

2021

## Business Meeting Report (Secretary's and Treasurer's Report)

Academy Editors

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## ARKANSAS ACADEMY OF SCIENCE

**Stephen Addison**  
President

**Andrew Sustich**  
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**Andrew Sustich**  
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JAAS  
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**Ivan Still**  
JAAS  
Managing Editor

**Rami Alroobi**  
Webmaster

**Abdel Bachri**  
Historian

**R. Panneer Selvam**  
Newsletter Editor

**Stephen Addison**  
Undergraduate grants

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### Secretary's Report

**ARKANSAS ACADEMY OF SCIENCE**  
**104<sup>th</sup> Annual MEETING MINUTES**  
Zoom Meeting Hosted by UCA  
**April 10 – 11:00a.m.**

Meeting called to order at 11:00 am CDT by President Stephen (Steve) Addison.

#### **1. President's Report**

Steve Addison welcomed attendees to the first ever Zoom general Business Meeting of the Academy. He thanked everyone for participating. Steve noted he had been president for two consecutive years which is a first for the Academy. Further, during that time he has not been able to attend an in-person annual spring meeting of the Academy. We have missed the comradery of the live academy meetings and are quite ready for them to return.

#### **2. Local Arrangements Committee: Jack Jackson**

Jack Jackson reported the meeting to be progressing smoothly. He specifically named Ragupathy Kannan and Clint Brooks as valuable support staff for the meeting. A complete list of those who staffed the meeting is in the Resolutions included in the Business Meeting Minutes (Appendix B).

#### **3. Secretary's Report: Colis Geren**

The minutes of the previous year's meeting will be available to the membership in this year's journal. Any corrections should be sent to the secretary.

Current membership is 128 of which 55 are life members while 73 are annual memberships.

To date 11 institutions have paid their annual dues for 2021.

Two people have been nominated to become Fellows of the Arkansas Academy Science. More than 200 e-mails have been sent asking for members to vote for or against these nominations. Votes will be counted if they are received by April 14.

Members are reminded they can nominate potential fellows or honorary fellows up to October 1 of the year prior to their initial consideration. Those nominations should be to the secretary (information on nomination criteria are given at the end of this report). The membership will vote on the nominees at the spring meeting. Those approved will be awarded the following year. This year's vote is, of necessity electronic, but the expectation is that it will be in person in future years.

The Academy has had plaques prepared for Jack Jackson, Stephen Addison, and Ivan Still for their service to the Academy. If those persons will electronically send me an appropriate USPS address, I will mail their plaques to them.

We are arranging a luncheon late in the summer to award Peggy Smith and Liz Adams the plaques for Doug James and Kim Smith as the first two named Fellows of the Arkansas Academy of Science.

For your information, the following are the rules adopted for the fellowship programs of the Academy.

#### **FELLOWS**

The Fellows of the Arkansas Academy of Science are a group of distinguished scientists, technologists, engineers, and mathematicians selected in recognition of their outstanding contributions to science, technology, engineering, and mathematics (STEM) in Arkansas. Any Member of the Academy who has made a

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distinguished or substantial contribution to the areas of teaching, research, and service in any area of STEM in Arkansas may be nominated. AAS Fellows serve as ambassadors for the Society and as such are encouraged to engage in outreach and other activities that will benefit and promote both AAS and the STEM professions in Arkansas.

Arkansas Academy of Science members are invited to submit nominations for Fellows. A potential Fellow must be an active member of the Academy for a minimum of 3 years and have contributed to STEM in one or more of the following: (a) outstanding STEM research, (b) inspired teaching of STEM, or (c) significant leadership in the Academy. Nominations and seconds for Fellows should be submitted to the Secretary of the Academy no later than October 1 of the year previous to the year of actual consideration. A nomination consists of 1) a cover letter from the primary nominator, 2) a second supporting letter from a co-sponsor, 3) a CV of the nominee, and 4) a concise document outlining the nominee's specific contributions to STEM in Arkansas and AAS in particular. The Executive Committee will determine if the nominee's qualifications are complete during the fall Executive Committee Meeting. A majority vote of the Executive Committee on any nominee will result in that nomination being presented to the Academy Membership during the following Spring Business Meeting for possible approval. The Secretary will distribute a list of nominees to the Academy Membership at least 10 days prior to the Spring Business Meeting. Fellows will receive a plaque at the subsequent year's business meeting. Fellows are appointed for life. There are no restrictions on the number of Fellows elected each year.

### **HONORARY FELLOWS**

The Honorary Fellows of the Arkansas Academy of Sciences are a group of distinguished individuals, selected in recognition of their outstanding contributions to STEM in Arkansas, who are not members of AAS. Any individual who has made a distinguished or substantial contribution in any area of STEM in Arkansas may be nominated. AAS Honorary Fellows serve as ambassadors for the Society and as such are encouraged to engage in outreach and other activities that will benefit and promote both AAS and STEM in Arkansas.

