Greetings from the President
Amanda Fuller, NAAS President; Executive Director, Kentucky Academy of Science

Greetings Academy of Science colleagues! I have taken the reins as NAAS Board President from 2021 – 2023. I’ve enjoyed getting to know many of you in recent years and I hope to get to know more of you in the coming months.

I first got interested in the work of NAAS in 2016 when Steve Warshaw contacted me. He was very encouraging, and I encourage all of you to take the time to visit our state academies about their operations & structures. I offered to help because I thought it was a great excuse to get to know my counterparts in other Academies of Science. I see a lot of common ground among our organizations but also a rich diversity in programs. As President, I’m really looking forward to sharing more of this within our network. Some of you, for example, are doing terrific public programming. Some of you are doing meaningful state & local science policy work. Some of you have thriving Journals, and others have terrific Annual Meetings, or solid fundraising in place. These are a few of the areas that I’m looking forward to dig into and share in coming months.

I hope you’ll join your fellow state for a series of “Academy Chats”- We’ve put this series together based on what our Affiliates have told us they are interested in learning.

CONTINUED ON PAGE 4

AJAS: From virtual Phoenix to hybrid Philadelphia

By Lee Brogie, AJAS Executive Director

Being able to attend the AAAS Annual Meeting as an AJAS delegate this year has been the greatest honor and an extremely cherished opportunity for me. Every Q&A, keynote session, and plenary lecture has provided transformative knowledge that I can apply to all disciplines in life.

It seems like yesterday that we were getting together virtually for the 2021 AJAS/NAAS/AAAS Conference. What an incredible experience! The 2021 Class of AJAS Fellows is the largest ever. 200 students from 23 affiliated academies presented 190 research projects at the 2021 AJAS/AAAS Virtual Poster Session. Congratulations to this year’s Fellows who shared their research with the world via the poster session https://projectboard.world/ajas and had their abstracts published in the 2021 AJAS Annual Meeting Program https://aaas.confex.com/ajas/2021/meetingapp.cgi/Session/27887. The Poster Session is still live, and I encourage all of you to take the time to visit posters. While you are there be sure to watch the Welcome Video featuring Sudip Parikh, CEO AAAS, and Lee Ann Brogie, Director AJAS; visit the Sponsors/Partners page; and download a copy of the 2021 AJAS/NAAS Conference Brochure.

Going virtual allowed our conference to begin in late December and end on February 11th, the last day of the 2021 AAAS Annual Meeting. The first event of the AJAS Conference was a film screening of the documentary about the 2018 Nobel laureate in Physiology or Medicine, Dr. Jim Allison. The documentary titled Jim Allison: Breakthrough, is the story of one man’s visionary quest to find a cure for cancer. Following the screening Drs. Allison and Padmanee Sharma hosted a live Q&A for the AJAS Fellows.

CONTINUED ON PAGE 5

A Message from AAAS CEO Sudip Parikh

At AAAS, we provide input into policymaking at every level of government. I am incredibly excited by the bipartisan support for increased funding for science in the coming year. Part of that funding would be to help train the next generation of scientists and engineers. This next generation of scientists will tackle the challenges of climate change and drive advances in quantum computing and healthcare that will change the way we live. They will bring diversity of thought derived from diversity of experience.

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**NAAS Board Members 2021-22**

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<th>Position</th>
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**Past and Future Reflections of NAAS**

By Ed M. Brogie, NAAS Exec. Dir.

As the Executive director of NAAS, I would like to say farewell, but not goodbye to all my friends and colleagues of the NAAS and AJAS. We (Lee and I) plan to help in different ways than we are currently. I first brought AJAS students from my Independent Science Research class to Chicago in 1987. I taught most of the Laurel science classes in a rural Nebraska K-12 school that graduated around 30 students a year. For 24 years one or more of my high school research students qualified from Nebraska to attend the AAAS/AJAS Conference and present their research to the world's largest multidisciplinary scientific society (AAAS), which is a leading publisher of cutting-edge research through its Science family of journals.

Because of my support, experience, and fund-raising history with the AJAS, I was elected NAAS President-elect in 2004 and as the part-time NAAS Exec Dir. in 2010 to raise funds for a growing AJAS conference. I have many fond memories of meeting Peter Faletra, Don Jordan, Michael Strauss, Mandana Sassanfar, Joan Messer, Duane Nichols, Lynn Elfner, Steve Case, Mike Roche, Assad Panah, and many others. These volunteers spent many hours serving NAAS and AJAS over the years. My thoughts have always been that with so many working officers, NAAS never really needed an Exec. Director but needed the whole board to work on fundraising and general operations as a team in support of our state academies.

Since AAAS was formed from Affiliated Academies, the 50 NAAS Academies are geographically distinct and are a part of the AAAS constitution so they can select two NAAS delegates to serve on the AAAS Council. NAAS by function and mission is still in every way, the Affiliated Academies of Science, (AAS) and was formed in 1926. The Affiliated Academies of Science’s first Academy Conference met on December 30, 1926 in Philadelphia at the Annual Meeting of the AAAS, and it has presented programs at subsequent Annual Meetings. The AAAS website states “One of the most important functions of the NAAS is sponsorship of the American Junior Academy of Science (AJAS).”

The Pandemic has increased the importance of technology tools like Zoom and now MemberLeap to make communication with the Affiliated Academies much easier. With these tools Affiliated Academies can communicate with each other and share their ideas more often and in a much less complicated format.

Because I am leaving there is talk to restructure NAAS into a larger organization outside our constitution. This major reorganization would be more self-governing and less member-based. The NAAS would be able to set policy without approval of the Affiliated Academies. The reorganization would also require a much larger budget and financial support system. Currently the large majority of reserve money in the NAAS bank account has come from AJAS-related activities and fund-raising. Any monies spent on other functions in the reorganization have the potential to detract the support for AJAS. I feel that any attempt to set up additional organizations between AAAS and the Affiliated Academies weakens our mission and will compromise the collective power of the Affiliated Academies. Once the AAAS Affiliated Academies give up control there are few ways to get it back. I am not sure why folks would want to serve on the NAAS board and undermine our simple mission of supporting the AAAS Affiliated Academies and the American Junior Academy of Science through NAAS group affiliation.

