



The SS-ASPB

Newsletter of the Southern Section of the American Society of Plant Biologists

October 2023

TO ENCOURAGE AND PROMOTE THE GROWTH OF AND THE WELFARE AND GOOD FELLOWSHIPS OF PLANT BIOLOGISTS GENERALLY...

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Greetings from Dr. Colleen Doherty 2023-2024 SS-ASPB Chair



Dear SS-ASPB Community Members,

Thank you for your commitment to our community and work advancing plant science.

In the face of the depressing news and uncertainty that fills today's world, it is essential to recognize the importance of our community and the need to continue to engage in plant science research. I sometimes wonder if what I am doing is relevant when so much is happening worldwide- how can I have any impact? I think the answer is that as an individual, I can't, but as a community, *WE CAN*. So this is why I want to thank you; together, we make a difference.

We are united by research and our love of research. As a community, our research unlocks the mysteries of basic biology, uncovers new aspects of plant biology,

addresses the challenges of our changing planet, and develops solutions to vital issues. In turn, our research is enhanced by our community. We are part of a group that:

- *Provides solutions for a changing world:* The world is facing unprecedented issues, from climate change to global health issues. Plant science offers solutions, from sustainable agriculture to improving access to quality nutrition. Our research plays a role in addressing these challenges.
- *Provides hope:* Every discovery, every spark that ignites a student's curiosity or interest in science is a force for change. Our research can provide positive stories of progress that provide inspiration to fight the complacency that sometimes accompanies understanding the myriad effects of climate change.

So, thank you for being part of the extraordinary SS-ASPB community. Your involvement makes us stronger. Let's continue to nurture our love for plant science and make a positive impact on the world. Please stay engaged. Attend the sectional meeting if you can. This year it will be in Dauphin Island, AL at a central location. Critically, please give feedback on how the society can improve, what do you think could make us stronger and even more impactful?

Recap SS-ASPB 2023 Fayetteville, AK

The 2023 SS-ASPB Meeting was held at the Hilton Garden Inn in Fayetteville, AR March 25-27, 2023. There were 76 attendees from 20 institutions. With over 40 talks and 25 posters, it was a packed meeting that truly represented the diversity of plant science research topics.

Kudos to all who presented their research. Here's a recap of the award winners.

Undergraduate Presentation Awards:

1st Place Caityn Hubric

2nd Place Haley Murphy

3rd Place 2 awardees Haley Ernest and Rebekah Ramey

Cotton Inc. Graduate Presentation Awards:

1st Place Danish Diwan

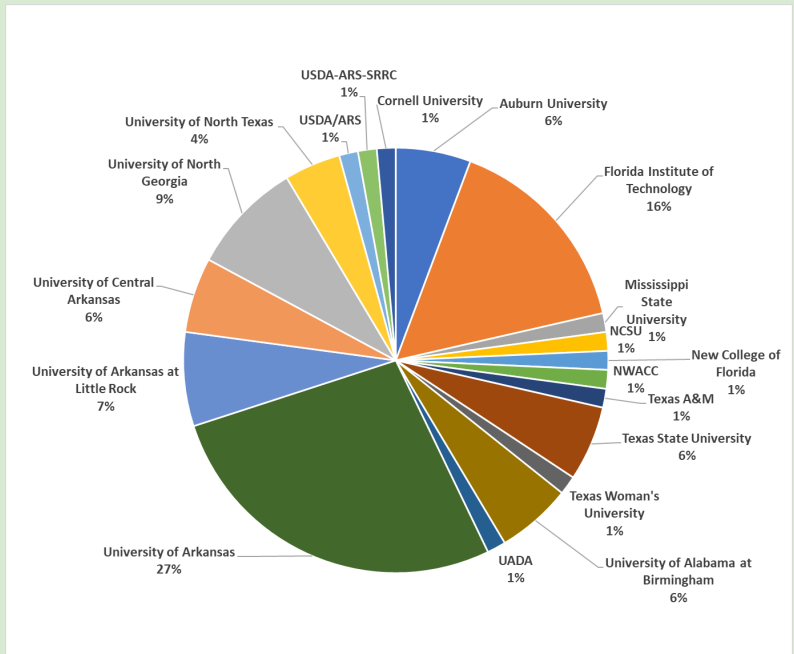
2nd Place 2 awardees Peter James Gann and Brooklyn Rogers

3rd Place Rachel Woody-Pumford

Henry Daniell ISA

Post Doc Award: Chandan Maurya

Graduate Student Award: Risheek Khanna



Kriton Hatzios Symposium: The Role of Plants in Space Biology

The Kriton Hatzios Symposium in 2023 explored ***The Role of Plants in Space Biology***. The event started with a presentation delivered by Dr. Anna-Lisa Paul of the University of Florida. Dr. Paul is the Director of the Interdisciplinary Center for Biotechnology, Co-Director of the Florida Space Plants Lab, and Research Professor in Horticultural Sciences. Her contributions to space biology have garnered numerous accolades, including fellowships in the American Society for the Advancement of Science and the American Society for Gravitational and Space Research. She has also been recognized as the NASA Exceptional Scientific Achievement Medal recipient and the NASA Award for Most Compelling Science on the International Space Station (ISS). Dr. Paul's outstanding dedication and commitment were honored with the Orr Reynolds Distinguished Service Award.