Arkansas Academy of Science members are invited to submit nominations for Honorary

Fellows. Candidates must have spent a significant portion of their professional careers in Arkansas or contributed substantial research findings pertaining to Arkansas. Nominations and seconds for Honorary Fellows should be submitted to the Secretary of the Academy no later than October 1 of the year previous to the year of actual consideration. A nomination consists of 1) a cover letter from the primary nominator, 2) a second supporting letter from a co-sponsor, 3) a CV of the nominee, and 4) a concise document outlining the nominee's contribution to STEM in Arkansas. These accomplishments could be in any area of basic or applied science, engineering, math and technology as well as in STEM teaching or in service to STEM. The Executive Committee will determine if the nominee's qualifications are complete during the fall Executive Committee Meeting. A majority vote of the Executive Committee on any nominee will result in that nomination being presented to the Academy Membership during the following Spring Business Meeting for possible approval. The Secretary will distribute a list of nominees to the Academy Membership at least 10 days prior to the Spring Business Meeting. Honorary Fellows will receive a plaque at the subsequent year's business meeting. Fellows are appointed for life. There are no restrictions on the number of Honorary Fellows elected each year.

I currently have 7 boxes of back issues of the journal stored in my attic. I will continue to store them even after I retire as secretary.

Ed and Andy moved to approve the report and Todd seconded the motion. Approval was unanimous.

### **4. Treasurer's Report: Andy Sustich**

This report was the same as presented last December and it was approved by the executive committee at that time so is preapproved.

The end of 2021 AAS financial statement is presented at the end of these minutes.

### **5. Historian's Report: Abdel Bachri**

The 2021 spring meeting of the Arkansas Academy of Science at the University of Arkansas at Fort Smith (UAFS), Arkansas was the 104<sup>th</sup> annual meeting of the Academy. This will mark the second time that UAFS has hosted the Academy having done so previously in 1996, when named Western College.

**Arkansas Academy of Science Business Meeting Report**

The 104<sup>th</sup> meeting was originally scheduled to take place on April 3-4<sup>th</sup> 2020 at UAFS. However, due to the global COVID-19 (Coronavirus) pandemic, UAFS leadership and AAS had no choice but to make the necessary decision to cancel the 2020 meeting in order to protect the health, safety, and well-being of its members and attendees. AAS decided to postpone its 104<sup>th</sup> meeting and host it at UAFS, possibly face-to-face. The 2020 membership dues were rolled forward and counted as 2021 dues. However, one year after the World Health Organization declared the covid-19 outbreak a Public Health Emergency of International Concern, the pandemic continued to rage on with infections reaching an all-time high rate during Fall 2020. During AAS executive meeting, which was conducted online via zoom on Dec 16, 2020, UAFS Jack L. Jackson II announced the meeting will be conducted virtually on April 9-10 2021. The 104<sup>th</sup> meeting marked the first time an annual meeting was held online.

The meeting was very efficiently managed by Jack Jackson, conference chair. Other local organizing committee members consisted of Ragupathy Kannan, Clint Brooks, Myron Riggsby, Tom Buchanan, Joshua Burns, Amy Skypala, Kristine Garner, and David McClellan of UAFS. The organizing committee did an outstanding job with hosting the meeting online; all research presentations were disseminated through prerecorded video lectures. This comes at a time where the online presence of the Academy was growing. Dr. Helen James, Research Zoologist and Curator of Birds at the Smithsonian Museum of Natural History, served as the keynote speaker and gave a presentation on Discovering a Lost World of Birds: Fossils in Hawaii's Lava Caves.

University of Arkansas – Fort Smith was founded in 1928 as Fort Smith Junior College. The name was changed to Westark Junior College in 1966, then Westark Community College in 1972, and Westark College in 1998 before becoming known as University of Arkansas – Fort Smith in 2002 as one of 21 academic institutions and affiliates governed by the University of Arkansas System board of trustees and administered by the president of the system.

No physical pictures were taken but screen shots of the virtual conference will be kept in the archives.

Collis moved approval of the report and Ivan seconded the motion. Approval was unanimous.

## **6. Journal of the Arkansas Academy of Science Editor-In-Chief Report: Ivan Still**

### **a) Volume 74**

Sixteen manuscripts were submitted for consideration of publication in volume 74 (2020) of the JAAS. These manuscripts included 11 Articles, and 5 General notes, all being submitted by the electronic manuscript submission process on the Journal website. Numbers were obviously down due to the COVID19-induced issues resulting in the cancellation of the meeting last year.

By the beginning of May, manuscripts were checked for style, grammar, format, etc., to ensure compliance with the “Instructions to Authors”. Abstracts were sent to potential reviewers by mid to late May. I handled Physical Science papers, Invertebrate biology and some Vertebrate biology papers, while Doug Barron handled 2 Ecology/Environmental papers, and Cristina Blanco handled 2 Vertebrate Biology papers. The majority of manuscripts were sent out electronically for review by the beginning of June. I would like to thank the Associate Editors and reviewers for their help in the preparation of volume 74.

Authors were informed if their paper was accepted with the need for minor or major revision or whether their paper was rejected in July. Authors were asked to return their revisions to their handling editor via Scholarworks by August 31, with the page charges submitted directly to Andy Sustich. Two manuscripts required “major” corrections. Once reviews were returned to handling editors, control of manuscript processing was returned to me. Final revisions with page numbers were uploaded at the end of November: this does provide a final time for authors to check their manuscripts, for any errors arising during final editorial formatting (although not for changing content). The final completion of the Journal for general release is dependent on the December executive committee meeting, when Secretary and end of year Treasurer's report are available. Hence, the Journal was released electronically in the first week of January.

