Factors on the Development of Overtraining Syndrome, *Murphy High School*, Mobile
3. \*Katherine Wilson, Perfusion Pressure (OPP) as Characterized by 24-hour Telemetry in Nonhuman Primates (NHPs), *Alabama School of Fine Arts*, Birmingham

4. *Amrita Lakhanpal*, Use of Computational Analyses to Identify Genes Disproportionately Affected by NFKBIA Deletions and Implicated in Breast Cancer and Glioblastoma Tumorigenesis, *The Altamont School*, Birmingham
5. *Avery Pyles*, Eye-Phone: A Study of How Cell Phones Affect Peripheral Vision, *Wetumpka High School*, Wetumpka
6. *Emma Wolf*, The Memory of an Eye Witness, *Jefferson County International Baccalaureate School*, Irondale
7. *Julian Vilardi*, Quit Bugging *Wetumpka High School*, Wetumpka
8. *Sarah Avington*, Comparing the Respiration Rates of *Drosophila melanogaster* Lines with Different Activity Levels Using the Loligo System, *Alabama School of Fine Arts*, Birmingham
9. Sommer Carnes, Investigation of Sense Association, *Jefferson County International Baccalaureate School*, Irondale

### Medicine Health and Behavioral Science

1. \**Eric Cheng*, The Effect of Inhibiting DNA-Protein Kinase and ADP-Ribose Polymerase on Head and Neck Squamous Cell Carcinoma Survivability, *Alabama School of Fine Arts*, Birmingham
2. \**Ritikraj Arya*, Phytohormone Abscisic Acid as a Novel Chemotherapeutic Agent in Breast Cancer, *LAMP High School*, Montgomery
3. \**Sabrina Springer*, Interactions of Caffeine with Anti-Cancer Medication Topotecan with NMR Spectroscopy, *Alabama School of Fine Arts*, Birmingham
4. *A'Zhariya Ellis*, Pathogenic Effects of IL-17 Receptor A in Lupus B Cells, *Alabama School of Fine Arts*, Birmingham
5. *Katherine Malone*, Chronic Pain Stigma and its Effect on Chronic Pain Severity, *Alabama School of Fine Arts*, Birmingham
6. *Yancy Williams*, Hepatocellular Carcinoma and Frailty Outcomes, *Alabama School of Fine Arts*, Birmingham

### Physical Science Earth and Space Science

1. \**MiKayla Johnson*, Investigating How a Galaxy's Age, Metallicity, and Stellar Mass Affects its Redshift, *Wetumpka High School*, Wetumpka
2. *Clayton Hutsler*, Test viability of lightning as an alternative energy source, *Wetumpka High School*, Wetumpka
3. *Eric Mao*, Temperature Estimation with Commercial UHF RFID Tags, *Auburn High School*, Auburn
4. *Jiho Lee and Suma Ejantkar*, Testing Atmospheric Conditions for Novel Cloud Seeding Method Using Bacterial Ice Nucleators with Regionalized pH Influence, *Auburn High School*, Auburn
5. *Logan Hammack*, Musical Reaction, *Wetumpka High School*, Wetumpka
6. *Nikitha Sridhar*, Stabilizing Protein Function with Osmolyte Mixtures, *Auburn High School*, Auburn
7. *Rachel Rook*, The Effects of Chemicals on Wood Decomposition and Which Wood Makes the Best Paper, *Wetumpka High School*, Wetumpka

\* Denotes AJAS student who is also entered in the Gorgas Scholarship Competition

## GORGAS SCHOLARSHIP COMPETITION

**Sci-Mix Session  
Thursday Evening,  
5:30 PM– 6:45 PM KHCC Atrium  
and Ballroom Foyer  
Ellen Buckner, Presiding**

1. *Ritikraj Arya*, Phytohormone Abscisic Acid as a Novel Chemotherapeutic Agent in Breast Cancer, LAMP High School, Montgomery, [Teacher-sponsor-Sabita Saldanha]
2. Eric Cheng, The Effect of Inhibiting DNA-Protein Kinase and ADP-Ribose Polymerase on Head and Neck Squamous Cell Carcinoma Survivability, Alabama School of Fine Arts, Birmingham, [Teacher-sponsor-Rebecca Thrash]
3. *Garrison Clark*, Creatine Monohydrate: Recipe for Success, Wetumpka High School, Wetumpka, [Teacher-sponsor-Virginia Vilardi]
4. *Peyton Crosby*, Wireless Electricity: Simple, yet Effective, Wetumpka High School, Wetumpka, [Teacher-sponsor-Virginia Vilardi]
5. *Haley Donovan*, *Achroia grisella* As Effective Decomposers of Polyethylene, Wetumpka High School, Wetumpka, [Teacher-sponsor-Virginia Vilardi]
6. *Isabella Elortegui*, The Effects of Psychological Factors on the Development of Overtraining Syndrome, Murphy High School, Mobile, [Teacher-sponsor-Rebecca Mullins]
7. *Colton Greene*, Wind Tunnel Design & Diecast Car Aerodynamics II, Wetumpka High School, Wetumpka, [Teacher-sponsor-Virginia Vilardi]
8. *MiKayla Johnson*, Investigating How a Galaxy's Age, Metallicity, and Stellar Mass Affects its Redshift, Wetumpka High School, Wetumpka, [Teacher-sponsor-Virginia, Vilardi]
9. **\*\*Noel Lange**, Development of Innovative Strategies to Protect the Aquatic Environment from Household Plastic Microfibers, Auburn High School, Auburn, [Teacher-sponsor-Mark T. Jones]
10. *Aditi Limaye*, Limit Shapes for Special Probabilities on Partitions, Bob Jones High School, Madison, [Teacher-sponsor-Benjamin Johnston]
11. *Sabrina Springer*, Interactions of Caffeine with Anti-Cancer Medication Topotecan with NMR Spectroscopy, Alabama School of Fine Arts, McCalla, [Teacher-sponsor-Susan Lagrone]
12. *Katherine Wilson*, Intra-Subject Variability and Nycthemeral Rhythms of Ocular Perfusion Pressure (OPP) as Characterized by 24-hour Telemetry in Nonhuman Primates (NHPs), Alabama School of Fine Arts, Birmingham, [Teacher-sponsor-Susan Lagrone]

