



**102nd Annual Meeting
of the Alabama Academy
of Science
February 27th & 28th
2025**

Troy Montgomery Campus

**Meeting Jointly with
Alabama Junior Academy
Of Science and the
Gorgas Scholarship
Competition**



ONE HUNDRED SECOND ANNUAL MEETING

of the

ALABAMA ACADEMY OF SCIENCE, INC.



Meeting Jointly With
ALABAMA JUNIOR ACADEMY OF SCIENCE
and
GORGAS SCHOLARSHIP COMPETITION PROGRAM BOOK
Feb 27th-28th, 2025

Troy University Montgomery Campus

www.alabamaacademyofscience.org

<http://alabamajunioracademyofscience.org>

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

LOCAL ARRANGEMENTS COMMITTEE

The Academy expresses its appreciation to Jacksonville State University, College of Arts, Humanities and Sciences, and the Local Arrangements Committee for planning and hosting this 101st Annual Meeting.

Chairpersons

Ken Roblee
Robert Vilardi

Facilities/Equipment Coordinator

Robert Vilardi

Food/ Hospitality

Danielle Hudson
Suzanne Lukjan
Kristen Williams

Promotions/Publicity

Heidi Beattie

GENERAL INFORMATION

- Registration badges will be required for admission to paper/poster scientific sessions (including all presenters), the Thursday evening Sci-Mix, and the banquet. Registration link: <https://www.alabamaacademyofscience.org/aasajas-registration-form/> Tickets for the Joint AJAS/AAS banquet may be purchased at the registration desk until all tickets are gone.
- At least one of the authors of a presented paper or poster must be a member of the Academy. Membership payment must be made at <http://www.alabamaacademyofscience.org/join-aas-2/> and is separate from registration payment.
- Computers will be provided where needed for presentations (PCs for Power Point).
- Parking is in the Troy University spaces only. Please display attached parking pass in your vehicle. **THE PERMIT IS ON THE LAST PAGE OF THE PROGRAM.**
- A map of the Troy Montgomery campus can be found on the link below. Please check the appropriate booklet section for location information. You may also access a campus map here: <https://www.troy.edu/about-us/montgomery-campus/campus-map.html>



[Montgomery Campus Map - Troy University](https://www.troy.edu/about-us/montgomery-campus/campus-map.html)

View and download TROY Montgomery Campus Map. This website uses cookies to collect information and to improve your browsing experience.
www.troy.edu

POSTER PRESENTATION INFORMATION

Alabama Academy of Science Poster set-up begins at 8:00 AM Thursday, February 27th in room 140 of Whitley Hall. **AAS Posters are available for viewing on Thursday from 8:30 AM until 4:15 PM according to the Sections' schedule below.** Each poster is allotted **up to 46"X46" of display space on mobile bulletin boards**, but 42" wide by 32" high would scale to normal dimensions and is the recommended size. These are hard boards, so tape must be used for poster display. Authors are encouraged to bring what they need. Authors for the section posters should be present for discussions with viewers and competition judges at the designated times below. **All posters should be removed at the conclusion of the session, and all must be removed by 4:15 PM.**

Gorgas Scholars and Junior Academy Posters may be set up beginning at 4:15 PM Thursday February 27nd room 140 of Whitley Hall for the Sci-Mix. On Friday, February 28th, Gorgas Posters should be set up at 7:30 AM. Each poster is allotted **up to 46"X46" of display space.**

Posters will be available for public viewing in the **Sci-Mix from 4:30 – 5:45 PM on Thursday (Sci-Mix)**, prior to the joint banquet.

POSTER VIEWING TIMES Whitley Hall 140

NOTE: Posters for AAS may be set up in **Whitley Hall 140** beginning at 8:00 AM, Thursday February 27nd. Locate posters by cards on poster boards indicating Section and Poster # in the program booklet.

All Senior Academy posters must be removed by 4:15 PM

Sci-Mix (AJAS and Gorgas) 4:30 – 5:45 PM Whitley Hall 140

ORAL PAPER PRESENTATION INFORMATION

All presentation rooms are equipped with monitor screens and computers. The technology in the library is open access, and available to users. The library staff asks that you do not plug in your own devices. For questions regarding the equipment, please ask the library staff. Presenters are asked to bring their **Windows compatible (PowerPoint, Word, etc.) presentations pre-loaded on a USB-A thumb drive.** If presenters log into their email to download presentations, their email will show up on the screen for all to see. All thumb drives are to be removed at the conclusion of the presentation.

PROGRAM OF THE ALABAMA ACADEMY OF SCIENCE

**Executive Committee Dinner
Wednesday, February 26th, 2025
6 pm Whitley Hall**

**AAS Awards Banquet
Thursday, February 27th, 2025
6:30 pm Gold Room, Whitley Hall
Keynote address follows banquet immediately**

**" The Bone Wars: FOXI3 Strikes Back in Prostate Cancer Metastasis"
Dr. Jacqueline Jones, Troy University**

**AAS Luncheon
Thursday, February 27th, 2025
Gold Room, Whitley Hall
12 pm
Speaker: Dr. Samiksha Raut
Broaden SABER session at AAS-2025**

PROGRAM OF THE ALABAMA ACADEMY OF SCIENCE
Thursday, February 27th, 2025
Troy Montgomery Campus, Whitley Hall

8:00 AM – 10 AM	Registration	Whitley Hall, Foyer
8:00 AM	Poster Set-Up (Morning Session)	Whitley Hall 140/141
11:45 AM	Take down	Whitley Hall 140/141
See Section for times	Academy of Science Program Paper Sessions Biological Sciences (Section I) STEM Education Chemistry (SECTION II) Meeting Jointly with Engineering And Computer Science (Section IV) Physics and Mathematics (Section III) Engineering and Computer Science (Section IV) Environmental And Earth Science (Section VIII) Health Sciences/Neurosciences (Section IX) Joint with Stem Education (Section VII)	MWHI 327 MWHI 329 MWHI 617 MWHI 329 MWHI 618 MWHI 318
See Section for times	Poster Viewing (Morning Session) Biological Sciences (Section I) Chemistry (Section II) Engineering and Computer Science (Section IV)	Whitley Hall 140/141
12:00 Noon	AAS Photo	Whitley Tine’s Alley
12:10-1:00 PM	Sack Lunch	Whitley Gold Room
12:15 – 12:45	Lunch Speaker	Whitley Gold Room
1:00 PM	Poster Set-Up (Afternoon Session); Take down by 4:15	Whitley Hall 140/141
1:15 – 4:15 PM	Academy of Science Program Paper Sessions Social Sciences (Section V.) and Anthropology 9 (Section VI)	MWHI 325
See Section for times	Poster Viewing (Afternoon Session) Physics and Mathematics (Section III) Environmental and Earth Science (Section VIII) Health Sciences (Section IX) & Stem Ed. (VII)	
4:15 PM	Business Meeting Update to the membership of the AAS by the Executive Director. Voting for Officers	MWHI 318
4:30 PM	AAS/AJAS Joint Annual Business Meeting	MWHI 318
4:30 – 5:45 PM	Sci-Mix/Viewing of AJAS & Gorgas Scholars’ Posters	Whitley Hall 140/141

6:30 PM

Joint AJAS/AAS Banquet

Whitley Hall Gold Room

Guest Speaker: Dr. Jacqueline Jones, Troy University

“The Bone Wars: FOXI3 Strikes Back in Prostate Cancer Metastasis”

Associate Professor and Chair

Department of Biological and Environmental Sciences

**PROGRAM OF THE ALABAMA JUNIOR ACADEMY OF
SCIENCE**

Thursday, February 27, 2025, Troy University at Montgomery

4:00 – 5:00 PM	Registration	Whitley Hall Foyer
4:30 – 5:45 PM	Poster Set-up and Orientation	Whitley Hall 140/141
5:00 –6:15 PM	“Sci Mix” Viewing of AJAS and Gorgas Scholars’ Posters	Whitley Hall 140/141
6:30 PM	Joint AJAS/AAS Banquet	Gold Room, Whitley Hall

Guest Speaker: Jacqueline Denise Jones PhD

ALABAMA JUNIOR ACADEMY OF SCIENCE

Friday, February 28th Location TBA

Troy University Montgomery

Breakfast on your own; hotel and town locations

7:00 AM	Registration	Whitley Hall Foyer
7:30 AM	Paper Reading Orientation	Whitley Gold Room
7:15 AM	ALL AJAS & Gorgas Judges Orientation	Whitley Tine’s Alley
8:00 AM	Paper Competition	
	Life Sciences	MWHI 327
	Physical Science Earth and Space Science	MWHI 617
	Engineering and Mathematics and Computer Science	MWHI 318
	Medicine and Health, Behavioral, and Social Sciences	MWHI 617
	Environmental Sciences	MWHI 326
8:00 AM	Prepare for AJAS 2025 (Mentoring Workshop for Future Competitions, Dr. Mark Jones, AJAS Director)	Whitley Tine’s Alley
11:30 AM	Elections and Business Meeting	Whitley Tine’s Alley
12:00 Noon	AJAS-Gorgas Group Photo	Whitley Tine’s Alley
12:00 Noon	Box Lunches	Whitley Gold Room
1:15 PM	AJAS Paper Competition Finals	MWHI 327
2:55 PM	AJAS Judges meeting	Whitley Tine’s Alley
3:15 PM	Awards Reception, Joint AJAS/Gorgas	Whitley Gold Room

GORGAS SCHOLARSHIP COMPETITION

Date: Thursday, February 27, 2025, Troy University Montgomery

4:00 – 5:00 PM	Registration	Whitley Hall Foyer
4:00 – 5:00 PM	Poster Set-up and Orientation	Whitley Hall 140/141
5:00 – 6:15 PM	“Sci Mix” Viewing of AJAS and Gorgas Scholars’ Posters	Whitley Hall 140/141
6:30 PM	Joint AJAS/AAS Banquet	Gold Room, Whitley Hall

Guest Speaker: Jacqueline Denise Jones PhD

Presentation of Alabama Academy of Science Honors and Awards
Presentation of Gorgas Finalists, Banquet Speaker

GORGAS SCHOLARSHIP COMPETITION

Date: Friday, February 28, 2025

Troy University Montgomery, Montgomery, AL

Breakfast on your own; hotel and town locations

7:00 AM	Registration.....	Whitley Hall Foyer
7:15 AM	Gorgas Judges Orientation	Whitley Tine’s Alley
7:00 – 8:45 AM	Set Up Science Exhibits/Display/Poster/Orientation.....	Whitley Hall 140/141
8:45 – 9:45 AM	Demonstrations for Judges	Whitley Hall 140/141
Note that the schedule will be arranged for competition in both AJAS and Gorgas if indicated.		
10:00 AM – Noon	Individual Interviews with Judges will be conducted at the poster presentation sites	Whitley Hall 140/141
12:00 Noon	AJAS-Gorgas Group Photo	Whitley Tine’s Alley
12:00 Noon	Lunch; Box Lunches	Whitley Gold Room
	Lunch Speaker	Whitley Gold Room
12:00 – 1:00 PM	Gorgas Judges Executive Session.....	Civic Room
1:15 PM	AJAS Paper Competition Finals	MWHI 327
2:55 PM	Remove Posters and Displays.....	Whitley Hall 140/141
3:15 PM	Awards Reception, Joint AJAS/Gorgas	Whitley Gold Room

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

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

ACADEMY SCIENTIFIC SESSIONS
SECTION I. BIOLOGICAL SCIENCES

Meet and Greet

Thursday Morning – 9:30 – 10:00 am
MWHI 327 Tenzing Ingty, Presiding
Meeting Jointly with STEM Education

SECTION I. BIOLOGICAL SCIENCES Paper Session I

Thursday Morning – 11:30 am– 3:40 pm
MWHI 327 Tenzing Ingty, Presiding
Meeting Jointly with STEM Education

1. 11:30 *P **A Unique Alabama Sulfide-Tolerant Worm, *Limnodrilus hoffmeisteri* Clade III, (Annelida: Clitellata: Tubificida: Naididae) Begins To Yield Its Extremophile Secrets: Remnants of an Ancient Adaptation Rather Than Convergent Evolution?** David Johnson, Samford University.
2. 11:50 *P **Unequal Distribution of microRNA Target Sites within 3'UTR: Implications for Evolutionary Genomics and Bench to Bedside Research.** Alexander Kofman, Troy University; Franziska Ahrend, National Institute of Diabetes and Digestive and Kidney Diseases; Walter Bell, The University of Alabama at Birmingham, Jiling Zhong, Troy University; Long Ma, Troy University; Vitaly Voloshin, Troy University; Siegfried Harden, Troy University.