Volume 74 is 100 pages long, including cover pages. Printed copies have been sent out to members throughout March 2021 and should arrive to individuals over the next few weeks, depending on the USPS. I have “volunteered” individual members to receive the package of Journals at different institutions and to distribute Journals to

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members at their institutions. I would like to thank those individuals that performed that task in 2020 and those who have/will be doing the same for 2021. I have also attempted to find physical addresses for our Life Members for whom we have University/Institutional addresses, but who no longer appear on those Institutional websites. I sent out volume 74 to 10 such individuals. I specifically asked that they confirm by email to the jarksci@gmail.com (the Journal email) if they are still interested in remaining in contact with the Academy and still wish to receive their hardcopy of the Journal and the annual Academy newsletter in the future, as part of their Life membership. So far I have only received two responses: if I do not receive a response from the others, I plan to remove them from the mailing list for the Journal.

### b) Leadership report

Download statistics for the on-line journal were: 4584 full-text downloads in the month of March 2021, 50,236 in year-to-date, and 160,319 total downloads since being on Scholarworks from a total of 2,361 manuscripts in the journal. For the past month, top countries for download are the USA (1909), followed by India (317) and then the UK (231). Top referrers: Google, then scholar.google.com.

### c) Editorial Board and preparation for succession

I have recruited Dr. Amber Harrington as Associate Editor of Physical Science for Volume 75 onward. Dr. David Bowles (Missouri State University, *retired*) has volunteered to become the Invertebrate zoology Associate Editor this year too. I would like to express my gratitude to these new additions to the Editorial Board of the Journal. As of this meeting, we are still in need of an Editor-in-Chief and Managing Editor for Volume 76 onward, when I step down with the completion and any mailing of Volume 75 in 2022 (annual meeting). We have had a recruitment notification for Managing Editor in the Newsletter since 2018, and once Dr. Hemmati stepped down and I also took on the Editor-in-Chief position, for the Editor-in-Chief position. Duties for both positions were posted in the 2020 and 2021 Newsletter, and I included a one pager on the duties in Volume 74. I have been compiling a set of templates and where necessary additions to the "how to manual" for performing the Editorial and publishing process to

be handed on to my successor. Dr. AlRoobi and I have streamlined the process of uploading changes to the Editorial Board and Instructions to Authors on the Journal webpage (the latter will also make it easier for authors as these are now in pdf format).

Approval of the report was unanimous.

### 7. Webmaster: Rami Alroobi

Rami was unable to attend the meeting.

### 8. Newsletter: Panneer Selvam

The spring newsletter was completed in a timely fashion and contained the appropriate information for the meeting.

### 9. Committee Reports:

#### Nominations Committee

Jeff Shaver of UAFS was nominated for the position of Vice President while Steve Addison was nominated for the position of Secretary. No nominations from the floor occurred. Jeff and Steve were elected by a unanimous voice vote.

#### Undergraduate Research Awards: Stephen Addison

Four quality proposals were received and approved. They are summarized below.

Sara V. Vue, Henderson State, Mentor: Martin J. Campbell, Ionic liquid polymers for space environments, \$1,000.

Lara I. Kockaya, Henderson State, Mentor: Martin J. Campbell, Air filtration in space environments, \$1,000.

Cori Clower, Ouachita Baptist University, Mentor: Sharon Hamilton, Test and compare drug inclusion methods on polymer-based collagen mats, \$1,000.

Aiiryl McCoy, Ouachita Baptist University, Mentor: Sara E. Hubbard, Investigation of damage to polycarbonate lamps stored at the Indianapolis Museum of Art (Chemistry investigation), \$1,000.

#### Outreach Committee Report- Edmond Wilson Chair

Committee members: Stephen Cooper, Biology, Harding University; Gija Geme, Chemistry, Southern Arkansas University; Antoinette Odendall, Biology, Chemistry, Engineering, Southern Arkansas University.

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We will work with various people and committees to see that our new Honorary Fellows get recognition for their outstanding contributions to this State.

We will be developing materials for our website to direct learning activities for K-12.

We will not necessarily develop the materials ourselves but rather gather information and place it on our website in a way to allow for hands-on learning experiences. AAS members will be encouraged to participate in development of these materials.

We are planning to develop a presentation to be made at public libraries, which can travel, to generate interest and knowledge about the great State of Arkansas.

With the hopeful demise of the severity of the COVID-19 Pandemic, we plan to participate in Thunder Over Arkansas and Tinkerfest this fall.

Help us find volunteers for our committee from each AAS college campus!

**10. Related Organization Reports:*****i.* Arkansas Junior Academy of Science - Charles Mebi**

I wish to thank all Participants and presenters for choosing to present your research work at the 2021 Arkansas Junior Academy of Science competition. The event took place on April 3, from 9 am to 11 am.

This year's competition was virtual. All presenters received an email with the WebEx link for the presentations. The event started at 9 am with category presentations. The presentations were automatically recorded.