*Ed Brogie, NAAS Executive Director*
A Message from AAAS CEO Sudip Parikh
(Continued from Page 1)

If we’re going to address the challenges and seize the opportunities of the future, we are going to need the brain power of the descendants of Native Americans, Pilgrims, Founding Mothers and Fathers, Enslaved Peoples, Ellis Island Arrivals, and immigrants from everywhere. Having seen the potential of our young scientists – those still in high school and college – I am confident that we will be in good hands.

Policy issues are important to scientists. As you grow your scientific and technical skills, I encourage you to start learning how science intersects with society. The upcoming 2022 AAAS Annual Meeting will offer the opportunity to discuss the latest scientific advances and their implications for society. You can find more details here: https://meetings.aaas.org/. I hope to see you in Philadelphia or online!

Sudip Parikh, AAAS CEO

NAAS Affiliated Academies of Science have the opportunity to become more involved in NAAS and AAAS Affairs.
By Michael Strauss,
The following offices are up for election and NAAS is seeking nominations from the ranks of leadership within the 48 Affiliated Academies

(Three open positions)
NAAS Treasurer (3-year term)
NAAS Newsletter Editor (3-year term)
NAAS AAAS Representative (3-year term)

Non-Voting Members: (Positions Available)
NAAS Member-at-Large (A-Affiliated Academies) Each position carries a three-year (3 yr.) term.
NAAS Member at Large (B-Business) Each position carries a three-year term (3 yr.)
AJAS Member at Large (C-Junior Academies) Each position carries a three-year term (3 yr.)

Deadline for nominations will be at the NAAS Delegates Meeting at the AAAS Annual Meeting, Philadelphia, PA, February 16-20, 2022 (The Delegates usually meet on Saturday of February 19, 2022, TBA)

Please contact Nominations and Awards Committee Chair
Michael Strauss to place a nomination:
Dr. Michael Strauss, USDA (retired), 1056 Old Ranch Road, Crawford, TX 76638
michael_strauss1@hotmail.com or Cell: 240-676-7670
Greetings from the President
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I hope you’ll join your fellow state for a series of “Academy Chats” - We’ve put this series together based on what our Affiliates have told us they are interested in learning.

- Growing, Managing and Engaging Academy of Science Membership Friday June 11, 3:30-5pm ET. Register: https://zoom.us/meeting/register/tJJkdumqj0jHtYvfTSf9pCPb4n232sgsFit
- Dipping into State-Level Science Policy - Friday June 25, 3:30-5pm ET https://zoom.us/j/97081679137?pwd=NWxNN0tuRWdKbhEdjiV0MUhSM3FMUT09
- Fundraising for Academies of Science - Friday July 9 3:30-5pm ET https://zoom.us/meeting/register/tJ0rcOyopjojHtIIIz4BMPpRce1aVL7RbrA2
- Diversity, Equity, Inclusion for Academies of Science -Friday August 13, 3:30-5pm ET https://zoom.us/meeting/register/tJwqf-6oqzIsHdUw3cXtE-zV2cY0sFLnjCbjZ

Slated for the fall we’ve got:
- Chat with AAAS
- Public Programming
- Journal Editors’ Convening
- And pitch us your ideas! What do you want to know about or share?

As I write this, our National Association of Academies of Science is facing a transition which offers an opportunity to grow and evolve. I am looking forward to building the capacity of the organization so that we can continue the programming we have, while serving you better and connecting our Academies to each other so that we can continue learn from each other. Ed Brogie is retiring from his NAAS at the end of June and Lee Brogie has stepped down as AJAS Director, but is still helping with the transition to a new Director. I’m looking forward to hearing more from you—our member academies—in the coming months, about what we can do better and what you want from us!

Thank you very much to our recent Past Presidents who have been great team-builders and have helped make smooth leadership transitions in the organization. I’m appreciating the collaboration that has been established on our board and I’m continuing what they’ve started, to build a shared leadership team with Past President Mike Strauss and President-Elect David Torain.

Please don’t hesitate to get in touch with me- I’d love to chat with you and hear your ideas about the future of NAAS!

Amanda Fuller
Executive Director, Kentucky Academy of Science
859-227-2837
executivedirector@kyscience.org
Southern California Academy of Sciences- Junior Academy Spring ‘21 News Update.

- SCAS website:  [http://scas.nhm.org](http://scas.nhm.org)
- Contact email:  [scas.nhm@gmail.com](mailto:scas.nhm@gmail.com)

During 2020-21… a Covid19 pandemic year affected by separation, isolation and social unrest throughout the country, the Southern California Academy of Sciences students in the Research Training Program carried on with their pursuit to learn about science research, however under different guidelines from previous years. Normally this research training involves the routine of working in the laboratories of their mentors in Southern California academic institutions, however due to the upsurge of the Covid19 in 2020, the subsequent unavailability of lab access, and to protect those involved, the program was modified to have the students write a Scholarly Paper. This paper was proposed to students and mentors at our first virtual meeting as an extensive review of the literature that can lead to new insights and new conclusions on their topic. Students were asked to collaborate online with their mentors, who helped guide their students’ writing of this paper. Students attended virtual workshops organized by the Junior Academy committee where professional scientists clarified the RTP’s new temporary direction and taught students about writing scientific papers and creating posters. This academic year preparation led to nine students presenting their posters at the virtual Southern California Academy of Sciences (SCAS) Annual Meeting on May 7, 2021.

The following nine students are to be congratulated for writing their papers and presenting their posters at this virtual SCAS Annual Meeting:  Aksh Garg, Palos Verdes Peninsula HS; Camilla Martinez, North Hollywood HS; Ashwin Sivakumar, Flintridge Preparatory School; Doyoon Kim, Grover Cleveland HS; Kavya Gupta, Westview HS; Pranav Moudgalya, University HS; Michael Skibsted, Santa Margarita Catholic HS; Su Kara, Capistrano Valley HS; Sabreen Alam, Portola HS.