BREAK FOR LUNCH 12:10 PM to 1:00 PM

3. 1:10 *G **Human breast milk-derived exosomes attenuate lipopolysaccharide-induced activation in microglia.** Oluwatomi Akinduro, University of Alabama at Birmingham; Sanjay Kumar, University of Alabama at Birmingham; Yuechan Chen, University of Alabama at Birmingham, Quamarul Hassan, University of Alabama at Birmingham; Brian Sims, University of Alabama at Birmingham.
4. 1:30 *U **Effects of diet types on *Daphnia pulex* longevity and reproduction.** Ola Lutfi, University of Alabama at Birmingham; Victoria Gibbs, University of Alabama at Birmingham.
5. 1:50 *u **Mixed methods and murky microbiomes: a literature review of current microbial profiles and associated challenges in sea urchin studies.** Skyler Oliver, University of Alabama at Birmingham; Michael Williams, University of Alabama at Birmingham; Jeri Brandom, University of Alabama at Birmingham, Asim Bej, University of Alabama at Birmingham; Stephen Watts, University of Alabama at Birmingham.
6. 2:10 *G **Evaluation of Body Composition in Response to Single Cell Protein in Zebrafish.** M. Gibson Attar, University of Alabama at Birmingham; Jami de Jesus, University of Alabama at Birmingham; Jonathan Flowers, University of Alabama at Birmingham, Robert Barry, University of Alabama at Birmingham; Michael Williams, University of Alabama at Birmingham; Jeri Brandom, University of Alabama at Birmingham; Stephen Watts, University of Alabama at Birmingham.
7. 2:30 *U **Endolysins as Natural Antimicrobial Agents for Mitigating *Listeria monocytogenes* to Enhance Food Safety.** Nikhat Sultana, Tuskegee University; Weaam Awad, Tuskegee University; David Donovan, Morgan State University, Archana Sharma, Tuskegee University.

8. 2:50 *P **Dopant Pyroelectric Coefficient Enhancements in Semi-crystalline Polyvinylidene Difluoride (PDVF) Thin Films and Its Importance for Sensor Science Applications and Technologies.** Matthew Edwards, Alabama A&M University; Andrew Walter, Brookhaven National Laboratory.
9. 3:00 *U **Evaluating Bystander Ability to Identify and Manage Out-of-Hospital Cardiac Arrest.** Suhas Patil, University of South Alabama; Matt Howard, South Alabama; Will Montalban, South Alabama, Jason Brooks, South Alabama; Nancy Rice, South Alabama.
10. 3:20 *P **Welcome to the Biology Café: A Social Learning Space.** Mickie Powell, University of Alabama at Birmingham.

SECTION I. BIOLOGICAL SCIENCES Poster Session I
Thursday 10:00 to 11:20 AM – Whitley 140/141

1. ***U Talking Turtles.** Ethan Jones, Troy University; Fisher Parrish, Troy University; Elizabeth Kobs, Troy University, Alvin Diamond, Troy University.
2. ***U Antibiotic activity of whole-cell and cell-free culture supernatant of a *Paenibacillus* species.** Cameren Cunningham, Auburn University in Montgomery; Adrian Lewis, Auburn University at Montgomery; Jecayla Howard, Auburn University at Montgomery, Madison Foshee, Auburn University at Montgomery; Benedict Okeke, Auburn University at Montgomery.
3. ***U An Ancient Sulfide-Binding Free-Cysteine Motif Is Present in Three Extracellular Globin Genes in the Unique, Sulfide-Tolerant *Limnodrilus hoffmeisteri* (Annelida: Clitellata: Tubificida: Naididae), Blount Springs, AL, But Is Absent for One Gene in Freshwat.** Kayleigh Simpson, Samford University; Emma Thompson, Samford University; Shiloh Nokes, Samford University, Hannah Sanavi, Samford University.
4. ***U Investigate the effect of mutagenesis of the N-terminal residues on the Thermal stability of LDH.** Kayla Williams, Jacksonville State University; Sharifah Albraiki, Jacksonville State University.
5. ***U Lowering the Barriers to Automated Cell Biology Experiments.** Scotland Cooper, University of South Alabama; Dhananjay Tambe, University of South Alabama.
6. ***U Molecular Characterization of Lactic Acid Bacteria and Yeast from Local Fruits and Vegetables.** Madison Foshee, Auburn University in Montgomery; Madison Foshee, Auburn University in Montgomery; Adrian Lewis, Auburn University in Montgomery, Tikayla Barker, Auburn University in Montgomery; Jecayla Howard, Auburn University in Montgomery; Cameren Cunningham, Auburn University at Montgomery; Benedict Okeke, Auburn University in Montgomery, Kayla Stojak, Auburn University at Montgomery.
7. ***U Combination of HDAC and FYN inhibitors in Synovial Sarcoma Treatment.** Gavin Anchondo, Jacksonville State University; Gavin Anchondo, Jacksonville State University; Le Su, Jacksonville State University.
8. ***U Comfort expressing identity among sexual and gender minority adults in the Deep South.** Taylor Miller, University of Alabama at Birmingham; Riley Luthin.
9. ***G Melt-curve Analysis as a Tool for Bacterial Community Profiling.** Ryan Standaert, University of Alabama at Birmingham; James Morris, University of Alabama at Birmingham.
10. ***U Role of Calcium sensitive RabGAPs in endocytic trafficking pathway.** Amelia Herron, University of Alabama at Birmingham; Zhiyong Liu, University of Alabama at Birmingham; Heng Huang, University of Alabama at Birmingham, Jerry Law, University of Alabama at Birmingham.
11. ***G Boosting Mobility: Impact of *Lactobacillus plantarum* and Its Byproducts in a Fruit Fly Model of Alzheimer's Disease.** Yousef Addassi, Samford University; Harrison Taylor, Samford University; Alexa McDermott, Samford University, Maddi Roberts, Samford University; Patricia Jumbo, Samford University; Brad Bennett, Samford University.
12. ***G Acoustic Survey of Bat Community on Fort Moore.** Kaitlin Connelly, Auburn University; Jean Fantle-Lepczyk, Auburn University; Robert Gitzen, Auburn University.
13. ***U Changes in Synaptic Tau Levels and Dendritic Spine Morphology in Alzheimer's Disease.** Juliana Eberhardt, University of Alabama at Birmingham.

14. ***G Engineering of For-Profit Drought Tolerant Crops; the circadian rhythmic overexpression of RD29s In transgenic plants.** Adhikari Ashna, Auburn University; Simrandeep Kaur, Auburn University; Sang-Wook Park, Auburn University.
15. ***U Type 4D cAMP-Phosphodiesterase (PDE4D) as a Novel Therapeutic Agent in Obesity.** Zachary Chancey, University of South Alabama; Jackson Miller, University of South Alabama; Daniel Irelan, University of South Alabama, Abigail Boyd Boyd, University of South Alabama; Edward Fielder, University of South Alabama; Will McDonald, University of South Alabama; Wito Richter, University of South Alabama.
16. ***U Investigating the Antimicrobial Potential of Lactobacillus plantarum Postbiotics Against Enteric Bacteria.** Maddi Roberts, Samford University; Alexa McDermott, Samford University; Patricia Jumbo-Lucioni, Samford University, Brad Bennett, Samford University Samford University.
17. ***P The Nucleotide Content of the 3'UTR in Human mRNAs.** Alexander Kofman, Morgan Seymour, Julianna Rivero, Kenaz Knowles, Brayden Varnado, Mary Katherine Swanson Lee, Loren Belle Evans, Troy University.
18. ***U Heart Rate Measurement of Daphnia pulex in Lifespan Studies.** Gabriel Coleman, University of Alabama at Birmingham; Victoria Gibbs, University of Alabama at Birmingham.
19. ***U Examining the Relationship Between Oxygen Uptake Rates and Food Diets in the Water Flea, Daphnia pulex.** Rebecca Iglesias, University of Alabama at Birmingham; Victoria Gibbs, University of Alabama at Birmingham.
20. ***U The Impact of Urbanization on Microbial Communities Along Shades Creek.** Lily Flowers, Samford University; Harvey Sophia, Samford University; Drace Kevin, Samford University.
21. ***U Analysis of Local Bacteria in Blount Springs, AL.** Michael Mellinger, Samford University; Kevin Drace, Samford University.
22. ***U Weevil infestation patterns follow mastings and drought in six oak species in central Alabama.** Hayden Ledford, Samford University; Arabella Hall, Samford University; Caroline Altman, Samford University, Trustin Northington, Samford University; Bella Spry, Samford University; Ryan Taylor, Samford University; Emma Thompson, Samford University.
23. ***U Investigating the Role of WNT Signaling in Morphogenesis and Mucin Secretion in Intestinal Crypt-Villi Formation Using Caco-2 Cells.** Osionela Ogiogwa, Alabama A&M University; Nathaniel Burmas, University of California, Irvine.
24. ***G Bioinformatics Analysis of POGZ Variants in Relation to White-Sutton Syndrome.** Hannah Rollins, Jacksonville State University; Lauryn Staples, Jacksonville State University; Jenna Ridlen, Jacksonville State University.
25. ***U Genomic Analysis of Microbial Samples from Mars 2020 Rover Spacecraft.** Winner Igbogbo, Alabama A&M University.

SECTION II. CHEMISTRY Paper Session MWHI 329
Meeting Jointly with ENGINEERING AND COMPUTER SCIENCE
Dr. Humayun Kabir & Sharifah Albraik, Presiding
Thursday Morning: 8:00 am -10:00 am

1. 8:00 *P **Stimulated Raman Photothermal Imaging with Femtosecond Pulses.** Clyde Varner II, Alabama A&M University Alabama A&M University.