The judges selected the top three presenters for each category. The results were posted on the ArJAS website and emailed to all the presenters by Monday, April 5. Since the presentations were recorded, presentations by the 1<sup>st</sup> place category winners were reviewed later by the judges to determine overall winners. Therefore, the 1<sup>st</sup> place category winners were not required to present again.

The awards were mailed to the winners after the competition.

**Awards and Recognitions:**

- 1<sup>st</sup> place overall: \$150 and plaque  
2<sup>nd</sup> place overall: \$100 and plaque

- 3<sup>rd</sup> place overall: \$50 and plaque  
1<sup>st</sup> place category: plaque  
2<sup>nd</sup> and 3<sup>rd</sup> place category: Certificates

1<sup>st</sup> place chemistry and biochemistry winners will receive recognition from the Central Arkansas Section of the American Chemical Society during its annual awards ceremony. Recipients will be contacted later.

Overall winners will be given the opportunity to represent the State of Arkansas at the 2022 American Junior Academy of Science (AJAS) Conference.

**2021 Arkansas Junior Academy of Science Competition winners:****Overall Winners**

- Kevin D. Durden  
Little Rock Central High School
- Amna Khan  
Little Rock Central High School
- Dishant A. Sharma  
Little Rock Central High School

**Subject Area Winners****Chemistry**

- Amna Khan  
Little Rock Central High School
- Fatima Majid  
Pulaski Academy

**Biochemistry**

- Jana H. Eid  
Pulaski Academy
- Bhavana Sridharan  
Little Rock Central High School

**Environmental Science**

- Ilie L. Thomas  
Pulaski Academy
- Tarini Eswaran  
Little Rock Central High School
- Aimee H. Bae  
Little Rock Central High School

**Engineering**

- Landon P. Runion-Driskel  
Little Rock Central High School
- Maya F. Uwaydat  
Pulaski Academy
- Andrew A. Parson  
Pulaski Academy

**Zoology**

- Gautami J. Lohakare  
Little Rock Central High School

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**Microbiology**

1. Dishant A. Sharma  
Little Rock Central High School
2. Andre E. Fiser  
Pulaski Academy

**Computer Science**

1. Kevin D. Durden  
Little Rock Central High School
2. Anu Iyer  
Little Rock Central High School
3. Sofia Roman  
Pulaski Academy

**Behavioral and Social Science**

1. Sydney C. Crary  
Pulaski Academy
2. Akul Shrivastava  
Little Rock Central High School
3. Audrey I. Gardner  
Pulaski Academy

**11. Business Old and New:**

- i. 2022 meeting at OBU is confirmed as is the 2023 meeting at UAPB.
- ii. Order of Program for the Business Meeting will follow the same format as the executive committee meeting.
- iii. Collis reported that votes are coming in on the fellow nominees and will continue to be received through April 14.
- iv. Matters relating to the Journal: Ivan moved that the price of old hard copies of the journal be reduced to \$35. This was approved unanimously. The general opinion of the committee is that a box to indicate whether or not a participant wanted a hard copy of the journal be included on the meeting registration form. John Jiang presented his credentials and expressed interest in the position of Managing Editor of the Journal.

**12. Meeting was adjourned**

Steve passed the hammer to Andy Sustich who is now our President. Andy thanked UAFS for an excellent meeting under difficult circumstances. He congratulated Doug's daughter for an excellent presentation as well as an excellent career. He is planning on a "regular meeting" in 2022.

The meeting was adjourned shortly before 11:00 to allow transition to the general business meeting.

Minutes prepared by Secretary Collis Geren, April 12 2021. Approved by Exec. Com. December 17 2021

**Treasurer's Report  
ARKANSAS ACADEMY OF SCIENCE  
2021 FINANCIAL STATEMENT  
December 9, 2021**

**Balance – December 9, 2021** **\$161,517.27**

**Balance – December 9, 2020** **\$164,264.61**

**Net Gain** **-\$2,747.43**

**DISTRIBUTION OF FUNDS**

Checking Account Dec. 9, 2021 \$12,994.18  
Arvest Bank

PayPal Account: \$37.81

Available funds on Dec. 9, 2021

Certificate of Deposit Dec. 9, 2021 \$53,531.04

Includes Phoebe and George Harp Endowment

Arvest Bank

Certificate of Deposit Dec. 9, 2021 \$53,531.04

Arvest Bank

Certificate of Deposit Dec. 9, 2021 \$41,423.11

Arvest Bank

**TOTAL** **\$161,517.18**

**INCOME**

1. INTEREST (Interest Earned Year to Date December 9, 2021)

- |                                  |                |
|----------------------------------|----------------|
| a. Checking Account, Arvest Bank | \$0            |
| b. CD1 (Arvest Bank)             | \$80.22        |
| c. CD2 (Arvest Bank)             | \$80.22        |
| d. CD3 (Arvest Bank)             | <u>\$62.08</u> |

All interest was added to the CDs **\$222.52**

2. JOURNAL

- |  |                 |
|--|-----------------|
| a. Page Charges (includes \$150 from UAFS for rejected manuscript) | \$4,800.00      |
| b. Subscriptions, University of Arkansas                           | <u>\$300.00</u> |