Judges who read papers and interviewed students at their posters added to the success of the program. Students did their best to earn a spot to attend the national AJAS meeting to be held in conjunction with the hybrid AAAS Annual Meeting in Philadelphia, PA in February, 2022. The student AJAS delegates chosen from this group will be announced in July.

In July the SCAS RTP Selection Committee will review and select the 2021-22 students and the RTP cycle begins again. Before one realizes, written papers and poster presentations will be submitted again for the SCAS Annual Meeting that may be held at either California State University, Fullerton or University of California, Santa Barbara, in May 2022.

Gloria J. Takahashi,  
SCAS Board Member  
SCAS RTP  
AJAS Director 1990-2000

AJAS: From virtual Phoenix to hybrid Philadelphia

Continued from Page 1

Three amazing events took place in January. The first 2 sessions -- From Star Wars to Science: Building Your Story presented by Randy Olson, scientist turned film-maker and Comedy, Science, and Communication: Telling Your Story presented by Brian Palermo, Groundlings Improv Acting, Los Angeles -- provided students with tools to best communicate their research to others. The last session in January was the AJAS/NAAS Welcome Session featuring the National Institutes of Health’s Director Dr. Francis Collins. Just 10 days into a new administration, Dr. Collins was adamant to find time to speak with the 2021 Class of AJAS Fellows.

The first AJAS Conference event in February was the AJAS Research Round Table. Three Zoom meetings with breakout rooms were held allowing students to share their research in small groups. The AAAS Annual meeting began on February 8th. Students were encouraged to attend AAAS sessions including the AAAS President’s and Plenary Lectures. The premier event at AJAS in-person conferences is the NAAS Breakfast with Scientists, where students and scientists converse over breakfast. To emulate that experience, the AJAS Meet the Scientists sessions were held on February 11th. Dr. Marcia McNutt, Director of the National Academies of Science, arranged for her IT staff to host four Zoom meetings with breakout rooms. Students and scientists were randomly assigned to breakout rooms. After 25 minutes, the scientists moved to their second room, giving students a chance to converse with two prominent scientists of our time. 32 scientists and 4 stand-by scientists joined us for these sessions.

The AJAS/NAAS Closing Ceremony honored the 2021 Class of AJAS Fellows and featured keynote speaker Dr. Cathy L. Pederson. Her talk titled The Road Less Traveled: Postural Orthostatic Tachycardia Syndrome, disclosed her journey into illness and our healthcare system after her daughter became ill with postural orthostatic tachycardia syndrome (POTS). Dr. Pederson is in a unique position as a neurobiologist and the founder of Standing Up to POTS to use her scientific knowledge to help push this chronic illness community forward.

A heartfelt thank you to the conference attendees who stepped-up and shared their leadership skills and areas of expertise to make this year’s conference a huge success. Adult volunteers served as Poster Reviewers (26), Zoom Hosts/Co-hosts (12), Zoom Technical Support (2), Research Round Table Supervisors (35), and Meet the Scientists Moderators (32). Student volunteers served as Research Round Table Emcees (35) and Meet the Scientists Encouragers (32).

As many of you may already know, I did not run for re-election as your AJAS Director. My tenure began in 2005 when I volunteered to serve as the AJAS Assistant Director to Dr. Joan Messer. In 2009, when Joan stepped down as Director, I was elected as the next AJAS Director by the Assembly of Delegates. My first conference as your AJAS Director was in 2010 at the Annual Meeting in San Diego. It has been an amazing privilege to be entrusted with the leadership role of creating experiences that celebrate the success of America’s finest pre-collegiate scientific researchers. This extraordinary journey will always be close to my heart.

I am thrilled that Dr. Kelly Salmon (NH) will be serving as the next AJAS Director. Kelly and her team are working closely with AAAS to plan the 2022 AJAS/NAAS Conference. AAAS is looking at a hybrid model for their Annual Meeting and the AJAS team is optimistic that our conference will include an in-person component (to be held in Philadelphia, Pennsylvania February 16-20) along with a virtual presence. Rest assured that the AJAS mission -- to introduce, encourage, and accelerate pre-college students into the social, cultural, intellectual, and professional world of science, technology, engineering, and mathematics – will not be forgotten as we move forward.

Lee Brogie, AJAS Director
When I was in elementary school, I used to hide under the covers when I couldn’t fall asleep and read by the light of a finger flashlight that I got from the token machine at the dentist’s office. Eventually, I upgraded to a small and considerably brighter flashlight, but the batteries in it made its metal casing burn up in my hand after only a few minutes. I knew there had to be a light source out there that balanced performance and practicality. This began a search for the optimal bedtime reading illumination and, simultaneously, my journey into the realm of scientific research.

Years later as a high school freshman, I began to look for an opportunity to expand my research skills in a more professional setting. I joined a research group with a professor at the nearby University of North Carolina at Charlotte and began to shadow a then-Ph.D. candidate, who brought me along in the process of synthesizing new materials for applications in the optimization of organic light emitting-diodes. Up to this day, I have been working in this area of study, using new materials to improve solid-state lighting technologies including OLEDs, LEDs, and OPVs. From the kid reading by flashlight to the student researcher that I am today, my experience working in the lab has unquestionably changed how I navigate and investigate the world.

Being able to attend the AAAS Annual Meeting as an AJAS delegate this year has been the greatest honor and an extremely cherished opportunity for me. Every Q&A, keynote session, and plenary lecture has provided transformative knowledge that I can apply to all disciplines in life. A particularly memorable lesson was from Mr. Randy Olson, who introduced the ABT framework of storytelling. In school, I find myself seeking out and recognizing the ABTs that exist within sources for research papers, books that I read in English, and summaries of findings in my AP Psychology class. The blueprint of ands, buts, and therefore finds its way into presentations and stories that I share with my friends. The efficacy of this template is undoubtedly clear in my mind, as I still remember the story of the penguin that Mr. Olson initially narrated with it. Another unforgettable session was Dr. Francis Collins’ presentation. I was intrigued by the concept he introduced of the Innovation Funnel used by RADx in their vaccine initiative. I found it astonishing that the funnel for the project started with 3000 ideas; it opened my eyes to the true range of possibilities that innovation offers.