**\*\* Regeneron Science Talent Search 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.

## 2019 REGIONAL SCIENCE FAIRS

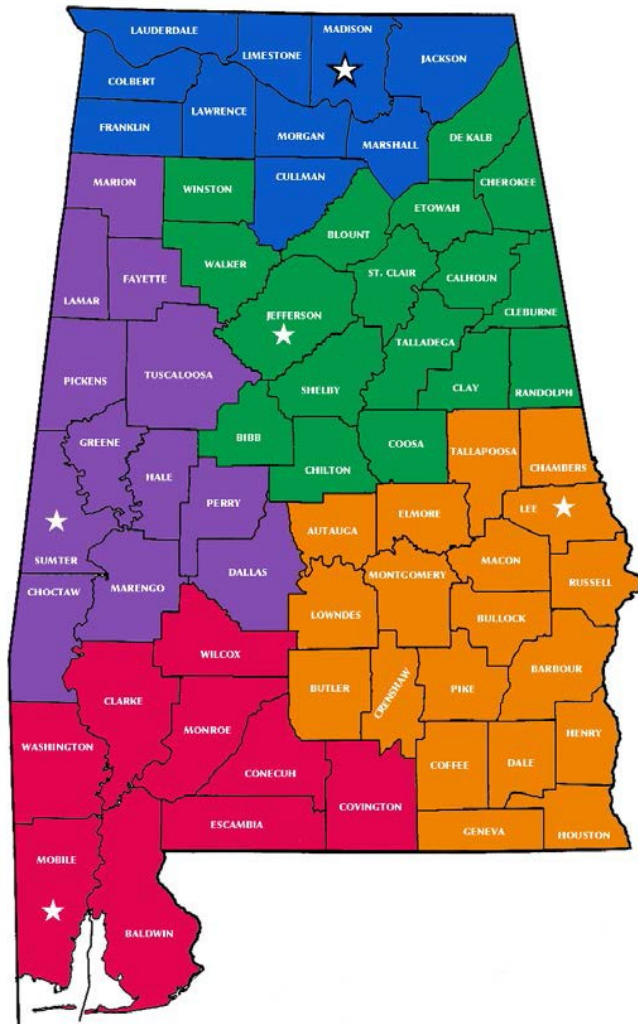
1. **Central Alabama Regional Science & Engineering Fair**, [web](#), March 2, 2019  
Kevin Jarrett, coordinator  
The University of Alabama at Birmingham  
Community Outreach, 5th Fl., CHSB 19  
933 19th Street South  
Birmingham, AL 35294-2041
2. **West Alabama Regional Science Fair**, March 2, 2018  
Roger Campbell, Ph.D. [rcampbell@uwa.edu](mailto:rcampbell@uwa.edu)  
Chairperson, Department of Physical Sciences  
The University of West Alabama  
Station 23  
Livingston, AL 35470  
(205) 652-3873
3. **North Alabama Regional Science and Engineering Fair**, [web](#) March 12-13, 2019  
Jacob Kerstiens, coordinator  
[jacob.kerstiens@uah.edu](mailto: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](#), March 6-7, 2019  
Janie Marino  
GEARSEF Fair Coordinator  
[jgm0010@auburn.edu](mailto:jgm0010@auburn.edu)
5. **Mobile Regional Science and Engineering Fair**, [web](#), March 15-16, 2019  
[Engineering@southalabama.edu](mailto:Engineering@southalabama.edu)  
David T. Allison, Ph.D.  
Department of Earth Sciences  
136 LSCB, 307 N. University Blvd.  
University of South Alabama  
Mobile, AL 36688
6. **Alabama Science & Engineering Fair**, [web](#), April 4 & 5, 2019  
Vanessa Colebaugh, coordinator  
[asef@uah.edu](mailto:asef@uah.edu)  
256.824.4510  
The University of Alabama in Huntsville  
Earth System Science Center, CRH 3078  
Huntsville, AL 35899

## 2019 INTERNATIONAL SCIENCE AND ENGINEERING FAIR

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

The Intel 2019 ISEF will be held May 12-17, 2019 in Phoenix, AZ at the Phoenix Convention Center. For details visit <https://student.societyforscience.org/attendees>

Virginia Vilardi, Intel/ISEF and State Coordinator, 1251 Coosa River Parkway, Wetumpka H.S., 36092, (334) 799-0104, [Virginia.vilardi@elmore.k12.al.us](mailto:Virginia.vilardi@elmore.k12.al.us).