**Total** **\$5,100.00**

3. MEMBERSHIP

- |  |                   |
|--|-------------------|
| a. Individual/Associate                | \$955.00          |
| b. Individual collected at the meeting | \$0               |
| c. Institutional                       | <u>\$1,000.00</u> |

**Total** **\$1920.00**

4. MEETING INCOME **\$0**

**Arkansas Academy of Science Business Meeting Report****5. MISCELLANEOUS INCOME**

a. Unspent/returned UG awards	\$0
b. Gifts: PayPal Charitable Giving Fund	<u>\$13.00</u>

**Total** **\$13.00**

**TOTAL INCOME** **\$7,290.52**

**EXPENSES****1. STUDENT AWARDS**

\$0

**2. AWARDS (Organizations)**

a. Arkansas State Science Fair	\$0
b. Arkansas Junior Academy of Science	\$0
c. Arkansas Junior Science and Humanities Sym.	<u>\$0</u>

**Total** **\$0**

**3. UNDERGRADUATE RESEARCH AWARDS**

a. Four from 2020, four from this year	<u>\$7,805.00</u>
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**Total** **\$7,805.00**

**4. JOURNAL**

a. Volume 74 Printing Cost	\$1,724.38
b. Journal Mailing Cost	<u>\$255.37</u>

**Total** **\$1,979.75**

**5. MISCELLANEOUS EXPENSES**

a. Reimburse Rami for Website registration	\$163.49
b. Reimburse Andy for Quicken subscription	\$62.99
c. Dues: National Assoc. of Academies of Science	\$0
d. PayPal fees	<u>\$26.72</u>

**Total** **\$253.20**

**6. MEETING EXPENSES**

\$0

**TOTAL EXPENSES** **\$10,037.95**

**ARKANSAS ACADEMY OF SCIENCE  
COST OF JOURNAL**

VOLUME	COPIES	PAGES	PRINTER CHARGE	TOT. VOL. COST	COST/COPY	COST/PAGE
44 (1990)	450*	136	\$9,298.64	\$9,798.64	\$21.77	\$72.05
45 (1991)	450*	136	\$9,397.07	\$9,929.32	\$22.06	\$73.01
46 (1992)	450*	116	\$9,478.56	\$10,000.56	\$22.22	\$86.21
47 (1993)	400	160	\$12,161.26	\$12,861.26	\$32.15	\$80.38
48 (1994)	450	270	\$17,562.46	\$18,262.46	\$40.58	\$67.63
49 (1995)	390	199	\$14,725.40	\$15,425.40	\$39.55	\$77.51
50 (1996)	345	158	\$11,950.00	\$12,640.75	\$36.64	\$80.00
51 (1997)	350	214	\$14,308.01	\$15,008.01	\$42.88	\$70.13
52 (1998)	350	144	\$12,490.59	\$13,190.59	\$37.69	\$91.60
53 (1999)	350	160	\$13,686.39	\$14,386.39	\$41.10	\$89.91
54 (2000)	350	160	\$14,149.07	\$14,849.07	\$42.43	\$92.81
55 (2001)	360	195	\$16,677.22	\$17,498.22	\$48.61	\$89.73
56 (2002)	350	257	\$18,201.93	\$19,001.93	\$54.29	\$73.94
57 (2003)	230	229	\$14,415.12	\$15,715.12	\$68.33	\$68.62
58 (2004)	210	144	\$7,875.76	\$9,175.76	\$43.99	\$63.72
59 (2005)	215	226	\$16,239.04	\$17,835.84	\$82.96	\$78.92
60 (2006)	220	204	\$11,348.06	\$12,934.30	\$58.79	\$63.40
61 (2007)	195	150	\$8,196.84	\$9,914.69	\$50.84	\$66.10
62 (2008)	220	166	\$2,865.00	\$2,967.49	\$13.49	\$17.88
63 (2009)	213	206	\$3,144.08	\$3,144.08	\$14.76	\$15.26
64 (2010)	232	158	\$2,713.54	\$2,764.30	\$11.91	\$17.50
65 (2011)	200	194	\$2,915.12	\$2,963.03	\$14.82	\$15.27



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VOLUME	COPIES	PAGES	PRINTER CHARGE	TOT. VOL. COST	COST/COPY	COST/PAGE
66 (2012)	200	216	\$3,087.91	\$3,180.29	\$15.90	\$14.72
67 (2013)	200	238	\$3,311.42	\$3,396.32	\$16.98	\$14.27
68 (2014)	180	192	\$2,812.75	\$2,944.08	\$16.36	\$15.33
69 (2015)	180	170	\$2,622.87	\$2,622.87	\$14.57	\$15.43
70 (2016)	180	307	\$3,179.53	\$3,320.76	\$18.45	\$10.82
71 (2017)	180	262	\$2,839.45	\$2,839.45	\$15.77	\$10.83
72 (2018)	180	229	\$2,681.40	\$2,779.35	\$15.44	\$12.14
73 (2019)	180	166	\$2,559.87	\$2,848.28	\$15.82	\$17.16
74 (2020)	170	100	\$1,724.38	\$1,979.75	\$11.65	\$19.80

The Total Volume Cost equals the printer's charge, plus the other miscellaneous charges (e.g. Mailing Costs).