SECTION II. BUSINESS MEETING [Elect a Vice-Chair, term ending 2024-25]

SECTION II. CHEMISTRY Poster Session Whitley 140/141
Thursday Morning: 11:00 am -12:00 pm

1. **Effect of linker defects (open sites) of Metal organic frameworks on Chromium (VI) adsorption.** Oluwasegun Raji, University of Alabama in Huntsville; Jie Ling, University of Alabama, Huntsville; Urvi Mysore, James Clemens High school.
2. **Multilayer hydrogel microcubes: Effects of templating particle morphology on cubic hydrogel properties.** Daniel Inman, University of Alabama at Birmingham; Veronika Kozlovskaya, University of Alabama at Birmingham; Pavel Nikishau, University of Alabama at Birmingham; Sarah Nealy, University of Alabama at Birmingham; Jongwha Oh, University of Alabama at Birmingham; Claudiu Lungu, University of Alabama at Birmingham; Eugenia Kharlampieva, University of Alabama at Birmingham.
3. **Controlled synthesis and pH-sensitive complexation of poly(methacrylic acid) polyampholytes.** Pavel Nikishau, University of Alabama at Birmingham; Veronika Kozlovskaya, University of Alabama at Birmingham; Eugenia Kharlampieva, University of Alabama at Birmingham University of Alabama at Birmingham.
4. **Development of Latent Fingermarks on Synthetic Papers and Medical Sponges Using Ninhydrin and 1,8-Diazafluoren-9-one and their Comparison.** Jules Guei, Alabama A&M University; Jules Guei, Alabama A&M University.
5. **Visible Pump Terahertz Probe Measurements of Embedded Polymer Conductivity in Organic Matrices.** Clyde Varner II, Alabama A&M University; Edwin Heilweil, NIST Alabama A&M University.
6. **XPS Determination of Defect and Vacancy Concentration in Perovskite doped PVDF:PVA Composite Film.** Clyde Varner II, Alabama A&M University; Padmaja Guggilla, Alabama A&M University; Matthew Edwards, Alabama A&M University.
7. **Targeted Brain-Selective Nicotinic Receptor Modulation: Investigating Epibatidine Derivatives with Methyl and Butyl Groups for Neural Specificity.** Ashlyn Smith, Jacksonville State University; Sydney Heidrich, Jacksonville State University; Stephen Slauson, Jacksonville State University.
8. **Mirror Mirror On the Wall Who is The Most Active of Them All.** Caleb Lopansri, University of South Alabama; David Forbes, University of South Alabama; Mary Helene Marmande, University of South Alabama; Bailey Baxter, University of South Alabama.

9. **Synthesis of effective chain extender for waste polyethylene terephthalate (PET) and its effect on intrinsic viscosity (IV) recovery.** Joseph Eggemeyer, Troy University; Mojtaba Enayati, Troy University.
10. **From Wells to Cells: Advancing Selective PP5 Inhibitors.** Mary Helene Marmande, University of South Alabama; Bailey Baxter; Caleb Lopansri; Lucy Orr; Richard Honkanen; David Forbes.
11. **Fluorescing Tetrapyridine Hydrogels: From Weak to Peak Basicity.** Hannah Lawley, University of South Alabama.
12. **Synthesis and Characterization of Cobaloxime Variants for Fluorescence Quenching Applications.** Victoria Bamigboye, Jacksonville State University; Anusree Mukherjee.
13. **Exploration of transition metal complexes for use in photoinduced electron transfer (PET) pathways.** Hunter Ballard, Jacksonville State University; Victoria Bamigboye, Jacksonville State University; Anusree Mukherjee, Jacksonville State University.
14. **Investigate the effect of mutagenesis of the N-terminal residues on the Thermal stability of LDH.** Kayla Williams and Sharifah Albraiki, Jacksonville State University.
15. ***U Brick by Brick: A Biological Lego Set.** Lucy Orr, University of South Alabama.
16. ***U Small Particles, Big Impact: Reengineering Lipid-Like Nanoparticle Synthesis.** Bailey Baxter, University of South Alabama.

**U or *G* Denotes presentation entered in student competition as an undergraduate or graduate student, respectively. **P* Denotes a professional scientist presentation.

SECTION III. PHYSICS AND MATHEMATICS Paper Session

Thursday Morning 8:20 AM – 10:00 A.M.

MWHI 617

Presiding: Byunghoon Lee, Padmaja Guggilla

1. **8:20 *g Growth and Characterization of Cesium Hafnium Chloride Scintillator from Melt.** Elijah Adedeji, Alabama A&M University; Angel Reeder, Alabama A&M University; Stephen Babalola, Alabama A&M University.
2. **8:40 *g Development of Dielectric Coating for Perovskite Doped Organic Solar cells.** Angela Davis, Alabama A&M University; Yu Lei, University of Alabama in Huntsville; Edwin Heilweil, NIST; Padmaja Guggilla, Alabama A&M University.
3. **9:20 *p New Insights into Electron-Positron Annihilation and Pair Production.** Tianxi Zhang, Alabama A&M University.
4. **9:40 *u Constructing a Micro Raman Spectrometer to Identify Gemstone Inclusion.** Jackson Cornelison, University of North Alabama, Brian Thompson. University of North Alabama.
5. **10:00 *p Dopant Pyroelectric Coefficient Enhancements in Semi-crystalline polyvinylidene Difluoride (PDVF) Thin Films and Their Importance for Sensor Science Applications and Technologies.** Matthew Edwards, Alabama A&M University; Padmaja Guggilla, Alabama A&M University; Andrew Walter, Brookhaven National Laboratory.

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

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

Thursday Morning 10:00 – 10:30 A.M.

MWHI 617

Presiding: Byunghoon Lee, Padmaja Guggilla

SECTION III – PHYSICS AND MATHEMATICS Poster Session

Thursday Afternoon – Whitley 140/141

Posters Section 1:00 – 2:30. All Poster Presenters Are To Be Present For Their Presentation(s) From 1:00 – 2:30. Posters Are To Be Removed at 2:30 p.m.

Presiding: Byunghoon Lee, Padmaja Guggilla

1. ***P A Geometrical Measure of Batmanship in Test Cricket.** Arjun Tan, Alabama A&M University.
2. ***P Unearthing the Tetrahedral Shape of the Earth and Locating its Four Vertices.** Arjun Tan, Alabama A&M University.
3. ***P Uniqueness of Squared Rectangles.** Youngsoo Kim, Tuskegee University; Young Kim, Tuskegee University; Byunghoon Lee, Tuskegee University.
4. ***G Process Development for Optically Gated Diamond Transistor.** Angela Davis, Alabama A&M University; Caitlin A. Chapin, LLNL; Clint Frye, LLNL, Sara Harrison, LLNL; Bikramjit Chatterjee, LLNL; Qinghui Shao, LLNL; Lars Voss, LLNL.

5. ***U Data Analyses of LEGEND Experiment and Model Beyond the Standard for Neutrinoless Double Beta Decays.** Pablo Ruiz Crespo, Alabama A&M University; Ian Guinn, ORNL; Tianxi Zhang, AAMU, Harisree Krishnamoorthy, ORNL.
6. ***U Data Analyses of LEGEND Experiment and Model Beyond the Standard for Neutrinoless Double Beta Decays.** Pablo Ruiz Crespo, Alabama A&M University; Ian Guinn, ORNL; Harisree Krishnamoorthy, ORNL, Tianxi Zhang, AAMU.
7. ***P Photonic crystals for light sail space propulsion..** Dimitar Dimitrov, Tuskegee University; Elijah Taylor-Harris, Tuskegee University.
8. ***U Quantum Unruh Radiation and Performances of Superconducting Qubits.** De'Angelo Bailey, Alabama A&M University; Tianxi Zhang, Alabama A&M University.
9. ***U Characterizing Cesium Hafnium Chloride through Photoluminescence Analysis.** Nehemiah Ibi-Eletta, Alabama A&M University; IBRAHIM BELLO, Alabama A&M University; Oluseyi Babalola, Alabama A&M University, Elijah Adedeji, Alabama A&M University.
10. ***G Quantum Unruh Effect and Radiation of Black Holes.** Hannah Sukarloo, Alabama A&M University; Tianxi Zhang.
11. ***G First-Principles Electronic Calculations of Monolayer 2D TMD Materials: MoS₂, MoSe₂, WSe₂, WS₂.** Elijah Adedeji, Alabama A&M University; Jingsong Huang, Centre for Nanophase Material Science (CNMS); Eva Zarkadoula, Centre for Nanophase Material Science (CNMS), Ryan Morelock, Centre for Nanophase Material Science (CNMS); Ganesh Panchapakesan, Centre for Nanophase Material Science (CNMS).
12. ***U Analysis of Hurricane Formation using DMD.** Goodluck Badewole, Alabama A&M University.
13. ***U Period Change Study of CC And.** Charlie Hendrix, University of North Alabama; Mel Blake.
14. ***U Progress Towards Studying asteroids, Impacts and Occultations at UNA Observatory.** Seth Kemble, University of North Alabama; Mel Blake.
15. ***U Period Change Study of CC And.** Charlie Hendrix, University of North Alabama; Mel Blake.
16. ***U Photoluminescence Spectroscopy Study of Cesium Hafnium Chloride (CHC) Crystal.** Ibrahim Bello, Alabama A&M University; Natarcia Chisholm, Alabama A&M University; Elijah Adedeji, Alabama A&M University, Nehemiah Ibi-Eletta, Alabama A&M University; Stephen Babalola, Alabama A&M University; Marius Schamschula, Alabama A&M University.
17. ***P Study of Luminescence and Transmission Properties of Er³⁺ ions in doped Boric – Lead Glass..** Dimitar Dimitrov, Tuskegee University; Joshua Hall, Tuskegee University; Akshaya Kumar, Tuskegee University.
18. ***U Measurements of the Higgs Boson.** Ruvarashe Nyabando, Alabama A&M University.
19. ***U Particle-in-cell Simulation of Relativistic Jets.** Tatenda Joseph, Alabama A&M University.
20. ***G Process Parameter Optimization of Recycled SS316L Powder Based Additive Manufacturing Process for Enhancing Fatigue Strength Using Machine Learning.** Ajibike Farounbi, Alabama A&M University; Padmaja Guggilla, Alabama A&M University; Judith Schneider, University of Alabama Huntsville.
21. ***G Response surface methodology for optimization of poly acrylonitrile (PAN) nanoparticles.** Karishma Gupta, Alabama A&M University; Oluseyi Babalola, Alabama A&M University; Padmaja Guggilla, Alabama A&M University.
22. ***G Plasma/Ozone Induced PolyNaSS Graft-Polymerization onto PEEK Biomaterial for Bio-integrated Orthopedic Implants.** Chandrima Karthik, University Of Alabama At Birmingham; Renjith Rajan Pillai, University Of Alabama At Birmingham; Gerardo Hernandez Moreno,

University Of Alabama At Birmingham, Namasivayam Ambalvanan, University Of Alabama At Birmingham; Prabaha Sikder, Cleveland State University; Vinoy Thomas, University Of Alabama At Birmingham.

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SECTION IV. ENGINEERING AND COMPUTER SCIENCE Paper Session

Meeting Jointly with Chemistry
Thursday Afternoon – MWHI 329
Ravi Gollapalli & Dr. Dony Dongqing, Presiding
8:00 am – 10:00 am

1. 8:00 *P **Stimulated Raman Photothermal Imaging with Femtosecond Pulses.** Clyde Varner II, Alabama A&M University Alabama A&M University.
2. 8:20 *G **Plasma/Ozone Induced PolyNaSS Graft-Polymerization onto PEEK Biomaterial for Bio-integrated Orthopedic Implants.** Chandrima Karthik, University Of Alabama At Birmingham; Renjith Rajan Pillai, University Of Alabama At Birmingham; Gerardo Hernandez Moreno, University Of Alabama At Birmingham, Namasivayam Ambalvanan, University Of Alabama At Birmingham; Prabaha Sikder, Cleavland State University; Vinoy Thomas, University Of Alabama At Birmingham.
3. 8:40 *U **Design of a solar PV plant for Florence, Alabama.** Wael Al-Kouz, University of North Alabama; Hannah Embrey, University of North Alabama; Alberto Boretti, , Wael Al-Kouz, University of North Alabama.
4. 9:00 *G **A machine learning-assisted approach for the Prediction of 3D Printing Parameters with their scaffold design for Periodontal Tissue Engineering Scaffolds.** Rakesh Pemmada, University of Alabama at Birmingham.
5. 9:20 *U **Assembly of Potent and Selective Inhibitors of PP5.** Bailey Baxter, University of South Alabama.
6. 9:40 *U **Diversifying Derivatives: Exploring New Functionalities of Lipid-like Nanoparticles.** Mary Helene Marmande, University of South Alabama; Bailey Baxter, University of South Alabama; David Forbes, University of South Alabama.