The Research Round Table was a highlight for me in a few ways. First, I found that presenting my research to a group of peers is much different than presenting to a panel of judges. The session flowed very smoothly and conversationally, and I gained insight into a variety of topic areas, some of which I had very limited prior knowledge in. One project that left a lasting impression on me was about detecting e-cigarette smoke in schools because it is an issue that is very relevant in my own school. I am also extremely thankful for the RRT leadership opportunity, which I took advantage of. As an emcee, I was able to develop my skills in facilitating group discussion and time management, two skills that will be relevant in any of my future endeavors. Despite not being able to attend the Meet the Scientist session due to a conflict with a school exam, I feel that I was able to make the most of the resources and events provided by AJAS.

While AJAS was definitely a significant step in my research, I know that it is not an ending point or an upper boundary. As a junior now, I am using the molecules that I synthesized earlier in a different application: creating rare-earth-free white light LED phosphors that do not have the adverse environmental impacts that current commercial ones have. As Dr. Collins emphasized in his session, I will continue to keep my horizons wide to welcome new ideas that come about and check out the new doors that open. I am excited to see where the future will take me in my pursuit of scientific research.
The Dallas Cocke Memorial Award

Former AJAS director Dallas Cocke dedicated her life to teaching science and to the missions of the American Junior Academy of Science and the Virginia Junior Academy of Science. She was inspired by her students and the educators and scientists she worked with in Virginia and across the nation. She well knew that the efforts of many can make a profound difference in the lives of young scientists. As well as many AJAS directors that followed Dallas Cocke – Like Dean Decker, Virginia; Gloria Takahashi, Southern California; Joan McCoy, Mississippi; and current AJAS director, Lee Ann Brogie of Nebraska.

The Dallas Cocke Memorial Award is sponsored by funds donated in her memory. This award recognizes a student who exemplifies the enthusiasm and dedication of Dallas Cocke. Students are invited to address the statement: “What the AJAS experience has meant to me.” The award recipient receives a certificate and a cash prize of up to $100. Eleven students responded in 2020. The following are their photos with statements from the students:

Molly DellaValla  
New Hampshire Academy of Science (NH)  
Hi! My name is Molly DellaValla. I am a freshman in high school and I have been homeschooled since First Grade. While I always loved science, in the past 2 years the New Hampshire Academy of Science has given me amazing scientific opportunities and access to the scientific community. This year, I really enjoyed working with both angled and colored active illumination towards the long-term goal of taking better, clearer, more detailed images of subjects under a microscope. Besides science, I enjoy playing piano and guitar, teaching, running, art, and baking. I would like to recognize Dr. Markus Testorf, my main mentor, for his help and insight. I would also like to recognize Dr. Peter Faletra, Dr. Kelly Salmon, and the rest of the mentors at the New Hampshire Academy of Science for their continuous support and extra work that made it possible for me to do my project virtually this year.

Kathleen Antonakakis  
Holmdel High School (NJ)  
My name is Kathleen Antonakakis and I am a current senior at Holmdel High School in Holmdel, New Jersey. For my research in AJAS, I compared the bacterial growth absorbed in organic versus non-organic cosmetic products by utilizing an artificial epidermis. In the end, I concluded that parabens, a synthetic chemical found in numerous products, are found ineffective in liquid or gel-based formulas. As I transition into the collegiate level of learning, I plan on majoring in biological sciences while concentrating in either molecular biology or microbiology. My research so far would not have been possible without Dr. Josephine Blaha or Dr. Maria Agapito. Dr. Blaha provided me all the resources and advice needed to complete my project whereas Dr. Agapito shed light on my path to AJAS by allowing me to participate in the NJAS virtual competition. Outside of biology, I enjoy providing comfort to cancer patients through my nonprofit organization Share A Little Love, LLC. Furthermore, I love taking part in various activities surrounding my Greek church, which include dancing, playing volleyball, and singing in the choir for liturgies.
Nick Powers  
**Sarasota High School (FL)**

Hello! My name is Nick Powers, I am currently a senior at Sarasota High School located in Sarasota, Florida. For the past three years I have designed and carried out environmentally oriented research. My most recent project, and the one I was fortunate enough to bring to AJAS, focused on designing an inexpensive filtration system made of a clay composite to remove common waterborne contaminants. It has been such a privilege to carry out research through my time in high school and I cannot thank my mentors enough. To Mr. Harshman and Mrs. Coppola: thank you for all that you have done, you are truly amazing. In addition to my research activities, I am also the Captain of my school’s sailing team, the Head Coach for Sarasota Youth Sailing's skiff development team, and the Principal Trombone in Sarasota Orchestra's Youth Symphony. Next year I will be attending the University of Florida. I am extremely grateful for my experience with AJAS and I’m looking forward to continuing my research endeavors in the future.

Shyam Ganesh Babu  
**Spring Valley High School (SC)**

Hello! My name is Shyam Ganesh Babu, and I am a rising senior at Spring Valley High School in Columbia, South Carolina. For my AJAS research project, I studied the effect of non-recirculating front surface air cooling on the amount of electricity in volts produced by a photovoltaic solar panel system. This year, I worked on exploring how to merge an aspiration thrombectomy device and a rotational atherectomy device for efficacious individual or joint removal of thrombi and plaque through in-vitro testing. I would like to thank Mr. Scott Price, Ms. Lindsey Rega, Mrs. Spigner, and Dr. Michelle Wyatt for their continued help and support throughout the research process. I’m interested in pursuing biology or biomedical engineering in the future. Besides research, I enjoy playing tennis, running long distances, and playing the clarinet. Thank you to SCJAS and AJAS for giving me the opportunity to share my research and meet many other junior scientists!