- On Volume 44 the Academy received 535 copies, but the printer did not charge us for the extra 85 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 45 the Academy received 594 copies, but the printer did not charge us for the extra 144 copies. For comparison purposes the calculated cost/copy is based on 450 copies.
- On Volume 46 the cost was greater than usual due to the high cost of a second reprinting of 54 copies by a different printer.

## APPENDIX A

**AWARD WINNERS FROM THE 104<sup>th</sup> ANNIVERSARY ARKANSAS ACADEMY OF SCIENCE  
(awardees are underlined)**

UNDERGRADUATE AWARDS**BIOCHEMISTRY/MOLECULAR BIOLOGY**

Sydney Du, Cladie B. White, University of Arkansas - Fort Smith

Faculty Mentors: Archana Mishra, Mohammad A. Halim, University of Arkansas - Fort Smith

**Designing Antimicrobial Peptides Against the Main Protease of SARS CoV-2: A Molecular Modelling Approach**

**VERTEBRATE BIOLOGY/ZOOLOGY**

Willow Newman, Chance Garrett, Matthew Gifford, University of Central Arkansas

Faculty Mentors: Ginny Adams, Reid Adams, University of Central Arkansas

**Turning Up the Heat: Thermal Tolerances of Fishes in the Kings River, Arkansas**

**PLANT BIOLOGY/BIOMEDICAL STUDIES**

Ashlyn Estes, University of Central Arkansas

Faculty Mentor: Erin Wiley, University of Central Arkansas

**Effects of Late Winter/Early Spring Flooding on Pin Oak Saplings**

**MUSEUM SCIENCE/BIODIVERSITY**

Grace Capooth, Hendrix College

Faculty Mentor: Adam C. Schneider, Hendrix College

**Curating and Digitizing the Bryophyte Collections of the Hendrix College Herbarium**

**CHEMISTRY I**

Paul Gambill, University of Arkansas - Fort Smith

Faculty Mentor: Mohammad A. Halim, University of Arkansas - Fort Smith

**Menthol: Acetic Acid Based Low Viscosity Deep Eutectic Solvents**

**CHEMISTRY II**

Evan Wittig, University of Arkansas - Fort Smith,

Faculty Mentor: Charuksha Walgama, University of Arkansas - Fort Smith

**Electrochemical Biofilms for Drug Metabolite Synthesis**

**PHYSICS**

Joe Coker, Hendrix College

Faculty Mentor: Julie Gunderson

**The Fluorino: A Low-Cost, Arduino-Controlled Fluorometer**

**Arkansas Academy of Science Business Meeting Report**

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**ENGINEERING**

**Grace Zimmerman**, University of Central Arkansas,  
Faculty Mentors: Jessica S. Friz, Nathan T. Perreau, NASA  
Langley Research Center

**Generic Robotic Guidance, Navigation, and Control  
Classes for the OSAM Architecture Simulation System  
(OASiS)**

**GEOSCIENCES**

**Matthew Neal**, Emily Blitz, Andrew Edmonds, Ian  
Hattabaugh, Preston Liles, Julia Mathews, Jake Thompson,  
Jonathan Turco, University of Arkansas - Fort Smith  
Faculty Mentors: Maurice Testa, Jordan Mader, University  
of Arkansas - Fort Smith

**Development of a Standardized Methodology for the  
Collection and Quantification of Microplastics in Fort  
Smith Regional Waterway**

**MEDICINE & PARASITOLOGY**

**Samantha Jones**, Southern Arkansas University  
Faculty Mentor: James Hyde, Southern Arkansas University  
**Testing the Long Term Viability of Organotypic  
Cultures of the Anterior Mouse Pituitary**

**GRADUATE AWARDS**

**BIOCHEMISTRY/MOLECULAR BIOLOGY/  
VERTEBRATE ZOOLOGY/MEDICINE**

**Billy Huggins**, University of Central Arkansas  
Faculty Mentor: Mindy Farris, University of Central  
Arkansas

**Vitamin D: A Longevity Vitamin?**

**COMPUTER SCIENCE/ENGINEERING**

**Etee Kawna Roy**, Arkansas State University  
Faculty Mentor: Brandon Kemp, Arkansas State University  
**Dynamic Modeling of Multiparticle Electrostatic Self-  
assembly Toward Tunable Surfaces in Inverted  
Dielectric System**

**APPENDIX B: RESOLUTIONS**

**Arkansas Academy of Science  
104th Annual Meeting, 2021 Resolutions**

Be it resolved that we, the membership of the Arkansas Academy of Science (AAS) offer our sincere appreciation to The University of Arkansas – Fort Smith for hosting the 104th annual meeting of the Academy. We thank the local arrangements committee: Myron Rigsby, Tom Buchanan, Joshua Burns, Amy Skypala, Kristine Garner, David McClellan, Julie Martin, Jason McGee, Matt Hartstein, Rhonda Boyd, Linus Yu, and especially Associate Conference Chairs, Ragupathy Kannan and Clint Brooks, and Conference Chair, Jack Jackson who supported the program and meeting arrangements listed in the AAS proceedings. We sincerely thank University of Arkansas- Fort Smith for providing its services during this, the first virtual meeting of the Academy.