SECTION IV BUSINESS MEETING 9:40 AM

[Elect Vice-Chair with term ending 2024-25]

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

SECTION IV. Engineering and Computer Science Poster Session Thursday Morning – Whitley 140/141 10:30am to 12:00 am

1. *P **The development and evaluation of chitosan-coated enzyme magnetic nanoparticles for cellulose hydrolysis.** Heejoon Park, University of North Alabama; Patrick Johnson, Iowa State University.
2. *G **Plasma/Ozone Induced PolyNaSS Graft-Polymerization onto PEEK Biomaterial for Bio-integrated Orthopedic Implants.** Chandrima Karthik, University Of Alabama At Birmingham; Renjith Rajan Pillai, University Of Alabama At Birmimngham; Gerardo Hernandez Moreno, University Of Alabama At Birmimngham, Namasivayam Ambalavanan, University Of Alabama At Birmimngham; Prabaha Sikder, Vinoy Thomas, University Of Alabama At Birmimngham; , .

3. ***U Prototyping A Spatial Atomic Layer Deposition (Ald) System Using A Gear Drive System And Programmable Logic Controller (Plc).** Owen Ellenburg, University of North Alabama; Owen Ellenburg, UNA; Emmanuel Soeren Koum, Ngando, Tegra Kabue, Mubikayi; Nate, Finley; Ryota , Miyazaki; Dongqing , Pan.
4. ***P Performance Evaluation of Multi-foci Information from Fresnel Zone Plate.** Nagi Buaossa, University of North Alabama; Monish Chatterjee, University of Dayton.
5. ***U Implementation of Fast Fourier Transform (FFT) and Discrete Fourier Transform (DFT) in Noise Filtration using MATLAB.** Mauyon Wusu, Alabama A&M University; Alak Bandyopadhyay, Alabama A&M University.
6. ***G Characterization of biomaterials derived from Industrial hemp Fibers.** Queen Abbah, Tuskegee University; Emily Amenyenu, Tuskegee University; Desmond Mortley, Tuskegee University, Byungjin Min, Tuskegee University.
7. ***U Metal-Doped Semiconductor Plasmonic Optoelectronic Switch.** Mayra Schliemann, Troy University; Raj Vinnakota, Troy University.
8. ***U Flexible Silver/Polyaniline Schottky Diodes on Polyethylene based Elastomer: A Sustainable Approach for Advanced Electronics.** David Summerlin, Troy University; David Summerlin, Troy University; Raj Vinnakota, Troy University, Arun Ghosh, Troy University; Shaimum Shahriar, Troy University.

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SECTION V. SOCIAL SCIENCES and SECTION VI. ANTHROPOLOGY Paper Session
Thursday Afternoon – MWHI 325
Dr. Mohit Anand & Dr. Cynthia Lovelace, Presiding Social Sciences
Jordan Kiper & Camille Westmont Anthropology
1:00 PM

1. 1:00 ***G Do Variations of Cognitive Empathy Influence Susceptibility to the Intentionality Bias?** David Willard, University of South Alabama; Joshua Foster, University of South Alabama.
2. 1:20 ***P Science of Literacy Simple View of Reading : Does it improve reading achievement work for struggling learners?** Dana Wilchcombe, Alabama A&M University.
3. 1:40 ***U Comfort expressing identity among sexual and gender minority adults in the Deep South.** Taylor Miller, Riley Luthin, University of Alabama at Birmingham.
4. 2:00 ***G The Role of Narcissism in Eyewitness Misidentification.** Haley Hearn, University of South Alabama; Andrew Elmore, University of South Alabama; Isabella Palmieri, University of South Alabama, Joelle Zoghby, University of South Alabama; Joshua Foster, University of South Alabama.
5. 2:20 ***G Mortal Imperatives: How Death Doulas Guide Others Through the End of Life.** Amy Shields, University of Alabama at Birmingham.
6. 2:40 ***U Agricultural Crisis: Meeting food demand utilizing Indigenous knowledge.** Julie Gonzalez, University of Alabama at Birmingham.
7. 3:00 ***P Foodways from the Roman Harbor Vada Volaterrana.** Stephen B Carmody, Troy University; Gabrielle Purcell, Troy University; Madisen James, Troy University, Gage Allen, Troy University.

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SECTION V BUSINESS MEETING [Elect a Vice-Chair, term ending 2024-25]
SECTION VI BUSINESS MEETING [Elect a Vice-Chair, term ending 2024-25]

SECTION VIII. ENVIRONMENTAL AND EARTH SCIENCE Paper Session
Thursday Morning –MWHI 618
Shaoyang Liu & Mojtaba Enayati , Presiding
9:00 AM

1. 9:00 **An Overview of the Creation of the Oyster Habitat Suitability Model for All Tidal Shorelines in Choctawhatchee Bay, Florida.** Chris Boyd, Troy University; Xutong Niu, Troy University; Rose Horn, St. Andrew and St. Joseph Bays Estuary Program.
2. 9:20 ***u AI-Assisted Modeling for Predicting Polyethylene Contamination Level in Recycled Polypropylene with Raman Spectrometry.** John Long, Troy University; Caleb Chatfield, Troy University; Shaoyang Liu, Troy University.
3. 9:40 **The Alabama Department of Environmental Management Nonpoint Source Grant.** Jennifer Barker, Alabama Department of Environmental Management.

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SECTION VIII. BUSINESS MEETING [Elect a Vice-Chair, term ending 2024-25]

SECTION VIII. ENVIRONMENTAL AND EARTH SCIENCE Poster Session
Thursday Afternoon – WHITLEY 140/141
1:00 – 3:00 PM

1. **The Necessity of Provenance: Analysis of a peculiar geological specimen from the Collections of the University of North Alabama.** Gregory Buckley, University of North Alabama; Mason Curb, University of North Alabama.
2. ***u Exploring Oceanic Garbage Patches: Utilizing Dynamic Mode Decomposition for Insight.** Moyinoluwa Adelowo, Alabama A&M University.
3. ***u Investigating the Predatory Behavior of the Bumblebee Assassin Snail (*Anentome helena*) and the Potential Ecological Implications in Invaded Freshwater Systems.** Kathleen Madden, Jacksonville State University; Lori Tolley-Jordan, Jacksonville State University.
4. ***u Fish and Crayfish Occurrence in Degraded Streams at the Troy University Arboretum.** Sophie Richards, Troy University; Jonathan Miller, Troy University.
5. ***u Effects of Environmental Conditions on the Growth of Microorganisms in Galbraith Mill Creek.** Ashton McCullar, Faulkner University; Landon Hunton, Faulkner University; Uduak Afangideh, Faulkner University.
6. ***u Effects of Different Water Treatments on Growth of Microorganisms in Gailbraith Mill Creek Watershed.** Daisy Neil Sapp, Faulkner University; Myles Boyd, Faulkner University; Uduak Afangideh, Faulkner University.
7. ***u Is Spring Break Coming Early? Effects of Climate Change on Alabama's Native Plant Phenology.** Kelly Pruitt, Jacksonville State University; Tenzing Ingty, Jacksonville State University.

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**SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Paper Session AM
Joint with Section VII STEM EDUCATION**

**Paper Session Thursday Morning – MWHI 318
Mark Caulkins and Jean-Pierre Ardit, Presiding Health Sciences
Stephanie Varghese, Presiding STEM EDUCATION
9:00 AM**

1. ***U Evaluating Bystander Ability to Identify and Manage Out-of-Hospital Cardiac Arrest.** Suhas Patil, University of South Alabama; Matt Howard, South Alabama; Will Montalban, South Alabama, Jason Brooks, South Alabama; Nancy Rice, South Alabama.
2. ***P Cadaver Anomalies in *G Cadaver Dissection- 2025.** Mark Caulkins, Samford University; Nicholas Washmuth, Samford; Scogin William, Samford.
3. ***P Use of Transcranial Direct Current Stimulation for Improvement of Symptoms of Depression: Focus on Improving Verbal Fluency.** Jack Shelley-Tremblay, University of South Alabama; Celeste Reames, Reames. University of South Alabama.
4. ***P Surgical Implants Found in Student Cadaver Dissection-2025.** Caulkins Mark, Samford University; Nicholas Washmuth, Samford; Scogin William, Samford.
5. ***P Does Instructor- generated resources impact student academic performance? A case study in a Non-Majors Biology Course.** Uduak Afangideh, Faulkner University.
6. ***G Evaluating the Effectiveness of an Integrative Education Implementation in Biology Classrooms on Increasing Student Sense of Belonging.** Christel Whitehead, University of Alabama at Birmingham.

**SECTION IX BUSINESS MEETING [Elect Chair with term ending 2024-25]
SECTION VII BUSINESS MEETING [Elect Chair with term ending 2024-25]**

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SECTION IX. HEALTH SCIENCES/NEUROSCIENCES Poster Session PM

Joint with

Joint with Section VII STEM EDUCATION

Poster Session Thursday Afternoon– Whitley 140/141

1:00 – 3:00

1. ***U Comparative Analysis of Two Traditional Antibiotics on bacterial isolates from Galbraith Mill Creek Watershed.** Garrett Orr, Faulkner University; Avery Vasquez, Faulkner University; Uduak Afangideh, Faulkner University.
2. ***U Health Outcomes among Sexual and Gender Minority Adults in the Deep South.** Penelope Robin, University of Alabama at Birmingham.
3. ***U Inhibition of cAMP-phosphodiesterase 4 (PDE4) protects from lipopolysaccharide-induced salivary gland dysfunction in mice.** Jackson Miller, University of South Alabama; Abigail Boyd, University of South Alabama; Wito Richter, University of South Alabama, Zach Chancey, University of South Alabama; Edward Fiedler, University of South Alabama; Daniel Irelan, University of South Alabama.
4. ***P Axillary Nerve Innervation of Long Head of Triceps in Student Dissected Cadaver.** Caulkins Mark, Samford University; Fiona Buttrum, Samford; Dasha Cherepovitsky, Samford, Emma Grace Clark, Samford; Victoria Cook, Samford; Anna Virginia Fagan, Samford; Rebecca Howard, Samford.
5. ***P Epidural Hematoma with Craniotomy.** Mark Caulkins, Samford University; Lauren Elliott, Samford; Kayla Hill, Samford, Hope Jiles, Samford; Tyler Reason, Samford; Olivia Trafazoli, Samford.
6. ***P Polycystic Kidney and Forearm Arteriovenous Fistula in Student Dissected Cadaver.** Mark Caulkins, Samford University; Susanne Boulter, Samford; Carly Dyer, Samford, Sara Janss, Samford; Julia Stoner, Samford; Sara Kate Thomas, Samford; Brad Cantley, Samford.
7. ***P Left Frontal-Temporal Craniotomy, Healed with Three Small Plates.** Caulkins Mark, Samford University; Elizabeth Bradley, Samford; Lindsey Fisher, Samford, Jonathan Greganti, Samford; Lauren Pritchett, Samford.
8. ***P Career Readiness Book Club Enhances Student Success for Community College Transfer Students.** Malia Fincher, Samford University; Greg Kawell, Samford University; Betsy Dobbins, Samford University, Randolph Horn, Samford University.
9. ***U A comparison of prenatal care in United States and Germany, Italy, Switzerland.** Elizabeth McMahan, Troy University; Janet Gaston, Troy University.
10. ***U Evaluating Potential for Three Antibiotic-resistant Bacteria to Contaminate Thermoplastic Materials Used to Construct Externally Worn Patient Medical Devices.** Dev Mehta, University of South Alabama; Terrence Ravine, University of South Alabama; Catherine Brock, University of South Alabama.
11. ***P Ethical Issues Surrounding Digital Health Technologies.** Shuntele Burns, Alabama State University.