Lisa Zhang  
**Providence High School (NC)**

My name is Lisa Zhang and I am a rising senior at Providence High School in Charlotte, NC. My research was on the synthesis and characterization of a molecule called Si(bzimpy)2 and its analogs for applications as organic semiconductors in OLEDs. I would like to recognize my mentor Dr. Margaret Kocherga for her help and guidance throughout the research process; without her, I would not have accomplished what I have today.
Safiya Sankari  
Eman Schools (IN)  
My name is Safiya Sankari. I am currently a senior at Eman Schools and will be attending the Massachusetts Institute of Technology for college. I have been involved in research my whole life, and I have primarily focused on environmental and medical concerns. For my AJAS project, I focused on determining if two novel soil microbes could potentially be used as an insecticide. This would help prevent all the adverse impacts that arise from neonicotinoid usage. I would like to thank my mentor Dr. Douglas Richmond for teaching me so much about this topic and making this research possible.

Lydia Guertin  
Fred J Page High School (TN)  
Though this project was completed during my sophomore and junior years of high school, I’m now a freshman at Haverford College intending to double-major in Physics and Astronomy with a minor in Religion and a concentration in Peace, Justice, and Human Rights. Outside of class, I’m now involved in astrophysical research on giant pulses in the radio wavelengths from millisecond pulsars under Dr. Natalia Lewandowska, a member of our club soccer team, part of an a capella group called The Outskirts, and a member of the editorial board of the new Haverford student-driven scientific publication called Jolt.

Michelle Park  
Solon High School (OH)  
Hello, my name is Michelle Park, and I am a junior at Solon High School in Solon, OH. For my AJAS project, I examined the light curves for RR Lyrae variable stars that I photographed to find a correlation between the characteristics of their patterns of variable light production. I hope that my research can help us better understand how variable stars can be more useful as tools to measure distances to the interstellar objects that they reside in. In the future, I would like to pursue astrophysics and continue to research the beauty of the universe!
Joshua Kupras  
**Brevard High, Rosman High, NCSSM (NC)**

Hello, I am Joshua Kupras, a graduating senior. I have been enrolled in several schools during my high school career, notably Brevard High, Rosman High, and NCSSM. I entered into the TIME program at Brevard High in my tenth grade year, a college level research class to put high school students to the test, and loved it. I discovered my passion for aerospace engineering while working on the project for TIME with a friend, and was so engrained in the project I took it to AJAS. In the project I worked on developing a new rocket fuel that could be manufactured on Mars with minimal processing. While I did not fully develop a useful fuel, I did accidentally create a very powerful new explosive, one that could greatly influence Martian mining operations and infrastructure creation on the Red Planet. I would like to thank Matthew Tuckey for his very generous act of letting me test my project in his room.

Katherine Monroe  
**High Technology High School (NJ)**

My name is Katherine Monroe and I am a senior at High Technology High School. I have a passion for engineering and neuroscience and have published research on perception and neural response in the Journal of Emerging Investigators. I will be attending Syracuse University this fall for bioengineering and neuroscience and am enthused to continue conducting research in these fields. I would like to recognize Mr. Michael T. Roche, New Jersey Academy of Science.

Anjali Dhanekula  
**Hathaway Brown School (OH)**

Hello, my name is Anjali Dhanekula, and I am a rising high school senior at Hathaway Brown School in Shaker Heights, OH. My project studies the effects of a freezing treatment called cryoablation on soft tissue cancer. I hope my research can one day be used to advance cancer therapies to help patients. I would like to thank Dr. Alex Huang and Mohammad Alshebremi from Case Western Reserve University, my mentors on this project. I would also like to thank Dr. Crystal Miller, my science research teacher, for her endless support. When I am not in the lab, I enjoy playing tennis for my school, volunteering with the Red Cross, and promoting civic engagement and philanthropy in my community.
The Alabama Academy of Science: Will hold the 2022 Annual Meeting on the campus of Athens State University, March 16 – 18, 2022. For information, contact: Executive Director email: Kramich@uab.edu

The Arizona-Nevada Academy of Science: Promoting STEM throughout Arizona and Nevada. The ANAS membership dues support science education in Arizona and Nevada through awards, grants and scholarships for outstanding K-12 science teachers; and for high school, undergraduate, and graduate students. Contact: Permanent Secretary Dr. Pedro Chavez: pchavez@midwestern.edu

The Arkansas Academy of Science: helps Arkansas students obtain college degrees as well as support the advancement and diffusion of science in Arkansas. For information contact, President Dr. Stephen Addison, University of Central Arkansas, 201 Donaghey Ave., Conway, Arkansas 72035 email: saddison@uca.edu

In 1857, the Chicago Academy of Sciences was founded by nature aficionados and amateur scientists seeking a space where they could study and share the specimens they collected. On October 23, 1999, the Academy’s Peggy Notebaert Nature Museum officially opened, helping residents of urban Chicago to connect with the natural world. For more information, visit our website: http://www.naturemuseum.org or contact: info@naturemuseum.org

The Colorado-Wyoming Academy of Science: We are privileged to have honored you, your teachers, your parents, and your NAAS affiliated Academy of Science representatives at the 2019 AJAS/NAAS/AAAS Conference. For more information, contact Dr. Doug Petcoff, President at petcoff@msudenver.edu or 303-556-3214.

The Delaware Academy of Science, Inc., based in Newark, Del., opened in 1968. We own and operate the Iron Hill Museum and Iron Hill Science Center, and work to promote science education in the First State. The board of directors of Delaware Academy of Science, Inc., as well as all the staff and volunteers at the Iron Hill Science Center and Museum are excited to announce the launch of DelawareScience.org as the online home of the Academy and all things related to the Iron Hill Science Center and Museum. The Science Center staff may be reached by phone at (302) 368-5703, or use our contact form at https://delawarescience.org/contact

The Florida Academy of Sciences, Inc. was founded in 1936 as a non-profit organization. The Academy is the Florida Affiliate of the American Association for the Advancement of Science and is the only organization in Florida that represents all disciplines of sciences. For more information, contact our secretary, Dr. Norine Noonan via email, noonan@usfsp.edu or by phone, (727) 873-4793.