## ALABAMA SCIENCE OLYMPIAD 2019

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

### **Division A2 -- Elementary Science Olympiad at**

#### **Jacksonville High School**

Saturday, February 23<sup>rd</sup>

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

Maximum of one team per school.

#### **University of West Alabama**

Tuesday, October 16<sup>th</sup>

#### **Auburn University**

Saturday, April 13<sup>th</sup>

Details at the <http://www.auburn.edu/cosam/scienceolympiad> web site.

### **Division B – Middle School (6-9) Science Olympiad at**

#### **University of Alabama, Tuscaloosa**

Saturday, March 2<sup>nd</sup>

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

#### **University of Alabama at Huntsville**

Saturday, February 16<sup>th</sup>

Link to additional <http://www.nsstc.uah.edu/scienceolympiad/index.html>

#### **University of Alabama at Birmingham**

Saturday, February 16<sup>th</sup>

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

Maximum of one team per school (per division).

### **Division C – High School (9-12) Science Olympiad at**

#### **University of Alabama, Tuscaloosa**

Saturday, March 2<sup>nd</sup>

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

#### **University of Alabama at Huntsville**

Saturday, February 16<sup>th</sup>

Link to additional <http://www.nsstc.uah.edu/scienceolympiad/index.html>

#### **University of Alabama at Birmingham**

Saturday, February 16<sup>th</sup>

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

Maximum of one team per school (per division).

### **State Tournaments**

#### **Auburn University**

Division B and C State Olympiads

Saturday, March 30<sup>th</sup>

Link to additional

<http://www.auburn.edu/cosam/departments/outreach/programs/Science%20Olympiad/>

**ASO State Policies can be found at:**

- [Registration Information: http://www.alabamaso.org/registration.html](http://www.alabamaso.org/registration.html).
- [Registration Form \(PDF\): http://www.alabamaso.org/registration.html](http://www.alabamaso.org/registration.html).
- [Coaches Handbook and Policies: http://www.alabamaso.org/handbook.html](http://www.alabamaso.org/handbook.html).
- [Division Descriptions: http://www.alabamaso.org/divisions.html](http://www.alabamaso.org/divisions.html).
- [ASO News and Notes: http://www.alabamaso.org/index.html](http://www.alabamaso.org/index.html).

### **National Science Olympiad Tournament**

The Science Olympiad National Tournament for Divisions B and C will be hosted Mary 31 – June 1, 2019, by Cornell University in Ithaca, NY.

**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](mailto: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. Ronald Hunsinger serves as Chair of the Mason Science Teacher Fellowship Committee, [rnhunsin@samford.edu](mailto:rnhunsin@samford.edu). Downloadable applications and further information can be found on the Academy web site, [www.alabamaacademyofscience.org](http://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

## 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 COD, 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.

## 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)

## SECTION OFFICERS, 2018-2019

### Section I: Biological Sciences:

- Chair: (2019) Gordon MacGregor, Department of Biology, University of Alabama in Huntsville, Huntsville, AL 35899, (256)-824-4925, [gm0009@uah.edu](mailto:gm0009@uah.edu)
- Vice Chair: (2019) Brad Bennett, Department of Biology, Samford University, Birmingham, AL 35229, (205) 726-2303, [bbennet1@samford.edu](mailto:bbennet1@samford.edu).

### Section II: Chemistry:

- Chair: (2020) Christopher Stopera, Dept. of Chemistry and Industrial Hygiene, Univ. of North Alabama, Florence, AL 35632, (256)-765-4479, [cstopera@una.edu](mailto:cstopera@una.edu)
- Vice Chair: (2020) Donna Perygin, Dept. of Chemistry and Geosciences, Jacksonville State Univ., Jacksonville, AL 36265, [dperygina@jsu.edu](mailto:dperygina@jsu.edu).