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SECTION X. BIOETHICS AND HISTORY AND PHILOSOPHY OF SCIENCE

Paper Session

1. No Entries
- 3:45 BUSINESS MEETING: Elect Section Chair / Vice-Chair 2023-24

SECTION X. BIOETHICS AND HISTORY AND PHILOSOPHY OF SCIENCE

Poster Session

Thursday Afternoon – 1103A/B

1. MEETING JOINTLY WITH SECTION IX. HEALTH SCIENCES/ NEUROSCIENCES

Special Sections

AJAS & Gorgas Student Sections
ALABAMA JUNIOR ACADEMY OF SCIENCE
Mark Jones, State Director, Presiding Posters at Sci-Mix Session
Whitley Hall 140/141
Thursday Evening, 4:45 PM– 5:45 PM Ellen Buckner, Presiding

Engineering and Mathematics

1. *Ashu Anand, *Developing Emulsion Additives to Optimize Rheological Behavior in Non-Aqueous Magnetorheological Smart Fluids*, Alabama School of Fine Arts, Birmingham
2. *John Belew, *AI-Powered Intrusion Detection System: Machine Learning Approach to Malware Detection and Prevention*, Wetumpka High School, Wetumpka
3. *Edwin Wu, *Intelligent IoT-Driven Medication Dispenser with Predictive Machine Learning Algorithm for Enhanced Senior Care*, Montgomery Academy, Montgomery
4. Saketh Pondugula, *Developing an Artificial Intelligence Model for Pneumonia Detection in Chest X-Rays: Health Implications for Military Personnel*, Auburn Junior High School, Auburn
5. Harini Chakilam, *Using Explainable AI in Immunohistochemistry Cell Images for Cancer Diagnosis*, Alabama School of Fine Arts, Birmingham
6. Nathan Dinh, *Digitizing Handwritten Documents with the help of AI*, Wetumpka High School, Wetumpka
7. Joseph LeFevre, *Paraprotector, the Future of Aviation*, Wetumpka High School, Wetumpka
8. Michael Mazur, *Linear Kinematic Force Dissipation Mechanism for Controlled Collision Impact*, Alabama School of Fine Arts, Hoover
9. Maryam Rasheed, *Using Piezoelectric generated power to light up the world*, Islamic Academy of Alabama, Homewood
10. Zubayr Rasheed, *Can AI understand Emotions?*, Islamic Academy of Alabama, Homewood
11. Jackson Taylor, *Up Up and Away*, Wetumpka High School, Wetumpka, AL

Environmental Science

1. *Esha Patel, *Effects of Increasing Humidity and Temperature on Growth and CO₂ Production in Echinacea purpurea*, Alabama School of Math and Science, Mobile
2. *Lillian Vilardi, *The Better Solution*, Wetumpka High School, Wetumpka
3. *Srihansi Sagi, *Laser Excited Atomic Fluorescence Spectroscopy for the Detection of Airborne Heavy Metals Cd, Mn, and As Using Mid-IR Rare-Earth Solid State Lasers and Frequency Conversion*, Alabama School of Fine Arts, Birmingham
4. *Prisha Sharma, *Impact of Environmental Cadmium Exposure on Efferocytosis in Alveolar Macrophages*, Alabama School of Fine Arts, Birmingham
5. Dominic Vilardi, *Revolutionizing Saving Energy through Means of Tactical and Plentiful Sources*, Wetumpka High School, Wetumpka

Life Science

1. *Jessica French, *A Comparative Analysis of the Inhibitory Effects of Eucalyptus and Tea Tree Essential Oils on Bacillus cereus Growth Compared to vancomycin.*, Murphy High School, Mobile
2. Harsha Bheemanathini, *The Effects of Nutrient Types on Planarian Survival and Regeneration*, Alabama School of Fine Arts, Birmingham
3. Charlee Chandler, *Zapping Zero-G to Rescue the Vestibulo-Ocular Reflex: Assessing the Efficacy of GVS in Mitigating Microgravity-Related Degradation of Gaze Stability*, Rehobeth High School, Dothan
4. Jacie Dunn, *An Investigation of the Relationship between Sound Frequency and Feline Behavior*, Valley Leadership Academy, Huntsville
5. Kira LeFevre, *Will Adding Artificial Light to a Chicken Coop Help With Egg Production During Molting?*, Wetumpka High School, Wetumpka
6. Rania Masri, *Investigating the Antibacterial Properties of Moringa Oleifera against Escherichia Coli and Bacillus Cereus*, Alabama School of Fine Arts, Birmingham

7. Mira Menon, *Axonal Trafficking of Synaptic Vesicles is Dynamically Modulated to Support Activity-dependent Presynaptic Function*, Loveless Academic Magnet Program, Montgomery
8. Denise Otali, *Investigating Moringa Oleifera's Antibacterial Properties Against Escherichia Coli and Bacillus Cereus*, Alabama School of Fine Arts, Birmingham
9. Nidhi Patel, *Level of Antibacterial Activity on Staphylococcus Epidermidis within Different Parts of the Psidium Guajava in Comparison to Vancomycin*, Murphy High School, Mobile
10. William Peng, *A CRISPR Knockout Loss-of-Function Screen Systematically Identifies Critical Epigenetic Barriers in Direct Cardiac Reprogramming*, Alabama School of Fine Arts, Birmingham
11. Leen Zidan, *Engineering Conjugated Endolysins as a Targeted Treatment for Acne Vulgaris: Combating Antibiotic Resistance and Reducing Inflammation*, Islamic Academy of Alabama, Homewood
12. Hyeonjung Kim, *Youth Risk Behavior Survey Identifies Demographic and Policy Factors as Key Drivers of Vaping Behavior among U.S. High School Students*, Auburn High School, Auburn

Medicine Health and Behavioral Science

1. * Rhea Arya, *Computational Prediction of Nonabine as a Novel CB2 Agonist*, Loveless Academic Magnet Program High School, Montgomery
2. * Aanchal Behara, *Overexpression of TFE3 in Susceptible Neuronal Populations: Implications for Lysosomal Biogenesis and Cellular Resistance in Neurodegenerative Diseases*, Alabama School of Fine Arts, Birmingham
3. *Sahishnu Saha, *To Identify a Multi-Gene Biomarker Based on Most Frequently Occurring Genetic Mutations Across Cancers Through Bioinformatics and Verify its Efficacy to Detect a Broad Range of Cancers Using Statistical Analysis*, James Clemens High School, Madison
4. Serena Agrawal, *Using Machine Learning to Determine the Major Risk Factors of Well-Differentiated Thyroid Cancer*, Hoover High School, Hoover
5. Annie Bao, *Development of a Novel Plasma Assay for Plasminogen Activator-Inhibitor (PAI-1) Activity in Healthy Dogs and Dogs with Immune-Mediated Hemolytic Anemia (IMHA)*, Auburn High School, Auburn
6. Advitiya Kana, *Mindreading and the Brain in Autism*, Hoover High School, Hoover
7. Jewel McCrary, *The Role of Cognitive Reframing in Reducing Negative Emotions Associated with Street Harassment*, UMS-Wright Preparatory School, Mobile
8. Jeremiah Ray, *Smartphones: Are We Addicted?*, Wetumpka High School, Wetumpka
9. Parker Thompson, *Leveraging Artificial Intelligence to Improve Health Literacy and Promote Health Equity*, Wetumpka High School, Wetumpka
10. Nathan Lee and Shresta Majeti, *Improved Medicine Delivery Using Combined Targeting Techniques*, Northridge High School, Tuscaloosa
11. Hunter Morris and Jennie Pohm, *RNA therapy and cancer*, wetumpka high school, Wetumpka

Physical Science

1. Monisha Bommu, *Using DeePMD to Model Atomic Interactions in an MoTe₂ Bilayer*, Alabama School Of Fine Arts, Birmingham
2. Paisley Dunn, *An Investigation of Thermochromic Pigments*, Valley Leadership Academy, Huntsville
3. Hayden McKenzie, *Illuminating the Evidence*, Wetumpka High, Deatsville
4. Urvi Mysore, *Synthesis and Iron Modification of Zeolitic Imidazolate Frameworks for the Adsorption of Hexavalent Chromium*, James Clemens High School, Madison
5. Dayna Simien, *Quantum Theory of Hydrogen*, Ramsay IB High School, Birmingham
6. Deisen Stifflemire, *Effects of Atomic Structure on Flame Color of Metal Ions*, Valley Leadership Academy (home school hybrid), Huntsville
7. Greeshma Vinoy, *Process Optimization of Plasma Enabled Nanotechnology-Integrated Thermoregulative Textiles*, Alabama School of Fine Arts, Birmingham

GORGAS SCHOLARSHIP COMPETITION

Sci-Mix Session

Whitley Hall 140/141

Thursday Evening, 4:45 PM– 5:45 PM Ellen Buckner, Presiding

1. *James Abrams*, Squirm And Burn: Testing Pre-Workout On Worms. Wetumpka High School. [Teacher Sponsor: Virginia Vilardi]
2. *Ashu Anand*, The Effects Of Electrical Stimulation On Planaria Tissue Regeneration. Alabama School of Fine Arts. [Teacher Sponsor: Hungsin Chin]
3. *Rhea Arya*, Computational Prediction Of Nonabine As A Novel Cb2 Agonist. Loveless Academic Magnet Program High School. [Teacher Sponsor: David Boone]
4. *Will Bao*, Machine-Learning-Driven Discovery Of Novel Acoustic Metamaterials For Broadband Noise Mitigation. Auburn High School. [Teacher Sponsor: Jacque Middleton]
5. *Aanchal Behara*, Localization Of Frontotemporal Dementia Risk Gene Rab38 To Glutamatergic Neurons: Implications For Selective Neuronal Vulnerability. Alabama School of Fine Arts. [Teacher Sponsor: Hungsin Chin]
6. *John Belew*, An Introspection On The Meat Industry And Finding Alternatives. Wetumpka Highschool. [Teacher Sponsor: Virginia Vilardi]
7. *Jessica French*, A Comparative Analysis Of The Inhibitory Effects Of Eucalyptus And Tea Tree Essential Oils On Bacillus Cereus Growth Compared To Vancomycin.. Murphy High School. [Teacher Sponsor: Julie Prerost]
8. *Esha Patel*, Effects Of Increasing Humidity And Temperature On Growth And Co2 Production In Echinacea Purpurea. Alabama School of Math and Science. [Teacher Sponsor: Natalie Ortell]
9. *Srihansi Sagi*, Laser Excited Atomic Fluorescence Spectroscopy For Detection Of Heavy Metals Cd, As, Mn Using Mid-Ir Rare-Earth Solid State Lasers And Raman Crystals. Alabama School of Fine Arts. [Teacher Sponsor: Hungsin Chin]
10. *Sahishnu Saha*, To Identify A Multi-Gene Biomarker Based On Most Frequently Occurring Genetic Mutations Across Cancers Through Bioinformatics And Verify Its Efficacy To Detect A Broad Range Of Cancers Using Statistical Analysis. James Clemens High School. [Teacher Sponsor: Kathryn Weir]
11. *Prisha Sharma*, Mpaact Of Environmental Cadmium Exposure On Efferocytosis In Alveolar Macrophages. Alabama School of Fine Arts. [Teacher Sponsor: Dreama White]
12. *Lillian Vilardi*, Upcycling Plastic, What To Do About One Of The Worlds Greatest Pollutants. Wetumpka High School. [Teacher Sponsor: Virginia Vilardi]
13. *Edwin Wu*, Intelligent Iot-Driven Medication Dispenser With Predictive Machine Learning Algorithm For Enhanced Senior Care. Montgomery Academy. [Teacher Sponsor: Jay Rye]

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.