The Georgia Academy of Science was organized in 1922 and incorporated as a nonprofit organization in 1953. The Georgia Academy of Science continues to grow in size and academic strength. The interests of Academy members encompass all aspects of science and that interest is expressed through participation in one or more of eight sections. The 2022 Annual Meeting will be held face-to-face in the spring. Contact secretary, Joseph Sloop, at jsloop@ggc.edu or 678-485-5021.

The Hawai'i Academy of Science (HAS) is a private, non-profit organization founded in 1925. The vision of the Academy is to promote scientific research & education in Hawai'i and the Pacific Rim. The Academy is particularly interested in developing and executing programs and experiences for the science and learning communities. Contact us at (808) 956-7930 or acadsci@hawaii.edu for more information.

The Idaho Academy of Science (IAS) was organized in 1958 to further the cause of science and science education in Idaho. The IAS seeks to improve the effectiveness of scientific education in Idaho, and to promote public understanding and appreciation of the sciences and applied technology in the modern world. The Academy is the only statewide organization in Idaho which embraces all scientific disciplines. Contact the Executive Director at Executive.Director@Idaho.Academy or 1 208-317-1477.
Illinois Academy of Science: Our mission, from our founding in 1907, has been the promotion of scientific research, the diffusion of scientific knowledge, and the unification of scientific interests in Illinois. Beginning in 1907, we have held our annual meeting at varying locations around the state every year since. In addition, our refereed journal, Transactions, has been published continuously since its inaugural first volume in 1908. The Annual Meeting was hosted by Eastern Illinois University in April, 2021. For more information, contact our president, Thomas Fowler at tfowler@siue.edu

The Iowa Academy of Science is a 501(c)3 non-profit organization. The mission of the Academy is to further scientific research, science education, and public understanding of science, and to recognize excellence in these endeavors. You may contact Craig Johnson, our Executive Director by telephone, 319-273-2581 and email, craig.johnson@uni.edu or iascience@uni.edu

Indiana Academy of Science: We are a professional membership organization of Indiana scientists, dedicated to promoting scientific research and diffusing scientific information, encouraging communication and cooperation among scientists, and improving education in the sciences. The 136th Annual Meeting was held March 20th, 2021. Contact our Executive Director, Delores Brown, at (317) 974-0827 or ExecDir@indianaacademyofscience.org

The Kansas Academy of Science was organized as the Kansas Natural History Society at Lincoln College (now Washburn University) in Topeka on September 1, 1868. The 153rd Annual Meeting was held virtually in April 2021. Contact our Secretary, Sam Leung by emailing us at sam.leung@washburn.edu or by calling us at 785-670-2375.

The Kentucky Academy of Science: The 2021 KAS Annual Meeting is scheduled for November 5-6 at Eastern Kentucky University. Check us out at www.kyscience.org. For more information, contact us at executivedirector@kyscience.org or (859) 227-2837.

The Louisiana Academy of Science: The 95th Annual Meeting was virtually held March 12-13th, 2020 by Louisiana State University. For information contact President Esperanza Zenon, Nicholls State University College of Arts and Sciences, Thibodaux, LA 70310, ezenon@rpcc.edu

Michigan Academy of Science, Arts, and Letters: Mission: supporting research and disseminating knowledge through annual meetings and publishing a quarterly journal of outstanding papers in the sciences, humanities and social sciences. The 2022 Conference will be held virtually on March 4th, 2022. For information, email Director Jessie DeHaan, michiganacademy@alma.edu.

Minnesota Academy of Science Mission: To recognize, promote and influence excellence in science. For information, email contact@mnmas.org.

The Mississippi Academy of Science helps coordinate and organize scientific seminars and symposia in Mississippi. The 85th Annual Meeting will be held August 5-6th, 2021 at Mississippi Gulf Coast Convention Center. For information, email msacademyofscience@comcast.net, or visit http://msacad.org/

Missouri Academy of Science: The purpose of the Academy is to foster public interest in scientific matters and promote cooperation between the scientific interests of Missouri. The 57th Annual Meeting was held April 23rd & 24th, 2021 at Columbia College, MO. For information, contact Business Manager Robin Dean, University of Central Missouri, W.C. Morris 132A, manager@missouriacadsci.org

Montana Academy of Science: For Information, contact President Chrissie Carpenter, Carroll College, ccarpenter@carroll.edu

North Carolina Academy of Science: The 117th Annual Meeting will be held virtually in 2021. For information about NCAS, contact Dr. Karen Guzman, Campbell University Department of Biological Sciences, P.O. Box 308, Buies Creek, NC 27506; Phone: (910) 814-4365; FAX: (910) 893-1887; Email: ncacadsci@gmail.com
North Dakota Academy of Science: The purpose of the Academy is to promote and conduct scientific research and to disseminate scientific knowledge. The Annual Meeting was held December 4th, 2020 online via Blackboard and Zoom. Membership in the Academy is open to persons who share the stated purpose of the Academy and who are active or interested in some field of scientific endeavor. For information, email: ndas@ndacadsci.org.

The Nebraska Academy of Sciences was first organized in Omaha in 1880 with 75 charter members. The Union Pacific Railroad, which supported the programs to make Nebraska the educational and cultural center of the West, was instrumental in the establishment of the Academy. The 131st NAS Annual Spring Meeting was April 23, 2021. Over 400 attendees observed nearly 240 abstract presentations during 2019’s event. The 130th NAS Annual Spring Meeting was scheduled for April 17th, 2020, but was cancelled due to COVID-19. For information, contact nebacad@um.edu.

New Jersey Academy of Science: The purpose of the academy is to stimulate education and research in science throughout New Jersey. For information about NJAS, visit us at Kean University, New Jersey Center for Science, Technology & Mathematics Education, 1000 Morris Ave., STEM Bldg. 5-13, Union, NJ 07083, or www.njas.org.

New Mexico Academy of Science: The mission of the New Mexico Academy of Science is to serve the state of New Mexico and its communities by publishing science and science education materials, giving recognition for contributions to science and science education, fostering scientific cooperation, raising public awareness of the importance of science and science education, and providing advice on matters related to science and science education. For information about NMAS, email nmas@nmas.org.