### Section III: Physics and Mathematics:

- Chair: (2019) Mel Blake, Dept. of Physics and Earth Science, Univ. of North Alabama, Florence, AL 35630, (256)-765-4284, [rdblake@una.edu](mailto:rdblake@una.edu)
- Vice Chair: (2019) Wen Yan, Dept. of Mathematics, Tuskegee University, Tuskegee, AL [wyan@tuskegee.edu](mailto:wyan@tuskegee.edu)

### Section IV: Engineering and Computer Science:

- Chair: (2020) Brian Toone, Dept. of Mathematics and Computer Science, Samford University, Birmingham, AL 35229 (205) 726-2960, [brtoone@samford.edu](mailto:brtoone@samford.edu).
- Vice Chair: (2020) Ravi Gollapalli, Dept. of Engineering Technology, Univ. of North Alabama, Florence, AL 35632 (256)-765-4857, [rgollapalli@una.edu](mailto:rgollapalli@una.edu)

### Section V: Social Sciences:

- Chair: (2020) Susan Herring, (256)-851-8036, [sdherring@att.net](mailto:sdherring@att.net)
- Vice Chair: (2020) Bryan Kennedy, Dept. of Management and Psychology, Athens State Univ., Athens, AL 35611, (256) 216-5363, [Bryan.Kennedy@athens.edu](mailto:Bryan.Kennedy@athens.edu)

### Section VI: Anthropology:

- Chair: Jason Mann, Department of Social Studies, Troy University, Troy, AL 36082, (334) 670-3957, [jmann@troy.edu](mailto:jmann@troy.edu)
- Vice Chair: Phillip Koerper, Dept. of History, Jacksonville State Univ., Jacksonville, AL 36265, (256)-782-5604 [pkoerper@jsu.edu](mailto:pkoerper@jsu.edu).

### Section VII: STEM Education:

- Chair: (2019) J. Wayne McCain, Dept. of Technology, Athens State University, Athens, AL 35611, (256) 216-5369, [wayne.mccain@athens.edu](mailto:wayne.mccain@athens.edu)
- Vice Chair: (2019) Mel Blake, Dept. of Physics and Earth Science, Univ. of North Alabama, Florence, AL 35630, (256)-765-4284, [rdblake@una.edu](mailto:rdblake@una.edu).

### Section VIII: Environmental and Earth Science:

- Chair: (2019) Steven Shultze, Dept. of Earth Sciences, University of South Alabama, Mobile, AL 36688 (205) 652-5459, [schultze@southalabama.edu](mailto:schultze@southalabama.edu)
- Vice Chair: (2019) Will Jackson, Dept. of Geology, University of South Alabama, Mobile, AL 36688 (251)-460-7569, [wjackson@southalabama.edu](mailto:wjackson@southalabama.edu)

### Section IX: Health Sciences:

- Chair: (2020) Ron Hunsinger, Dept. of Biology, Samford University, Birmingham, AL 35229, [rhunsin@samford.edu](mailto:rhunsin@samford.edu)
- Vice Chair: (2020) Donna Cleveland, Dept. of Radiologic Science, University of South Alabama, Mobile, AL 36688, [jclevel1@bellsouth.net](mailto:jclevel1@bellsouth.net), [dcleveland@southalabama.edu](mailto:dcleveland@southalabama.edu).

**Section X: Bioethics and History and Philosophy of Science:**

- Chair: (2020) Clark Lundell, Department of Industrial & Graphic Design, Auburn University, Auburn, AL 36849, (334)-844-2369, [lundece@mail.auburn.edu](mailto:lundece@mail.auburn.edu).
- Vice Chair: (2020) Brian LaHaie, College of Environment and Design, Univ. of Georgia, Athens, GA 30-602 (706)-542-5125, [blahaie@uga.edu](mailto:blahaie@uga.edu).

## ELECTED OFFICERS, 2018-2019

**President:** Drew Hataway, Dept. of Biology, Samford University, Birmingham, AL 35229, (205)-726-4190, [rahatawa@samford.edu](mailto:rahatawa@samford.edu)

**President-Elect:** Cameron Gren, Dept of Chemistry and Industrial Hygiene, University of North Alabama, UNA Box 5049, Florence, AL 35632, (256) 765-5027, [cgren@una.edu](mailto:cgren@una.edu).

**Second Vice-President:** John (Jack) Shelley-Tremblay, Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, [jstremblay@southalabama.edu](mailto:jstremblay@southalabama.edu)

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

**Treasurer:** Bettina Riley, USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, [briley@southalabama.edu](mailto:briley@southalabama.edu).

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

**Coordinator of the Junior Academy:** Mark Jones, J. F. Drake Middle School, 655 Spencer Ave., Auburn, AL 36832, (334) 444-3099 [mtjones@auburnschools.org](mailto:mtjones@auburnschools.org).

**Associate Counselor to the Junior Academy:** Mary Williams, Altamont School, 4801 Altamont Rd., Birmingham, AL 35222, (205) 879-2006, [mawilliams@altamontschool.org](mailto:mawilliams@altamontschool.org).

**Associate Counselor to the Junior Academy:** Wanda Phillips, Brooks High School, 4300 Highway 72, Killen, AL 35645 (256) 757-2115, [wanda.phillips@lchschoools.org](mailto:wanda.phillips@lchschoools.org).

**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](mailto: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](mailto: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](mailto:sawatts@uab.edu).

**Executive Director:** Larry Krannich, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294 (205) 934-8017, [krannich@uab.edu](mailto:krannich@uab.edu).