2025 NATIONAL JSHS COMPETITION

*The Alabama Junior Academy of Science is a 9-12th outreach by the Alabama Academy of Science. AJAS is the Alabama High Schools that participate in the Alabama Regionals for the Junior Science and Humanities Symposium (JSHS)(www.jshs.org).

*This scholarship competition is on a scientific paper. The top five go to the National Junior Science and Humanities Symposium (JSHS). The JSHS is sponsored by the Department of Defense, and the Departments of the Army, Navy and Air Force. They also offer educational outreach programs like summer internships and research experience opportunities.

*This year's competition will occur on February 27 and 28th at Troy University in Montgomery.

1. You should register here first to be added to email list and to communicate interest in an optional, virtual practice. Competition at the AL Regional will involve a 12 minute presentation and a 6 minute defense of your paper.

2. Formal registration is here for AL Regional JSHS through ideal logic. You may skip over paper and abstract submission for now. Final paper submission are due by 1/17/25 and 60 students will be announced by 1/27 to compete at the AL regionals.

*The 63rd National JSHS event will be April 22nd – 26th, 2025 with travel days on those dates as well, with the possibility of travel on April 21st. The location is Chantilly, VA, very near Dulles airport. Each region sends 5 students and two adults to NJSHS. There is a possibility of a 3rd adult as a national worker if you are interested. All travel is booked and paid for by the national office. This should not be

part of your regional budget or expenditures.

*Optional practices are local AMSTI sub-regions organize below, that will meet via zoom. Students may attend for practice, feedback or to observe other projects. Sign up for Local competitions in one of the following below regions. This will be organized once students have completed registration. Locals will occur in late January and the first week of February.

*Email questions to Dr. Mark T Jones, state director at jonesmt@troup.org

Alabama Science Olympiad



Auburn University hosted a statewide workshop for all regional and invitational tournament directors on August 12, 2024, to discuss tournament formats, dates and logistics. All tournament sites plan to host tournaments face-to-face this year. We are planning for 4 Elementary tournaments, 4 Middle/High School tournaments, 2 Invitational tournaments, and 1 state tournament for advancing Middle (B) and High School (C) teams. One B team and one C team will advance from the state tournament to the National Science Olympiad Tournament at University of Nebraska-Lincoln.

For the 2024-25 tournament season, Division AA (elementary) teams will pay \$75 per team for registration and Division B (middle school) and Division C (high school) teams will pay \$225 per team for registration (same as last year). Team registration fees allow the ALSO state office to provide more support for tournament hosts and allow for a more sustainable growth model.

On July 23, 2024, SO staff from Auburn University hosted a one-day training for 18 teachers at the AMSTI-Athens site. On September 19, 2024, SO staff from Auburn University hosted a training for faculty and staff at the University of West Alabama on logistics of hosting an Elementary Science Olympiad tournament. UWA aspires to begin hosting an ESO tournament this year.

All ALSO tournament dates are finalized (except for the UWA Elementary tournament), and teachers are currently registering teams. Team registration opened on September 9th at <https://scilympiad.com/al> and will continue through early January 2025. Current registration numbers (as of 10/1/24):

	<u>October 2022</u>	<u>October 2023</u>	<u>October 2024</u>
Elementary Teams	18	11	16
Middle School Teams	13	16	17
High School Teams	19	17	24
Total registration	50	44	57

The current registration numbers indicate we may be on track for the greatest number of registered teams since the pandemic.

This year's tournament dates, locations and contacts are listed below.

**ALABAMA SCIENCE OLYMPIAD
2024-25 Tournament Contacts**

Division AA (Grades 3-6) Olympiad Tournaments

- **Auburn University ESO (March 1, 2025)**
Kristen Jackson, jacksk6@auburn.edu
- **Jacksonville ESO (March 8, 2025)**
Natasha Scott, nlscott@jsu.edu
- **Wiregrass ESO (March 8, 2025)**
Jessica Freeman, Jessfreeman323@gmail.com

- **University of West Alabama (TBD)**
Dr. Chet Nicklaus, cnicklas@uwa.edu

Division B (Grades 6-9) and Division C (Grades 9-12) Olympiad Tournaments

- **University of Alabama Birmingham (Feb. 8, 2025 at UAB)**
Dr. Mark Bevensee, bevensee@uab.edu
- **AMSTI-South (March 1, 2025, Enterprise High School)**
Hope Balkcom, abalkcom@troy.edu
- **The University of Alabama (March 1, 2025 at Univ. of Alabama-Tuscaloosa)**
Dr. Derek Williamson, Dwilliamson@eng.ua.edu
- **AMSTI-North (March 8, 2025 at Athens State)**
Clint Vandiver, clint.vandiver@athens.edu

Alabama State Science Olympiad B and C Tournaments

- **Auburn University (March 29, 2025)**
Dr. Jessica Gilpin, 131 Science Center Classroom, Auburn University, AL 36849
Jag0038@auburn.edu

2025 Science Olympiad National Tournament

University of Nebraska - May 2025

State Director: Mary Lou Ewald, 131 SCC Building, Auburn University, AL 36849.
(cell) 334-444-1513, (office) 334-844-5745, ewaldml@auburn.edu.

ALABAMA SCIENCE & ENGINEERING FAIR SYSTEM

Engage in the scientific research process!

Students perform research, collect data, interpret results and then communicate findings at school or county science and engineering fairs.

Winners advance to one of four regional fairs in either the middle school junior division (grades 6-8) or high school senior division (grades 9-12).

Top students from each regional fair progress to the **Alabama Science and Engineering Fair (ASEF)** in April with a chance to compete for 150 awards totaling more than \$15,000.

ABOUT ASEF

ASEF is an affiliate fair of the Regeneron International Science and Engineering Fair (Regeneron ISEF), the world's largest international pre-college science competition.

More than a dozen Alabama high school students will advance to **Regeneron ISEF** from **May 10-16, 2025** in Columbus, OH and will compete against the top 1500 students in the world for nearly \$9 million in prizes and scholarships.

The top 10% of middle school winners from ASEF advance to the **Thermo Fisher Scientific Junior Innovators Challenge**.



AUBURN
Sciences and Mathematics
Outreach



REGIONAL FAIRS

NORTH ALABAMA (NARSEF)

Registration Deadline: Jan 24, 2025

Fair Date: Feb 28, 2025

Location: University of Alabama in Huntsville

Regional Director: Amy Beth Ford

Email: narsef@uah.edu

CENTRAL ALABAMA (CARSEF)

Registration Deadline: Jan 31, 2025

Fair Date: March 1, 2025

Location: University of Alabama at Birmingham

Regional Director: Kevin Jarrett

Email: kjarrett@uab.edu

MOBILE (MRSEF)

Registration Deadline: Jan 31, 2025

Fair Date: February 28 & March 1, 2025

Location: University of South Alabama, Mobile

Regional Director: Dr. David Allison

Email: dallison@southalabama.edu

GREATER EAST ALABAMA (GEARSEF)

Registration Deadline: Feb 14, 2025

Fair Date: March 14, 2025

Location: Auburn University at Montgomery

Regional Director: Dr. Matt Grilliot

Email: mgrillio@aum.edu

ALABAMA STATE FAIR (ASEF)

Website: <https://aub.ie/ASEF>

Registration Deadline: March 21, 2025

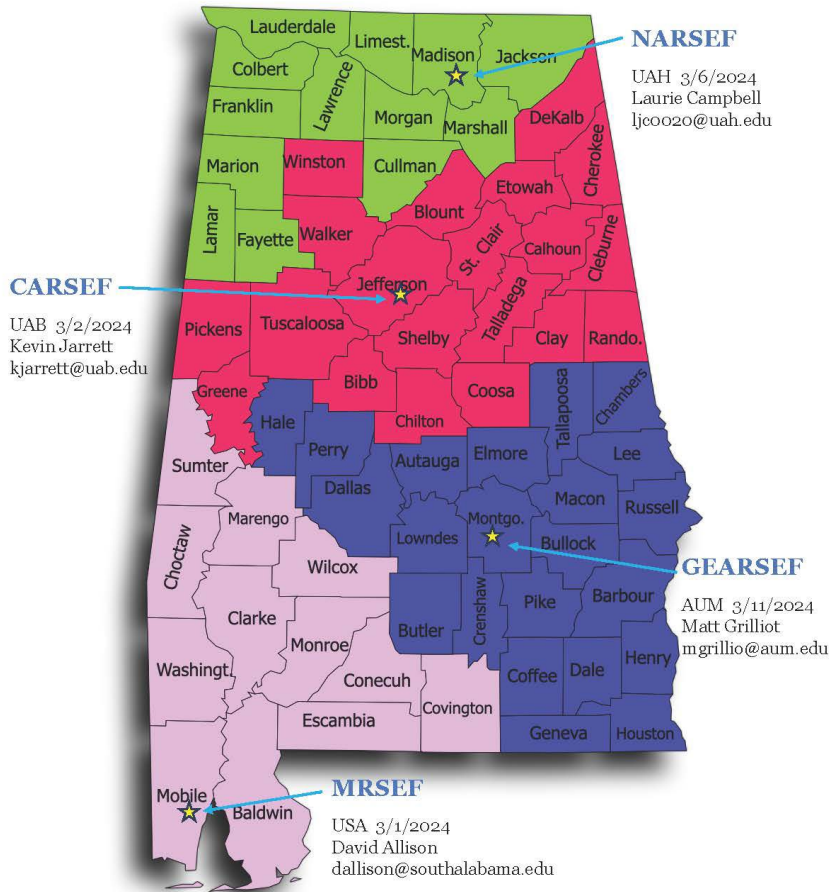
Fair Date: April 2025

Location: Auburn University, Auburn

ASEF Coordinator: Dr. Karen Dane

Email: kyd0002@auburn.edu

AL Regional Fairs





Invitation to Judge for STEM Day 2025: Empowering Tomorrow Through Sustainable Innovation

Dear Colleague,

On behalf of the Alabama A&M University STEM Committee, we are delighted to invite you to serve as a judge for our upcoming STEM Day 2025: Empowering Tomorrow Through Sustainable Innovation, scheduled for Thursday, April 10, 2025.

STEM Day at AAMU, founded by Dr. Matthew E. Edwards, has become a cornerstone event showcasing the innovative research and academic achievements of our students. This annual event provides a platform for participants to present their work through posters and presentations, fostering an environment of academic excellence and professional development. This year's theme, underscores the importance of addressing global sustainability challenges through advancements in science, technology, engineering, and mathematics.

As an accomplished academic or industry expert, your involvement would greatly enrich this event. Your expertise will provide valuable insights and feedback to our students, helping to identify and celebrate outstanding achievements while inspiring future leaders in STEM.