The Ohio Academy of Science is the leading organization in Ohio to foster curiosity, discovery, and innovation and to unite all who value education, science, engineering, technology, or their applications for the benefit of society. The 129th Annual Meeting will be held on April 9, 2022 at the University of Findlay. For information, contact Executive Director Michael Woytek, info@ohiosci.org. www.ohiosci.org

Pennsylvania Academy of Science: Since 1924, we have been educating and supporting scientists throughout Pennsylvania by striving to promote science, technology, education and the diverse interests of our members. We are the vital and valuable resource for Pennsylvania science professionals, faculty and students. The 96th Annual Meeting was held virtually April 10th, 2021. For more information visit our webpage at https://pennsci.org/, or contact President Matthew Wallace at mwallace@esu.edu

The South Carolina Academy of Science (SCAS) was organized in 1924, and in 1927 the Academy affiliated with the American Association for the Advancement of Science. The 93rd Annual Meeting in 2021 was held Saturday April 17th virtually due to the Covid-19 pandemic. For information contact: Secretary Sheryl Wiskur at wiskur@mailbox.sc.edu Website: http://scacademysci.org/

South Dakota Academy of Science: Contact: Paul Johnson for details at paul.johnson@sdstate.edu. Website: http://www.sdaos.org/
Southern California Academy of Science:
The Southern California Academy of Sciences is dedicated to promoting fellowship among scientists and those individuals interested in science and more. The SCAS Annual Meeting was held virtually at USC, Santa Barbara May 7, 2021. For more information visit the website: [http://scas.nhm.org/](http://scas.nhm.org/)

The St. Louis Academy of Science
The St. Louis Academy of Science has many events planned for the future. On our website you will find many lectures and events for the coming months. For more information call 314-533-8083 or visit [http://academyofsciencestl.org/](http://academyofsciencestl.org/)

The Tennessee Academy of Science seeks to promote scientific research and the diffusion of knowledge concerning science. For more information contact: Dr. Marcia Schilling, TAS Secretary. Office Phone: 931-221-7782; email: schillingm@apsu.edu or visit the website: [http://www.tennacadofsci.org/](http://www.tennacadofsci.org/)

Texas Academy of Science: The Texas Academy of Science promotes scientific research in Texas colleges and universities, encourages research as a part of student learning, and enhances the professional development of its members. TAS possesses a complex, intriguing and long-standing educational mission. For more information contact Secretary Frank J. Dirrigl, Jr. at frank.dirrigl@utrgv.edu or visit the TAS webpage here: [www.texasacademyofscience.org/](http://www.texasacademyofscience.org/)

Utah Academy of Sciences, Arts, and Letters: Founded 3 April 1908, the Utah Academy of Sciences was organized “to promote investigations and diffuse knowledge in all areas of science.” The Utah Academy of Sciences, Arts, and Letters and was incorporated as a nonprofit organization in 1959. The 2022 Annual Meeting will be held in person in the spring. To find more information please contact: Colleen Boam UASL Secretary utahacademy@gmail.com or visit: [http://www.utahacademy.org/](http://www.utahacademy.org/)

Vermont Academy of Arts and Sciences The Vermont Academy of Arts and Sciences was organized in October 1965. Membership is open to all who share the Academy’s interests. Becoming a member will help support the mission and the free-to-the-public educational activities of the VAAS. For information contact: John Van Hoesen: Green Mountain College, Geology at vanhoesen@greenmtn.edu.

The Virginia Academy of Science promotes the advancement of science in the Commonwealth of Virginia. Our publication the Virginia Journal of Science publishes peer reviewed original research reports as well as abstracts of the Annual Meeting presentations. The VAS Annual Meeting is most commonly held in the Spring of each year. For more information contact: vasooffice@vacadsci.org or call 804-864-1450.

Washington D.C. Academy of Science: The Washington Academy of Science was incorporated in 1898 as an affiliation of Washington D.C. area scientific societies. The formation of the Academy culminated a decade of planning under the leadership of the Philosophical Society of Washington. The founders included Alexander Graham Bell and Samuel Langley, Secretary of the Smithsonian Institution. For more information contact: academy@washacadsci.org call 202-326-8975 or visit: [http://www.washacadsci.org/](http://www.washacadsci.org/)

The West Virginia Academy of Science is an organization to meet and work with professional associates in many areas of science, engineering and humanities. It is a corporation chartered by the authority of the West Virginia legislature for the advancement of scientific knowledge and the promotion of scientific work. The 95th Annual Meeting of WVAS was held virtually due to the COVID-19 pandemic. For more information contact Jeremy Keene at Jeremy.keene@glenvill.edu or visit: [http://pwvas.org](http://pwvas.org)

The Wisconsin Academy of Sciences, Arts, and Letters brings people together at the intersection of the sciences, arts, and letters to inspire discovery, illuminate creative work, and foster civil dialogue on important issues. In this way, we connect Wisconsin people and ideas for a better world. For more information: contact@wisconsinaademy.org or visit: [www.wisconsinaademy.org/](http://www.wisconsinaademy.org/)
Representing Section Y: General Interest in Science and Engineering

Congratulations to AAAS Fellows 2020-2021

Nan Broadbent
Seismological Society of America
For outstanding contributions as a science communicator for scientific societies, particularly the American Association for the Advancement of Science and the Seismological Society of America.

Tinsley Davis
National Association of Science Writers
For distinguished leadership that has increased the vibrancy of the U.S. science writing community, enhanced public engagement with science, and strengthened science communication globally.

Linda D. Harrar
WGBH Educational Foundation
For tireless devotion and outstanding leadership in television science journalism focusing on human health, the global environment, biodiversity, and remarkable women leaders in developing countries.

James H. Lambert
University of Virginia
For distinguished contributions to the field of risk analysis, particularly using systems engineering tools to address critical infrastructure risk and resilience.

Andrew D. Maynard
Arizona State University
For distinguished contributions to the public’s understanding of science, risk and responsible innovation in the fields of nanotechnology, artificial intelligence and other emerging technologies.