### TRUSTEES:

- Ken Marion, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170 , [kmarion@uab.edu](mailto:kmarion@uab.edu).
- Prakash Sharma, Department of Physics, Tuskegee University, Tuskegee, AL 36088 (334) 727-8998, [pcsharma@mytu.tuskegee.edu](mailto:pcsharma@mytu.tuskegee.edu).
- James Bradley, Department of Biological Sciences, Auburn University, Auburn, AL 36849, [bradljt@auburn.edu](mailto:bradljt@auburn.edu).
- David Nelson, Department of Biology, University of South Alabama, Mobile, AL 36688 (252) 460-6331, [dnelson@usouthal.edu](mailto:dnelson@usouthal.edu).
- Brian Burnes, Department of Biology, University of West Alabama, Livingston, AL 35470 (205) 652-3442, [bburnes@uwa.edu](mailto:bburnes@uwa.edu).
- Mike Howell, Department of Biological Sciences, Samford University, Birmingham, AL 35229 , [wmlhowell@samford.edu](mailto:wmlhowell@samford.edu).

- Richard Hudiburg, Department of Psychology, University of North Alabama Box 5187, Florence, AL 35632 (256) 765-4572, [rahudiburg@una.edu](mailto:rahudiburg@una.edu).
- Adriane Ludwick, Department of Chemistry, Tuskegee University, Tuskegee, AL 36088 , [aludwick@tuskegee.edu](mailto:aludwick@tuskegee.edu).
- Brian Toone, Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, [brtoone@samford.edu](mailto:brtoone@samford.edu).
- Ellen B. Buckner, Ida V. Moffett School of Nursing, (205) 726-2092, Samford University, (205) 726-2092 [ellen.buckner@samford.edu](mailto:ellen.buckner@samford.edu)
- Stephen Watts, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170 (205) 934–2045, [sawatts@uab.edu](mailto:sawatts@uab.edu).
- Anne Cusic, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294–1170 (205) 934-9686, [acusic@uab.edu](mailto:acusic@uab.edu).

## APPOINTED COMMITTEES 2018-19

### Archives

- John McCall (2018) Department of Biological and Environmental Sciences, University of West Alabama, 35470, [jmccall@uwa.edu](mailto:jmccall@uwa.edu).

### Auditing Senior Academy

- Budget and Finance Committee

### Auditing Junior Academy

- Budget and Finance Committee
- Mark Jones, J. F. Drake Middle School, 655 Spencer Ave., Auburn, AL 36832, (334) 444-3099 [mtjones@auburnschools.org](mailto:mtjones@auburnschools.org).

### Budget and Finance

- Ken Marion, Chair, (2018) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294-1170, [kmarion@uab.edu](mailto:kmarion@uab.edu)
- Ellen Buckner, (2018) College of Nursing, University of South Alabama, Mobile, AL 36688, [ebuckner@southalabama.edu](mailto:ebuckner@southalabama.edu).
- Melia Fincher, (2019) Department of Biology, Samford University, 900 Lakeshore Dr., Birmingham, AL 35229, (205) 726-2928 [rmfinche@samford.edu](mailto:rmfinche@samford.edu).
- Bettina Riley, (2019) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, [briley@usouthal.edu](mailto:briley@usouthal.edu).
- Mark Jones, (2018) Coordinator of AJAS, J. F. Drake Middle School, 655 Spencer Ave., Auburn, AL 36832, (334) 444-3099 [mtjones@auburnschools.org](mailto:mtjones@auburnschools.org).
- Larry Krannich, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294, [krannich@uab.edu](mailto:krannich@uab.edu)

### Development:

- Larry Krannich, co-Chair, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294 [krannich@uab.edu](mailto:krannich@uab.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
George Cline.....	2007-08
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



**Editorial Board: (staggered 3-yr terms)**

- Jim Bradley, (2019) Department of Biology, Auburn University, Auburn, AL , [bradljt@auburn.edu](mailto:bradljt@auburn.edu)
- David Myer, (2020) English Department, Jacksonville State University, Jacksonville, AL 37276, [dmyer@jsu.edu](mailto:dmyer@jsu.edu)
- Prakash Sharma, (20178) Department of Physics, Tuskegee University, Tuskegee, AL 36088, [pcsharma@tuskegee.edu](mailto:pcsharma@tuskegee.edu)
- Ad-Hoc Steering Committee formed for developing a mission statement and objectives for the journal and create a mechanism for assessing the success of the journal moving forward. Report at Spring 2018 Executive Committee meeting:  
Drew Hataway, Ellen Buckner, Cameron Gren, Jack Shelley-Tremblay, Jim Bradley, Akshaya Kumar, Adriane Ludwick, and Brian Toone.