Event Details:

- Date: Thursday, April 10, 2025
- Time: 8:00 AM – 1:00 PM
- Location: Event Center, Alabama A&M University



If you are available to serve as a judge, please register through the following link: <https://forms.office.com/r/YyYZsDyFRK> or use the QR code provided above. Feel free to share this invitation with other potential judges.

Thank you for considering this opportunity to support the next generation of STEM innovators. We look forward to welcoming you to STEM Day 2025 and sharing this inspiring event with you.

Warm regards,

Yinshu Wu, Ph.D.
Associate Professor of Mathematics
Mathematics Program Coordinator
Department of Physics, Chemistry, and Mathematics
Alabama A&M University

yinshu.wu@aamu.edu | 256-372-8151

Ebony I. Weems-Oluremi, Ph.D.
Assistant Professor
Department of Biological and
Environmental Sciences
Alabama A&M University

Ebony.Weems@aamu.edu | 256-372-4433

WILLIAM H. MASON SCIENCE TEACHER FELLOWSHIPS

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

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

1990 - 1991	Mrs. Amy Livengood Sumner, UAB
1991 - 1992	Mrs. Leella Holt, UNA
1992 - 1993	Mrs. Joni Justice Shanklee, Samford University
1993 - 1994	Jeffrey Baumbach, Auburn University
1994 - 1995	Not Awarded
1995 - 1996	Laura West Cochran, University of Montevallo
1996 - 1997	Tina Anne Beams, UA
1997 - 1998	Carole Collins Crabbe Clegg, UAB
1998 - 1999	Cynthia Ann Phillips, UNA
1999 - 2000	Ruth Borden, UAB
2000 - 2001	Amy K. Murphy, UAB, Karen L. Celestine, AL A&M
2001 - 2002	Jeannine Ott, Eubanks, Auburn University
2002 - 2003	Not Awarded
2003 - 2004	Kanessa Miller, Auburn University
2004 - 2005	Not Awarded
2005 - 2006	Mary Busbee, UAB, and Bethany Knox, UAB
2006 - 2007	Kelly Harbin, UAB
2007 - 2008	Michael Hallman, UA
2008 - 2009	Sherri Sanders Grosso, UNA
2009 - 2010	Not Awarded
2010 - 2011	Danielle Brooke Morlan, UWA
2011 - 2012	Cory Goble, University of Montevallo
2012 - 2013	Amber Foster, UA
2013 - 2014	Amy Bolding
2014 - 2015	Arpan Bosmia, UAB
2015 - 2016	Lacey McEwen, Samford
2016 - 2017	Tyler Rice, Auburn
2017 - 2018	Celia Dozier, Samford
2018 - 2019	Jacob Helf, Auburn
2019 - 2020	Joshua Evans, University of Montevallo
2022 - 2023	Jaclynne Alivia Carden, Auburn University
2023 - 2024	Kelsey McCraw, and Todd Lamb, USA
2024 - 2025	Andria Covell, USA, and Jacqueline Cox, UAB
2025 - 2026	Dawn Schaffer, USA

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.
- 2020 Jodi Singer, Director, NASA Marshall Space Center, Huntsville;
Richard Myers, Director and President, HudsonAlpha Institute for Biotechnology, Huntsville.
- 2021 Errol Derwin Crook, Professor and Chair, Abraham Mitchell Endowed Chair, Department of Internal Medicine, University of South Alabama
- 2022 Michael Saag, Professor & Associate Dean for Global Health, University of Alabama at
- 2023 Dr. Larry Krannich, University of Alabama at Birmingham, Dr. Martha Varghese, Alabama A&M University
- 2024

None.

FELLOWS OF THE ALABAMA ACADEMY OF SCIENCE

- 2007 Ellen Buckner (University of Alabama at Birmingham), Leven Hazlegrove (Samford University), Richard Hudiburg (University of North Alabama), Larry Krannich (University of Alabama at Birmingham), Eugene Omasta (Troy University), Prakash Sharma (Tuskegee University).
- 2008 Ram B. Gupta (Auburn University), Harry O. Holstein (Jacksonville State University), Adriane G. Ludwick (Tuskegee University), Ken Marion (University of Alabama at Birmingham), Michael B. Moeller (University of North Alabama)
- 2009 Stephen A. Watts (University of Alabama at Birmingham) and Jane Nall (State Director, Science Olympiad Program)
- 2010 George Cline (Jacksonville State University), David H. Nelson (University of South Alabama), and Virginia Vilardi (State Coordinator, Science Fairs, Wetumpka High School)
- 2011 James T. Bradley (Auburn University), Anne Cusic (University of Alabama at Birmingham), James B. McClintock (University of Alabama at Birmingham)
- 2012 Benjamin J. Bateman (Troy University) and Edward E. Thomas (Auburn University)
- 2013 Safaa H. Al-Hamdani (Jacksonville State University) and Catherine D. Shields (Jefferson County International Baccalaureate School)
- 2014 Brian Burnes (University of West Alabama), Ronald N. Hunsinger (Samford University), and Pradeep Lall (Auburn University)
- 2015 Mickie Powell (University of Alabama at Birmingham) and David Brian Thompson (University of North Alabama)
- 2016 No award
- 2017 No award
- 2018 Mark Jones (J. F. Drake Middle School) and Akshaya Kumar (Tuskegee University)
- 2019 Lawrence J. Davenport (Samford University) and Puneet Srivastava (Auburn University)
- 2020 Mel Blake (University of North Alabama) and Arjun Tan (Alabama A&M University)
- 2021 No award
- 2022 Matthew Edwards (Alabama A&M University) and Courtney N. Haun (Samford University)
- 2023 Dr. Bettina Riley (University of South Alabama), Dr. Clark Lundell (Auburn University), Dr. Betsy Dobbins (Samford University), Dr. Donna Cleveland (University of South Alabama), Drew Hataway (Samford University) and Vinoy Thomas (UAB) and Mark Caulkins (Samford University)
- 2024 Dr Rita Malia Fincher (Samford University), Dr. David A. Johnson (Samford University), and Dr. Samishka Raut (UAB)

ADRIEL D. JOHNSON SENIOR MENTORING AWARD

2023 Samishka D. Raut, UAB and Virginia Vilardi, Wetumka High School

2024 None

2025 Dr. Vinoy Thomas, University of Alabama at Birmingham

SECTION OFFICERS, 2024-2025

Section I: Biological Sciences:

- Chair: (2025) Dr. Tenzing Ingty. Assistant Professor. Department of Biology. Jacksonville State University. tingty@jsu.edu
- Co-Chair: (2025) Jean-Pierre Arditi. Jarditi@southalabama.edu.
- Co-Chair: (2025) Cecilia Johnson. Instructor of Biology. Jacksonville State University. cdavis35@jsu.edu

Section II: Chemistry:

- Chair: (2025) Dr. Humayun Kabir. hkabir@una.edu.
- Vice Chair: (2025) Sharifah Albraiki. salbraiki@jsu.edu.

Section III: Physics and Mathematics:

- Chair: (2025) Byunghoon Lee, Dept. of Mathematics, Tuskegee University, Tuskegee, AL blee@tuskegee.edu.
- Vice-Chair: (2025) Padma Guggilla, Dept. of Physics, Chemistry, and Mathematics, Alabama A&M, Normal, AL padmaja.guggilla@aamu.edu.

Section IV: Engineering and Computer Science:

- Chair: (2025), Dr. Ravi Gollapalli. rgollapalli@una.edu.
- Vice Chair: (2025) Dr. Dony Dongqing Pan. dpan1@una.edu.

Section V: Social Sciences:

- Chair: (2025) Mohit Anand, Division of Business and Accounting, Miles College, Fairfield, AL 35064, manand@miles.edu.
- Co-Chair: (2025) Cynthia Lovelace, College of Business, Sanders Hall, 300 N. Beaty Street, Athens, Alabama 35611, Cynthia.Lovelace@athens.edu.

Section VI: Anthropology:

- Chair: (2025) Jordan Kiper. Department of Anthropology, The University of Alabama at Birmingham. <mailto:jkipper@uab.edu>
- Vice Chair: Camille Westmont, Department of Anthropology, The University of Alabama at Birmingham, westmont@uab.edu

Section VII: STEM Education:

- Chair: (2025). Stephanie Varghese, PhD, MBA, FAAO | OPSEL Instructor. The University of Alabama at Birmingham. bvarghese@uab.edu.

Section VIII: Environmental and Earth Science:

- Chair: (2025) Shaoyang Liu, Dept. of Chemistry, Troy University, Troy, AL 36082, lius@troy.edu.
- Vice Chair: (2025) Mojtaba Enayati. menayati@troy.edu.

Section IX: Health Sciences:

- Chair: (2025) R. Mark Caulkins, Physician Assistant Program, Samford University, Birmingham, AL 35229 (205) 726-4835, rcaulkin@samford.edu.
- Vice Chair: Jean-Pierre-Arditi

Section X: Bioethics and History and Philosophy of Science:

- Co-Chair: (2025) Clark Lundell, Dept. of Industrial & Graphic Design, Auburn University, Auburn, AL 36849, lundece@auburn.edu.
- Co- Chair: (2025). James Bradley, Auburn University, bradljt@auburn.edu.

Special Section Alabama Honors Scholars:

- Co-Chair: (2025) Douglas Marshall, Dean of the Honors, University of South Alabama, dougmarshall@southalabama.edu
- Co- Chair: (2025). Michael Sloane, Director, University Honors Program, University of Alabama at Birmingham. sloane@uab.edu.

ELECTED OFFICERS, 2024-2025

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

President Elect (1st VP): Matthew Edwards, Department of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 337-0340, matthew.edwards@aamu.edu

Second Vice President: Ronald Hunsinger, Professor Emeritus, Samford University, Birmingham, AL 35229, (205) 540-6732, rnhsin@samford.edu

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

Treasurer: Bettina Riley, USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL, 36532, (251) 517-5363, briley@southalabama.edu

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

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

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

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

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

Associate Executive Director (2024): Matthew Edwards, Department of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 337-0340, matthew.edwards@aamu.edu.