Jeremy B. Searle
Cornell University
For distinguished contributions in the field of evolutionary biology and for the promotion of science through teaching, international work, media activities and science-based natural history.

Ronald M. Thom
Pacific Northwest National Laboratory (Emeritus)
For distinguished contributions to coastal and estuarine ecosystem restoration, in assessment of cumulative effects of multiple restoration actions and adaptive management of restored systems.

Cliff Wang
U.S. Army Research Office/ North Carolina State University
For distinguished contributions to the field of science of security, and outstanding leadership in national research and transforming results into high impact cyber defense.

Nan Yao
Princeton University
For outstanding achievements in materials and structural analysis and distinguished contributions in related education, research, and service to advance science and engineering and their applications.

Section Y leadership is updated each year and these updated can be found at https://www.aaas.org/governance/section-y.
Advantages of teaching the metric system

“A Metric America: A Decision Whose Time Has Come”,
By Dr. Don M. Jordan, Eastern Director of US Metric Association

Graduations on a customary ruler:

“Some teachers pointed out, for example, that it is very difficult for small children to learn to interpret the graduations on a customary ruler; centimeters and millimeters are conceptually much simpler than small fractions of an inch.”

Children Learn Metric more readily:

“Citing a study it had sponsored, the American Association for the Advancement of Science (AAAS) mentioned an additional intangible benefit. It has been found that slower children learn metric more readily than they do the customary system—a factor that could not possibly be expressed in monetary terms.”

Time Could be Saved:

“Much more important, though, is the time that could be saved if students did not have to be drilled in the fractions necessary to cope with the customary system. Estimates varied, but mathematics teachers said that in elementary school they spend from 15 to 25 percent of their class time driving home the details of adding, subtracting, multiplying, and dividing common fractions. “Time can be saved simply by having to teach just one system of measurement

Key Teaching Point:

One Key Point to teaching metric to small children.

“Never convert between the customary system and the metric system”.

When teaching metric pretend you only know metric. Do not show examples like a meter is about a yard. Show instead that a meter is about the length of a baseball bat or the distance from the floor to the center of a door knob.

Use the “8-9 Rule”: Teach both systems {customary & metric} separately for eight month of the nine school month year. Convert between the two systems in month nine.
Report Friday, May 7, 2021 of NAAS Newsletter Editor and Chairman of the Communication Committee
Friday, May 5, 2021, NAAS Board Meeting, Conf call

During the Year 2020-2021, from February to February we will publish three (3) editions of the NAAS Newsletter.

Spring 2021 -- Fall 2021 &- Winter 2021 / 2021 (All three eventually can be found at the NAAS Website) We will have 10 copies at our board meeting.

Each edition was produced by the Office of Center for Science Education at USC. We no longer print hardcopies of the NAAS NL. We compile email addresses for all state academies during late spring and all summer. We use these email addresses to email our newsletter to approximately 500 individual leaders of our 45 state academies.

In addition we email the NAAS Newsletter to the following:
- Section Y active members, US. Department of Commerce / National Institute of Standards and Technology (NIST) officials, USMA Board, AAAS Council, AJAS Students & NAAS/AJAS Adults and about 50 to selective officials of other organizations. Total Emails about 1,000.

Each November/December, we obtain the New List of AJAS students and adults from the Treasurer. This list is used for the next three issues of the NAAS NL.

The Larger database file of board members of each state academy (about 500) is updated year around by contacting each state academy by regular mail, email and going on-line to search for updates by my Office at USC. This information is shared with the secretary of NAAS.

In the past the secretary of NAAS updates each page of the proceedings during late spring, summer and early fall using part of our data. This data is emailed as templates (see attached example of a template). We begin the process of updating the templates for about 45 academies after the AAAS Meeting in February each year. Most State Academies change boards/council during May, June & July. As soon as we complete this task, we construct a new dbf from the updated templates. This will provide us with a mailing list (emails) of the top officials in the 45 state academies.

We hire several work-study students to help with the NAAS NL. The cost about $700 per year. This is a good deal. The group of work-study students will update our state academy templates updated during the summers.

We stress that communication with all the State Academies is one of the prime responsibilities of NAAS. The NAAS Newsletter is one vehicle that helps us achieve that goal.

Copies of the NAAS newsletters can be found on the NAAS web-site. We pdf a copy and email to the NAAS Web-master to place on the NAAS Site.

This completes the 05/07/ 2021 NAAS NL Board report.

Dr. Don Jordan / Center for Science Education / College of Arts & Sciences / c/o Biol Dept / Coker Life Sciences, CLS 108/ University of South Carolina / Columbia SC 29208 / Phone: 777-7007; FAX: 777-8267 / cell 803 237 2879 / Email: djordan@sc.edu
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http://www.academiesofscience.org/ajas-current-sponsors

A Special Thank You to all our private donors!

Ed & Lee Brogie    Michael Cohen    Terri & Gary Jelinek    Nancy Martin & Fred Hendler
John Nemeth        Michael Strauss   David Torain           Steve Warshaw
Philip & Pamela Winchell
A Memo to Fellow Academies
Peter Faletra, AAAS Council Member

Dear fellow academies;

As you probably know, Ed and Lee Brogie are leaving their positions as leaders of our NAAS and AJAS respectively. In the 15 years or so of their leadership, the AJAS has become a shining example of how our national organization can advance the STEM careers of thousands of students across the USA.

We are lucky to welcome a new AJAS Director, Dr. Kelly Salmon. Many of you have met Kelly since she has been an active participant in the past annual meetings of the AJAS. Lee has agreed to help Kelly adjust to this demanding position. Kelly and Lee will be inviting members of our state academies to join a team they are putting together to help run our annual AJAS meeting.

We are all wishing them the best and hope that there will be an annual meeting that will offer at least an in-person element. As a board member of the NAAS and your AAAS Council representative, I am very encouraged that Lee will continue with the NAAS in helping in the Kelly in the transition.

We are also hoping Ed will continue and join our NAAS board to ensure we don’t lose his depth of historical memory, commitment to students, and endless generosity.

Sincerely;
Peter Faletra PhD
AAAS Council Member