**Electronic Media: (3-yr terms)**

- John Shelley-Tremblay, editor (2019), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, [jstremblay@southalabama.edu](mailto:jstremblay@southalabama.edu)
- Richard Hudiburg, Associate Editor, (2017) Department of Psychology, University of North Alabama, Box 5187, Florence, AL 35632, [rahudiburg@una.edu](mailto:rahudiburg@una.edu)
- Ad Hoc Committee for Electronic Media to consider Bylaw concerning associate editors, online JAAS publication, and Journal indexing: Brian Toone, John Shelley-Tremblay, and JAAS Editors

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

- Richard Hudiburg, Chair, (2016) Department of Psychology, University of North Alabama, Box 5187, Florence, AL 35632, [rahudiburg@una.edu](mailto:rahudiburg@una.edu)
- David Nelson, (2018) Department of Biology, University of South Alabama, Mobile, AL 36688, [dnelson@usouthal.edu](mailto:dnelson@usouthal.edu)
- Brian Toone, (ex officio) Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, [brtoone@samford.edu](mailto:brtoone@samford.edu).
- Larry Davenport, (2019) Department of Biological Sciences, Samford University, Birmingham, AL 35229, [ljdavenp@samford.edu](mailto:ljdavenp@samford.edu)

**Gorgas Scholarship Program: (staggered 3-yr terms)**

- Ellen Buckner, Co-chair, College of Nursing, University of South Alabama, Mobile, AL 36688, [ebuckner@southalabama.edu](mailto:ebuckner@southalabama.edu)
- Larry Krannich, Co-chair, Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294, [krannich@uab.edu](mailto:krannich@uab.edu)
- Elizabeth Dobbins, (2018) Department of Biology, Samford University, Birmingham, AL 35229, [egdobbin@samford.edu](mailto:egdobbin@samford.edu)
- David H. Nelson, (2018) Department of Biology, University of South Alabama, Mobile, AL 36688, [dnelson@usouthal.edu](mailto:dnelson@usouthal.edu)
- Prakash Sharma, (2019) Department of Physics, Tuskegee University, Tuskegee, AL 36088, [pcsharma@mytu.tuskegee.edu](mailto:pcsharma@mytu.tuskegee.edu).
- Diane Tucker, (2019) Science and Technology Honors Program, University of Alabama at Birmingham, Birmingham, AL 35294, [dtucker@uab.edu](mailto:dtucker@uab.edu).
- Peggy Burnett, Alabama Power Foundation, 600 North 18th Street, Birmingham, AL 35203, [PEBURNET@southernco.com](mailto:PEBURNET@southernco.com).
- Andrea Hunt, (2019) Sociology and Family Studies, University of North Alabama, Florence, AL. 35632, [ahunt3@una.edu](mailto:ahunt3@una.edu)

**Junior Academy:**

- Mark Jones, J. F. Drake Middle School, 655 Spencer Avenue, Auburn, AL 36832, [mtjones@auburnschools.org](mailto:mtjones@auburnschools.org)

**Junior Academy Regional Counselors:**

- Virginia Valardi, Wetumpka High School, Wetumpka, AL, [virginia.vilardi@elmore.k12.al.us](mailto:virginia.vilardi@elmore.k12.al.us)

**Local Arrangements at College of Health Sciences, Samford University**

- Ellen Buckner, Chair (2018), Ida V. Moffett School of Nursing, (205) 726-2092, Samford University, (205) 726-2092 [ellen.buckner@samford.edu](mailto:ellen.buckner@samford.edu)

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

- Matthew Edwards, Chair, (2018) Department of Physics, Chemistry and Mathematics, PO Box 338, Alabama A&M University, Normal, AL 35762, (256) 372-8119 [matthew.edwards@aamu.edu](mailto:matthew.edwards@aamu.edu)
- John McCall, (2019) Dean & Professor, Department of Biology, University of West Alabama, Livingstone, AL 35470 [jmccall@uwa.edu](mailto:jmccall@uwa.edu)
- Anne Cusic, (2017) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294-1170, [acusic@uab.edu](mailto:acusic@uab.edu)
- Yong Wang (2018) Center for Forestry and Ecology, Alabama A&M University, Normal, AL 35752 [yong.wang@aamu.edu](mailto:yong.wang@aamu.edu)

**Mason Scholarship: (staggered 3-yr terms)**

- Ronald Hunsinger (Chair) (2018) 1070 Crest Rd., Leeds, AL [rhunsin@samford.edu](mailto:rhunsin@samford.edu)
- Mickie Powell (2016) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294 [mpowell@uab.edu](mailto:mpowell@uab.edu)
- Jane Roy, (2018) School of Education, University of Alabama at Birmingham, Birmingham, AL 35294-1250, [jroy@uab.edu](mailto:jroy@uab.edu)
- R. Melvin Blake, (2017) Department of Physical and Earth Science, University of North Alabama, Florence, AL 35632, [rmlake@una.edu](mailto:rmlake@una.edu)

**Membership:** Vacant, Chair**Nominating:**

- Drew Hataway (Chair), Dept. of Biology, Samford University, Birmingham, AL 35229, (205)-726-4190, [rahatawa@samford.edu](mailto:rahatawa@samford.edu)
- Section Chairs