We especially thank our keynote speaker, Dr. Helen James, for her informative keynote address: *Discovering a Lost World of Birds: Fossils in Hawaii's Lava Caves.*

Appreciation and sincere gratitude is extended to our dedicated judges for the student presentations including Chiraz Amrine, Douglas Barron, Tom Buchanan, Joshua Burns, John Chamberlin, Puskar Chapagain, Shannon Clardy, Nawa Dahal, Lisa DuBose, Joel Funk, Mariusz Gajewski, Kristine Garner, Jacob Grosskopf, Julie Gunderson, Sharon Hamilton, Lionel Hewavitharana, Sara Hubbard, Nick Huisman, James Hyde, Naga Lakkaniga, Roger Lightner, David Mayo, David McClellan, Archana Mishra, Janet Renwick, Blake Sasse, Jeff Shaver, Ashokkumar Sharma, Amy Skypala, Ryan Stork, Suresh Kumar Thallapuram, Candice Thomas, Susanne Wache, Charuksha Walgama, Edmond Wilson. We thank Dr. Ragupathy Kannan for coordinating the judging.

We congratulate our student researchers, scientists, and engineers who presented papers and posters whose efforts contribute directly to the future success of the Academy and the improvement of advancement of

## Arkansas Academy of Science Business Meeting Report

science in Arkansas. We congratulate the student award winners listed in the minutes.

The Academy recognizes its leadership and offers its thanks to this year's set of executive officers including Stephen Addison (President), Andrew Sustich (President Elect and Treasurer), Todd Tinsley (Vice President), Franklin Hardcastle (Past President),

Ivan Still (Journal Editor-in-Chief and Journal Managing Editor), Panneer Selvam (Newsletter Editor), Rami Alroobi (Webmaster), Abdel Bachri (Historian), and Collis Geren (Secretary).

Respectfully submitted on this 10<sup>th</sup> day of April, 2021. Resolutions Committee.

### 2021 ARKANSAS ACADEMY OF SCIENCE MEMBERSHIP

#### LIFE MEMBERS

FIRST	LAST NAME	INSTITUTION
Steven	Addison	University of Central Arkansas
Edmond J.	Bacon	University of Arkansas-Monticello (ret.)
Vernon	Bates	Ouachita Mountains
Floyd	Beckford	Duke Kunshan University
Don	Bragg	USDA Forest Service
Calvin	Cotton	Geographics Printing Company
Betty	Crump	Ouachita National Forest
James	Daly	UAMS (retired)
Leo	Davis	Southern Arkansas University (ret.)
Mark	Draganjac	Arkansas State University
Jim	Edson	University of Arkansas-Monticello(ret.)
Kim	Fifer	UAMS
Collis	Geren	University of Arkansas-Fayetteville
John	Giese	Ark. Dept. of Env. Qual. (ret.)
Walter	Godwin	University of Arkansas-Monticello (ret.)
Anthony	Grafton	Lyon College
Joe M.	Guenter	University of Arkansas-Monticello (ret.)
Joyce	Hardin	Hendrix College
George	Harp	Arkansas State University (ret.)
Phoebe	Harp	Arkansas State University (ret.)
Gary	Heidt	University of Arkansas-Little Rock (ret.)
Mostafa	Hemmati	Arkansas Tech University (retired)
Philip	Hyatt	Arkansas Tech University (retired)
Shahidul	Islam	University of Arkansas-Pine Bluff
Cynthia	Jacobs	Arkansas Tech University
Cindy	Kane	UAMS
Ragupathy	Kannan	University of Arkansas-Fort Smith
Scott	Kirkconnell	Arkansas Tech University (retired)
Roger	Koepe	University of Arkansas-Fayetteville (ret.)
Christopher	Liner	University of Arkansas
Roland	McDaniel	FTN Associates
Grover P.	Miller	UAMS
Mansour	Mortazavi	University of Arkansas-Pine Bluff
James	Peck	University of Arkansas-Little Rock (ret.)
Michael	Rapp	University of Central Arkansas (retired)
Dennis	Richardson	Quinnipiac College
Jeff	Robertson	Arkansas Tech University
Henry	Robison	Southern Arkansas University (retired)
Benjamin	Rowley	University of Central Arkansas
David	Saugey	U.S. Forest Service (retired)
Panneer	Selvam	University of Arkansas-Fayetteville
Ivan	Still	Arkansas Tech University (retired)
Suresh	Thallapuram	University of Arkansas-Fayetteville
Stanley	Trauth	Arkansas State University (retired)
Gary	Tucker	FTN Associates
Renn	Tumlison	Henderson State University

#### LIFE MEMBERS

FIRST	LAST NAME	INSTITUTION
Scott	White	Southern Arkansas University
James	Wickliff	University of Arkansas
Jason	Wiles	Syracuse University, NY
Robert	Wiley	University of Arkansas-Monticello (ret.)