Dr. Paul's research revolves around the challenges of cultivating plants in the space environment. During the symposium, she shared her findings on how plants respond to the extremes of space, including microgravity and radiation. Notably, her research demonstrated the growth of plants in lunar regolith samples collected by Apollo astronauts. This groundbreaking achievement marked the first successful demonstration of plant growth in lunar regolith, though the plants were less robust than those grown in soil. Interestingly, the growth of plants in the lunar regolith varied depending on the specific location on the Moon, suggesting potential variations in plant growth across lunar regions.

The symposium continued with a presentation by Dr. Patrick Masson from the University of Wisconsin. Dr. Masson, a distinguished Professor of Genetics, has over 70 publications in plant science and has received awards for his research in plant tropisms, including election to Belgium's Royal Academy of Sciences, Letters, and Arts and a fellowship from the David & Lucile Packard Foundation. His talk focused on the effects of microgravity on plant growth, specifically highlighting the "Space Syndrome" observed in space-grown plants. This syndrome encompasses changes in organ size, leaf thickness, metabolism, and altered starch profiles. While detailed studies of the transcriptional and physiological responses to space have been performed, most of these have been *Arabidopsis*. Even most of these were done in a single genotype.

Dr. Masson's research using *Brachypodium*, a model monocot plant, compared three genotypes from different origins and identified genotype-specific responses to microgravity and distinct transcriptional effects between shoots and roots. A significant transcriptional signature in response to space flight was a change in oxidative stress responses, which has been observed in other experiments. Based on these findings, Dr. Mason's lab hypothesized that altering polyamines could reduce the impacts of space syndrome. Polyamines are positively charged molecules under physiological conditions regulating ion transport and ROS-associated stress responses. To test the hypothesis that altering polyamine levels could change the stress response and improve growth in microgravity, Dr. Mason's group sent plants with enhanced and reduced polyamine levels to the ISS to complete an experiment examining how altered polyamine levels affect the morphology and transcriptional response in the space environment. They

observed that the genotypes with altered polyamine levels showed differences in the petiole length, suggesting a connection between polyamine levels and growth in the space environment.

The symposium concluded with a virtual visit from Dr. Mark Settles, a NASA scientist and the Synthetic Biology Lead Investigator at NASA AMES Research Center. Dr. Settles, previously the Vasil-Monsanto professor of Plant Cell and Molecular Biology at the University of Florida, shared his research on NASA's efforts to develop biomanufacturing methods for in situ resource utilization in space missions. He emphasized the importance of on-site production, including food, medicine, and closed-loop life support systems. Dr. Settles highlighted the challenge of providing essential compounds like thiamin, folic acid, and carotenoids to astronauts on long-term space missions, as these substances degrade in stored foods. He described his work on developing microbes to supplement these compounds and testing their performance in space environments, including an orbit around the Moon.

The presentations by Dr. Anna-Lisa Paul, Dr. Patrick Masson, and Dr. Mark Settles provided valuable insights into the challenges and potential solutions for cultivating plants and ensuring the well-being of astronauts during extended space missions. Perhaps the most exciting thing about this year's Kriton Hatzios Symposium was that each speaker highlighted the critical yet unanswered questions about growing plants off-planet, suggesting that there is much-needed future research and many opportunities for students to study the roles of plants in space exploration.

SS-ASPB OFFICERS 2023-2024

Chair	Colleen Doherty	North Carolina State University
Vice-chair	Aaron Rashotte	Auburn University
Secretary	Andrew Palmer	Florida Institute of Technology
Treasurer	Jay Shocky	USDA-ARS

Executive Committee

Ashlee McCaskill	University of North Georgia
Aruna Kilaru	East Tennessee State University
Mustafa Morsy	University of West Alabama
Nihal Dharmasiri *Representative to ASPB Council & Membership Committees	Texas State University

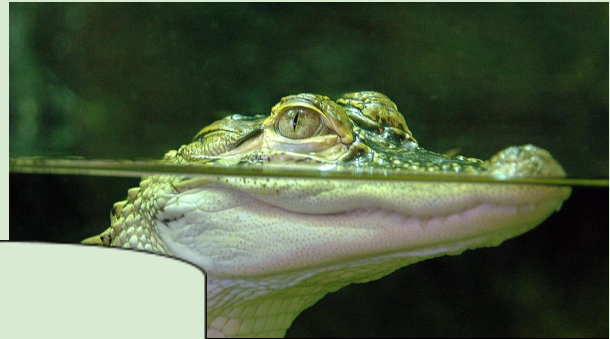
Financial Oversight Committee

Ken L. Korth	University of Arkansas
Vacant	

If you are committed to SS-ASPB and are interested in serving on an SS-ASPB Committee, please let us know. Nominations & self-nominations are welcome.

Save the Date! SS-ASPB 2024 Dauphin Island, AL

March 22-24 2024
Dauphin Island Sea Lab
101 Bienville Blvd
Dauphin Island, AL 36528



Plant Stress Responses

Speakers:

Katayoon Dehesh UC-Riverside
Jose Dinneny Stanford
Gloria Muday Wake Forest