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

- Donna Perygin (2020) Department of Chemistry and Geosciences, Jacksonville State University, Jacksonville, AL 36265, [dperygina@jsu.edu](mailto:dperygina@jsu.edu)
- Larry Krannich, (2018) Department of Chemistry, University of Alabama at Birmingham, Birmingham, AL 35294, [krannich@uab.edu](mailto:krannich@uab.edu)
- George Cline, (2017) Department of Biology, Jacksonville State University, Jacksonville, AL 36265, [gcline@jsu.edu](mailto:gcline@jsu.edu)
- Jimmy Triplett, (2016) Department of Biology, Jacksonville State University, Jacksonville, AL 36265, [jtriplett@jsu.edu](mailto:jtriplett@jsu.edu)
- vacant

**Public Relations: (staggered 4-yr terms)**

- Brian Burnes, Chair (2018) [bburnes01@gmail.com](mailto:bburnes01@gmail.com)
- Ellen Buckner, (2019), Ida Moffett School of Nursing, Samford University, Birmingham, AL 35229 (205) 726-2092(w); (205) 810-9877(c), [ebuckne2@samford.edu](mailto:ebuckne2@samford.edu); [ebbuckner@gmail.com](mailto:ebbuckner@gmail.com).
- Ronald Hunsinger, (2017) 1070 Crest Road, Leeds, AL 35094, [rhunsin@samford.edu](mailto:rhunsin@samford.edu)

- Mickie Powell, (2016) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, [mpowell@uab.edu](mailto:mpowell@uab.edu)
- vacant

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

- Brian Burnes, Chair (2021) [bburnes01@gmail.com](mailto:bburnes01@gmail.com)
- Bruce Smith, (2018) Scott-Ritchey Research Center, Auburn University, Auburn, AL 36849, [smithbf@auburn.edu](mailto:smithbf@auburn.edu)
- Stephen Watts, (2018) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, [sawatts@uab.edu](mailto:sawatts@uab.edu)
- Afef Janen, (2021) Alabama A&M University, [afef.janen@gmail.com](mailto:afef.janen@gmail.com)
- Bernece Herbert, (2021) Department of Community and Regional Planning, Alabama A&M University, Normal, AL 35762 (256) 372-4988, [bernece.herbert@amm.edu](mailto:bernece.herbert@amm.edu)

**Resolutions:**

- Brian Burnes, Chair (2021) [bburnes01@gmail.com](mailto:bburnes01@gmail.com)

**Science and Public Policy:**

- Scott Brande, Chair, (2018) Department of Geology, University of Alabama at Birmingham, Birmingham, AL 35294, [sbrande@uab.edu](mailto:sbrande@uab.edu)
- Al Nichols (2019) Dept. of Chemistry and Geosciences, Jacksonville State Univ., Jacksonville, AL 36265 (334) 442-2346, [anichols@jsu.edu](mailto:anichols@jsu.edu).
- Boakai Robertson, (2019) Department of Biology, Alabama State University, Montgomery, AL 36101, [brobertson@alasu.edu](mailto:brobertson@alasu.edu)
- James Bradley, (2018) Department of Biological Sciences, Auburn University, Auburn, AL 36849, [bradljt@auburn.edu](mailto:bradljt@auburn.edu)

**Steering:**

- Ketia Shumaker, Department of Biology, University of West Alabama, Livingston, AL 35470, (205) 652-3406 [kshumaker@uwa.edu](mailto:kshumaker@uwa.edu).
- Akshaya Kumar (2018) Department of Physics, Tuskegee University, Tuskegee, AL 36088, (334) 727 8968 [akumar@mytu.tuskegee.edu](mailto:akumar@mytu.tuskegee.edu).
- Nixon Mwebi (2019), Department of Physical and Earth Sciences, Jacksonville State University, Jacksonville, AL 36265, (256) 782-5336, [nmwebi@jsu.edu](mailto:nmwebi@jsu.edu).
- Drew Hataway (2020), Dept. of Biology, Samford University, Birmingham, AL 35229, (205)-726-4190, [rahatawa@samford.edu](mailto:rahatawa@samford.edu)
- Bettina Riley, (2019) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, [briley@southalabama.edu](mailto:briley@southalabama.edu).
- Melia Fincher, (2019) Department of Biology, Samford University, 900 Lakeshore Dr., Birmingham, AL 35229, (205) 726-2928 [rmfinche@samford.edu](mailto:rmfinche@samford.edu)

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

- Prakash Sharma, Chair, (2018) Department of Physics, Tuskegee University, Tuskegee, AL 36088, [pcsharma@mytu.tuskegee.edu](mailto:pcsharma@mytu.tuskegee.edu)
- Anne Cusic, (2016) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, [mamcusic@gmail.com](mailto:mamcusic@gmail.com)
- Gene Byrd, (2017) Department of Physics, University of Alabama, Tuscaloosa, AL 35487, [byrd@possum.astr.ua.edu](mailto:byrd@possum.astr.ua.edu)
- Vacant

## 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

<i>NAME</i>	<i>TERM</i>
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. Jandebeur.....	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

## **HOSTS FOR FUTURE ALABAMA ACADEMY OF SCIENCE MEETINGS**

- 2020 – Alabama A&M University (February/March)
- 2021 – University of South Alabama
- 2022 – Need a Host
- 2023 – College of Health Sciences, Samford University

The Local Arrangements Manual for planning Academy annual meeting can be found on the Academy website: [www.alabamaacademyofscience.org](http://www.alabamaacademyofscience.org).