#### REGULAR MEMBERS

FIRST	LAST NAME	INSTITUTION
Ginny	Adams	University of Central Arkansas
Meredith	Akins	University of Arkansas-Ft. Smith
Rami	AlRoobi	Southern Arkansas University-Magnolia
Chiraz	Amrine	Arkansas Tech University
Souvik	Banerjee	University of Arkansas-Ft. Smith
Doug	Barron	Arkansas Tech University
Sandhya	Baviskar	University of Arkansas-Ft. Smith
Keith	Blount	University of Arkansas-Monticello
David	Bowles	US. National Park Service
Tom	Buchanan	University of Arkansas-Ft. Smith
Joshua	Burns	University of Arkansas-Ft. Smith
Martin	Campbell	Henderson University
John	Chamberlin	Chamberlin Research, Little Rock, AR
Puskar	Chapagain	Southern Arkansas University-Magnolia
Stephen	Chordas III	Ohio State University
Rajib	Choudhury	Arkansas Tech University
Shannon	Clardy	Henderson State University
Kim	Cloud	University of Arkansas-Ft. Smith
Matthew	Connior	Northwest Arkansas Community College
Steven	Cooper	Harding University
Allyn	Dodd	Lyon College
David	Donley	Harding University
Kisa	DuBose	Arkansas Tech University
Phillip	Dukes	Southern Arkansas University-Magnolia
Eric	Fuselier	Crafton-Tull
Kristie	Garner	University of Arkansas-Ft. Smith
Abby	Geis	Arkansas College of Osteopathic Medicine
Gary	Graves	Smithsonian Institute
Jacob	Grosskopf	Arkansas Tech University
Gaumani	Gyanwali	Rich Mountain Community College
Mohammad	Halim	University of Arkansas-Ft. Smith
Sharon	Hamilton	Ouachita Baptist University
Lionell	Hewavitharana	Southern Arkansas University-Magnolia
Stacey	Hickson	Southern Arkansas University-Magnolia
Sara	Hubbard	Ouachita Baptist University
Michael	Howell	University of Arkansas-Little Rock
Jack	Jackson	University of Arkansas-Fort Smith

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FIRST	LAST NAME	INSTITUTION
Kailash	Jajam	University of Arkansas-Little Rock
David	Jamieson	Crowder College
Qinglong	Jiang	University of Arkansas-Pine Bluff
Thurmond	Jordan	Audobon Society
Jeremy	Lusk	University of Central Arkansas
Eric	Lovely	Arkansas Tech University
Dave	Mayo	University of Arkansas-Fort Smith
Chris	McAllister	Eastern Oklahoma State College-Idabel
Maureen	McClung	Hendrix College
Quinn	Montana	University of Arkansas-Fayetteville
Matthew	Moran	Hendrix College
Rebecca	Mroczek	University of Arkansas-Fort Smith
Kristina	Nath	Rich Mountain Community College
Karl	Naylor	University of Central Arkansas
Henry	North	Harding University
Antoinette	Odendaal	Southern Arkansas University-Magnolia
Jennifer	Ogle	University of Arkansas-Fayetteville
Joseph	Onyilagha	University of Arkansas-Pine Bluff
Rajvardhan	Patil	Arkansas Tech University
Mike	Plummer	Harding University
Christin	Pruett	Ouachita Baptist University
Brett	Servis	Henderson State University
Jeffrey	Shaver	University of Arkansas-Ft. Smith
Mikel	Shinn	AR Dept Environmental Quality
Hamed	Shojaeo	Arkansas Tech University
Twanda	Simmons	Arkansas State University-Beebe
Amy	Skypala	University of Arkansas-Ft. Smith
Ryan	Stork	Harding University
Andy	Sustich	Arkansas State University-Jonesboro
Ebo	Tei	University of Arkansas-Pine Bluff
Todd	Tinsley	Hendrix College
Susanne	Wache	Southern Arkansas Community College
Daoyuan	Wang	University of Arkansas-Pine Bluff
Grady	Weston	Harding University
Matthew	White	Arkansas College of Osteopathic Medicine
Jessica	Young	Arkansas Tech University
Matthew	Young	Arkansas Tech University
Zahra	Zamanipour	Henderson State University

**STUDENT MEMBERS**

FIRST	LAST NAME	INSTITUTION
Parker	Fane	Harding University
Samantha	Gibson	University of Arkansas-Pine Bluff
Carlin	Hill	Arkansas College of Osteopathic Medicine
Grace	Hoss	Arkansas College of Osteopathic Medicine
Olivia	Loudermilk	Harding University
Kate	Main	Arkansas College of Osteopathic Medicine
Brooke	Nelson	Arkansas College of Osteopathic Medicine
Brandon	Parker	Mensch Wold Lab
Zachary	Pierce	Arkansas College of Osteopathic Medicine
Audrey	Thomas	University of Arkansas-Ft. Smith
Kyla	Wilson	John Brown University

**SPONSORING/SUSTAINING MEMBERS**

FIRST	LAST NAME	INSTITUTION
Abdel	Bachri	Southern Arkansas University-Magnolia
Shannon	Clardy	Henderson State University
Eugene	Jones	Connect4Business
Stefanie	Leacock	University of Arkansas-Little Rock
Bryan	Lockhart	
Edmond	Wilson	Harding University