Associate Executive Director (2025): Ronald Hunsinger, Professor Emeritus, Samford University, Birmingham, AL 35229, (205) 540-6732, rnhsin@samford.edu

At Large Officers: Daniel Lerew, Southern Company, 501 12th Street South, Birmingham, AL 35217, (205) 994-0126, delerew@uab.edu

At Large Officers: Vineeth Vijayan, Alabama State University, Montgomery, AL, vineeth@uab.edu

At Large Officers: Stephen Babalola, Department of Physics, Chemistry and Math., Alabama A&M Uni., Normal, AL 35762, (256) 417-8196, stephen.babalola@aamu.edu

Graduate Student At Large Officers: Ranjith Pillai, Dept. of Materials Science & Engineering, University of Alabama at Birmingham, AL 35294, rrpillai@uab.edu

Graduate Student At Large Officers: Jean-Pierre Arditi, Department of Psychology, University of South Alabama, UCOM 1123, Mobile, AL 36688, (251) 767-0416, jarditi@southalabama.edu

Graduate Student At Large Officers: Cyndi Von Ahlefeldt, 905 Lake Lily Dr, Maitland FL 32751, (251) 508-7067, ci748922@ucf.edu

Graduate Student At Large Officers: Angela Davis, Department of Physics, Chemistry and Math., Alabama A&M Uni., Normal, AL 35762, (256) 899-8687, angeladavis@148yahoo.com

APPOINTED COMMITTEES 2024-25

Archives

- VACANT

Auditing Senior Academy

- Budget and Finance Committee

Auditing Junior Academy

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

Budget and Finance

- Trustee, Ken Marion, (Chair) 2026, Dept. of Biology, Univ. of Alabama at Birmingham, Birmingham, AL, 35294-1170, , kmarion@uab.edu
- Trustee, Ellen Buckner, (2026) College of Health Sciences, School of Nursing, Samford University, Birmingham, AL, 35229, (205)726-2092(w); (205) 810-9877(c), ebuckne2@samford.edu; ebbuckner@gmail.com
- President, Vinoy Thomas, Department of Materials Science and Engineering, University of Alabama at Birmingham, (2026) 975-4098, vthomas@uab.edu.
- Counselor to the Junior Academy, Mark Jones, (2024) 1233 Sanders St., Auburn. AL 36870, jonesmt@troup.org.
- Past President, J. Jeffrey Morris, Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, (2026) 934-9498, evolve@uab.edu.
- Treasurer, Bettina Riley, (2026) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL, 36532, (251) 517-5363, briley@southalabama.edu
- Secretary, Melia Fincher, (2026) Department of Biology, Samford University, Birmingham, AL, 35229, (205) 726-2928, rmfinche@samford.edu
- Executive Director, John Shelley-Tremblay, Department of Psychology, University of South Alabama, UCOM 1123, Mobile, AL 36688 (251) 460-6883, jstremblay@southalabama.edu

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

- John Shelley-Tremblay, (Acting Chair) (2026), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu
- Sharvare Palwai, (2026) Dept. of Physics, Tuskegee Univ. Tuskegee, AL 36088, spalwai@tuskegee.edu
- Jean-Pierre Arditi, (2026) Department of Psychology, University of South Alabama, UCOM 1123, Mobile, AL 36688 (251) 460-6371 x2, jarditi@southalabama.edu

Electronic Media: (3-yr terms)

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

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

- Richard Hudiburg, Chair, (2026) Department of Psychology, University of North Alabama, Box 5187, Florence, AL 35632, rahudiburg@una.edu
- David Nelson, (2026) Department of Biology, University of South Alabama, Mobile, AL 36688, dnelson@usouthal.edu
- Brian Toone, (ex officio) Department of Computer Sci., Samford University, Birmingham, AL 35229 (205) 726-2960, brtoone@samford.edu.
- Larry Davenport, (2026) Department of Biological Sciences, Samford University, Birmingham, AL 35229, ljdavenp@samford.edu

Gorgas Scholarship Program: (staggered 3-yr terms)

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

Junior Academy:

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

Junior Academy Regional Counselors:

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

Local Arrangements at Samford University (2023 Annual Meeting)

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

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

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

Mason Scholarship: (staggered 3-yr terms)

- Mickie Powell (Chair) (2024) Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294 mpowell@uab.edu
- Ronald Hunsinger (2023) 1070 Crest Rd., Leads, AL rnhsunin@samford.edu
- Enrique Jackson (2025) Miles College, emj.academic.consulting@gmail.com; ejackson@miles
- Michael Hallman (2025) Alabama Dept. of Public Health, PO Box 303017, Montgomery, AL 36130, michael.hallman@adph.state.al.us, hallman.michael@gmail.com.

- R. Melvin Blake, (2023) Department of Physical and Earth Science, University of North Alabama, Florence, AL 35632, rdblake@una.edu

Membership and Development:

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

- Active Past Presidents

Adriane G. Ludwick	1989-90
Ken R. Marion	1991-92
Michael B. Moeller	1992-93
Prakash Sharma	1993-94
Eugene Omasta	1994-95
Ellen B. Buckner	1997-98
Richard Hudiburg	2000-01
Stephen A. Watts	2002-03
Anne M. Cusic	2003-04
Larry Davenport	2005-06
David Nelson	2006-07
D. Brian Thompson	2009-10
Brian Burnes	2010-11
Mickie Powell	2011-12
Ronald N. Hunsinger	2012-13
Emanuel Waddell	2013-14
John McCall	2014-15
Brian R. Toone	2015-16
Akshaya Kumar	2016-17
Ketia Shumaker	2017-18
Nixon Mewabi	2018
Drew Hataway	2018-2020
Cameron Gren	2020-21
John Shelley-Tremblay	2021-22
J. Jeffrey Morris.....	2023-24

Nominating:

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

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

- Kenneth Roblee (Chair) (2027) Dept. of Mathematics, Troy University, Troy, AL 36082 kroblee@troy.edu.

- Donna Perygin (2026) Department of Chemistry and Geosciences, Jacksonville State University, Jacksonville, AL 36265, dperygina@jsu.edu.

- Larry Krannich, (2025) Department of Chemistry, University of Alabama at

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

- Brian Burnes, Chair (2024) bburnes01@gmail.com
- Ruigang Wang (2027) Dept. of Metallurgical & Materials Engineering, The University of Alabama, Tuscaloosa, AL 35487, rwang@eng.ua.edu
- Vinoy Thomas, (2026) Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, vthomas@uab.edu
- Bernece Herbert, (2023) Department of Community and Regional Planning, Alabama A&M University, Normal, AL 35762 (256) 372-4988, bernece.herbert@ammu.edu

Resolutions:

- Brian Burnes, Chair (2026) bburnes01@gmail.com
- Science, Public Policy, and Public Relations: (staggered 4-yr terms)**
- Scott Brande, co-Chair, (2025) Department of Geology, University of Alabama at Birmingham, Birmingham, AL 35294, sbrande@uab.edu
- Brian Burnes, co-Chair (2026) bburnes01@gmail.com
- Ellen Buckner, (2023), College of Health Sciences, School of Nursing, Samford University, Birmingham, AL 35229 (205) 726-2092(w); (205) 810-9877(c), ebuckne2@samford.edu; ebbuckner@gmail.com.
- Gregory Buckley (2023) Dept. of Physical and Earth Science, University of North Alabama, Florence, AL 25632, gbuckley@una.edu.
- James Bradley, (2024) Department of Biological Sciences, Auburn University, Auburn, AL 36849, bradjt@auburn.edu
- Marisol Alcantara Ortigoza (2025) Dept. of Physics, Tuskegee Univ., Tuskegee, AL 36088, malcantaraortigoza@tuakegee.edu.

Steering:

- Executive Director, John Shelley-Tremblay, (2023), Department of Psychology, University of South Alabama, UCOM 1123, (251) 460-6883 Mobile, AL 36688, jstremblay@southalabama.edu.
- Immediate PastPresident, J. Jeffrey Morris, (2023), Department of Biology, University of Alabama at Birmingham, Birmingham, AL 35294, (205) 934-9498, evolve@uab.edu.
- President, Vinoy Thomas, (2023) Department of Materials Science and Engineering, University of Alabama at Birmingham, (205) 975-4098, vthomas@uab.edu
- Vice President, Matthew Edwards, (2023) Dept. of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu
- Secretary, Bettina Riley, (2024) USA College of Nursing, 161 N. Section Street, Suite C, Fairhope, AL 36532, briley@southalabama.edu.
- Treasurer, Melia Fincher, (2024) Department of Biology, Samford University, 900 Lakeshore Dr., Birmingham, AL 35229, (205) 726-2928 rmfinche@samford.edu
- Wright A. Gardner Award: (4 members with staggered 2-yr terms)**
- Birmingham, Birmingham, AL 35294, (205) 936-0823, krannich@uab.edu
- Manoj Mishra, (2027)Dept. of Biological Sciences, Alabama State University, Montgomery, AL 36104 (334) 229-5085 mmishra@alasu.edu.
- Itza Soloman (2024), University of Mobile, 5735 College Parkway, Mobile, AL 36613, sitza@umobile.edu.
- Vacant (2020)
- Matthew Edwards, (2023) Dept. of Physics, Alabama A&M Univ., Normal, AL, 35762, (256) 372-8119 or (256) 372-8104, matthew.edwards@aamu.edu
- Akshaya Kumar, (2023) Dept. of Physics, Tuskegee University, Tuskegee, AL 36088, akumar@tuskegee.edu.

PAST PRESIDENTS

<i>NAME</i>	<i>TERM</i>	<i>NAME</i>	<i>TERM</i>
Wright A. Gardner (2 terms)	1924-26	Robert T. Gudauskas	1973-74
Stewart J. Lloyd	1926-27	Thomas E. Denton	1975-76
John R. Sampey	1927-28	Urban L. Diener	1976-77
Walter C. Jones	1928-29	James C. Wilkes	1977-78
Fred Allison	1929-30	William F. Arendale	1978-79
Emmett B. Carmichael	1930-31	Jack H. Moore	1979-80
George J. Fertig	1931-32	Geraldine M. Emerson	1980-81
J.F. Duggar	1932-33	Kenneth Ottis	1981-82
J.L. Brakefield	1933-34	Charles M. Baugh	1982-83
Russell S. Poor	1934-35	Raymond E. Isbell	1983-84
A.G. Overton	1935-36	John F. Pritchett	1984-85
Walter B. Jones	1936-37	Stanley T. Jones	1985-86
Roger W. Allen	1937-38	Philip G. Beasley	1986-87
P.H. Yancey	1938-39	H. Dean Moberly	1987-88
George D. Palmer	1939-40	Richard L. Shoemaker	1988-89
C.M. Farmer	1940-41	Adriane G. Ludwick	1989-90
Paul D. Bales	1941-42	Michael E. Lisano	1990-91
W.M. Mobley	1942-43	Ken R. Marion	1991-92
E.V. Jones	1943-44	Michael B. Moeller	1992-93
J.T. McKenzie	1944-45	Prakash Sharma	1993-94
J.M. Robinson	1945-46	Eugene Omasta	1994-95
James L. Kassner	1946-47	Dan C. Holliman	1995-96
John Xan	1947-48	Thomas S. Jandebour	1996-97
Eugene D. Emigh	1948-49	Ellen B. Buckner	1997-98
C.A. Basore	1949-50	Moore Asouzu	1998-99
Harold E. Wilcox	1950-51	Larry R. Boots	1999-00
Henry Walker	1951-52	Richard Hudiburg	2000-01
John A. Fincher	1952-53	Roland Dute	2001-02
Joseph F. Volker	1953-54	Stephen A. Watts	2002-03
William T. Wilks	1954-55	Anne M. Cusic	2003-04
Ralph Chermock	1955-56	Ronald L. Jenkins	2004-05
J. Allen Tower	1956-57	Larry Davenport	2005-06
Howard Carr	1957-58	David Nelson	2006-07
Herbert A. McCullough	1958-59	George Cline	2007-08
Samuel B. Barker	1959-60	Kenneth Roblee	2008-09
James R. Goetz	1960-61	D. Brian Thompson	2009-10
Paul C. Bailey	1961-62	Brian Burnes	2010-11
Louis J. Eisele	1962-63	Mickie Powell	2011-12
E. Carl Sensenig	1963-64	Ronald N. Hunsinger	2012-13
William J. Barrett	1964-65	Emanuel Waddell	2013-14
James F. Sulzby, Jr	1965-66	John McCall	2014-15
David L. DeJarnette	1966-67	Brian R. Toone	2015-16
H. Ellsworth Steele	1967-68	Akshaya Kumar	2016-17
Ruric E. Wheeler	1968-69	Ketia Shumaker	2017-18
Wilbur B. DeVall	1969-70	Nixon Mwebi	2018-18
W.L. Furman	1970-71	Drew Hataway	2018-20
G.O. Spencer	1971-72	Cameron Gren	2020-21
Joseph C. Thomas	1972-73	John Shelley-Tremblay	2021-22

James Jeffrey Morris
James Jeffrey Morris
Reuben B. Boozer

2022-23
2023-24
1974-75

Vinoy Thomas

2024-25

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