## **EXHIBITORS**

**The University of Alabama Press**



**NINETY-SEVENTH ANNUAL MEETING**

**of the**

**ALABAMA ACADEMY OF SCIENCE, INC.**



**JOINT MEETING**

**with the**

**ALABAMA JUNIOR ACADEMY OF SCIENCE**

**GORGAS COMPETITION AWARDS**









**February/March 2020  
Alabama A&M University**

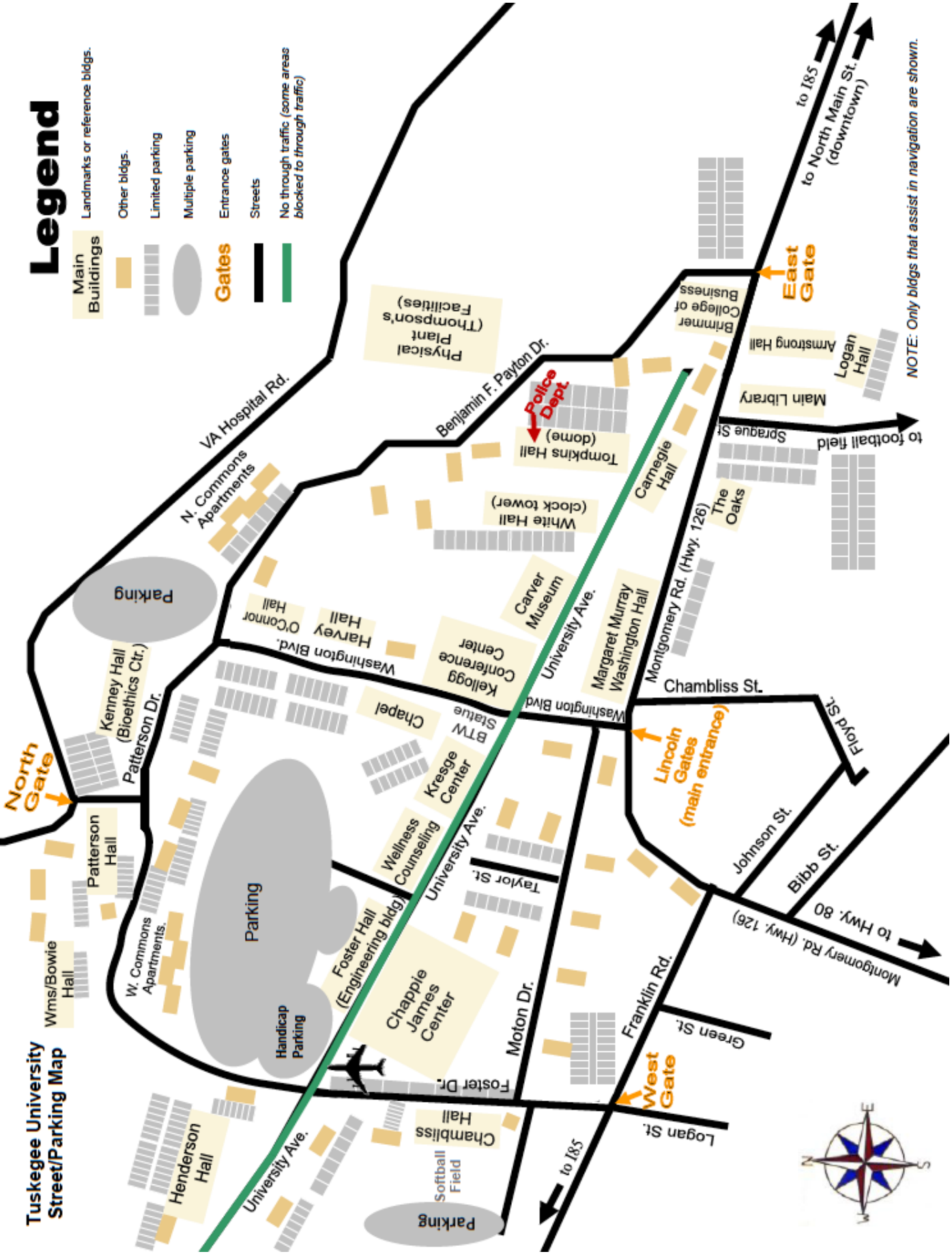
**Normal, AL**



# Tuskegee University Street/Parking Map

# Legend

-  Main Buildings
-  Landmarks or reference bldgs.
-  Other bldgs.
-  Limited parking
-  Multiple parking
-  Entrance gates
-  Streets
-  No through traffic (some areas blocked to through traffic)



NOTE: Only bldgs that assist in navigation are shown.