

A P R I L 2 0 1 2

# SS-ASPB

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



*Dr. Becca Dickstein*

*Hello from Dr. Becca Dickstein,  
2011-2012 Chair of the SS-ASPB*

This year, we had an outstanding annual meeting at Myrtle Beach, SC. that was organized by Dr. Jay Shockey, the 2011-2012 Secretary/Treasurer and Dr. Douglas van Hoewyk, an Assistant Professor at Coastal Carolina University, who served as our local host. Dr. Paul Stephenson organized the 2012 Kriton-Hatzios Symposium on Chloroplast Biology. Thank you, Jay, Doug, and Paul

for such a well-planned conference! We had over 75 participants, most of whom gave a talk, presented a poster, and/or asked questions and joined in the discussions. Thank you to everyone who participated in the meeting and contributed to its lively discourse.



Dr. Douglas van Hoewyk



Dr. Jay Shockey



Dr. Paul Stephenson

## Symposium

*The 2012 Kriton-Hatzios Symposium  
focused on abiotic stress.*

The featured speakers were:

### **Dr. Klaus Apel**

Boyce Thompson Institute for  
Plant Research, Ithaca, NY

*"How plants sense their  
environment: The role of  
chloroplasts in the perception of  
and response to environmental  
stress."*

### **Dr. Henry Daniell**

Dept. of Molecular Biology &  
Microbiology, Coll. of Medicine,  
Univ. of Central Florida

*"Chloroplast genomics and genetic  
engineering"*

### **Dr. Elizabeth Haswell**

Dept. of Biology Washington  
University in St. Louis

*"A Feeling for the Organelle:  
Multiple Roles for Mechano-  
sensitive Channels in the  
Chloroplast Envelope"*

*for more see page 5-6*

*Meeting summary*

*pages 2-4*

*Student awards*

*page 4*

*Symposium*

*pages 5-6*

*Next year's meeting and this year's ASPB meeting*

*page 7*

## *The meeting in a nutshell...*

We met at the Ocean Reef Resort Hotel in Myrtle Beach, right on the beach. It was pouring rain outside at our arrival in the afternoon of March 3rd, causing a number of people to be late arriving at the meeting and to miss part of the mixer held in the Café au Port restaurant inside the hotel that faced the beach. But inside, students, post-docs, USDA and company scientists, and faculty dined on smoked salmon and a variety of vegetable dishes at the buffet, as more participants finally arrived, some of them dripping wet.



*View from above the Café au Port restaurant.  
Photo courtesy of Becca Dickstein.*

The next morning March 4th, after a buffet breakfast at the Café au Port restaurant, we started with a welcome from me with information about our meeting. That was followed by a general session of talks by USDA and company scientists, faculty, and post-docs, broken up by a refreshment break. These were all great talks! By lunch, it had stopped raining, giving some people the opportunity to look at what the previous day's storm had washed up on the beach. Posters were open by lunch-time and others took the opportunity to view the posters in advance of the poster session planned for later in the afternoon.



*Three of the March 4 General Session speakers, Drs. Kenneth Bost, from University of North Carolina at Charlotte and Soymeds (left), Vicki Vance, from University of South Carolina (center), Abdelmajid Kassem, from Fayetteville State University (right).*

After lunch, we split up into concurrent sessions for the 22 graduate student oral competition talks. These were outstanding. Speaking as a judge for one of the sessions, I heard well-rehearsed, polished talks from students who are working on extremely interesting and important plant biology, ranging from ecology to biochemistry to molecular biology to molecular genetics.



*Three of the graduate students who presented in the graduate student oral competition talks, Claire Hann, from University of South Carolina (left), Prakitchai Chotewutmontri, from University of Tennessee (center), and Tessema Kebede Kassaw, from Clemson University (right).*

Later that afternoon was the poster session, with 23 posters, 9 of which were entered into the Aubrey Naylor Undergraduate Poster Competition. The posters were set up in a large ballroom and there were a lot of conversations going on at each of the posters, as poster presenters were leading other meeting participants in the experimental strategies, results, conclusions and planned experiments for the future presented in their individual posters. The posters were all well done.



*Poster session at the 2012 SS-ASPB Annual Meeting.*

To all of our graduate student oral competition speakers and undergraduate student poster presenters, you rock! We hope that you have each given yourselves a pat on the back, and thanked your peers and faculty mentors for helping you prepare your talk or poster.

The meeting banquet was held at Martin's Restaurant, a block away from the Ocean Reef Resort. During the banquet, Dr. Crispin Taylor, Executive Director of the American Society of Plant Biologists (ASPB, our parent society) spoke for a few minutes about ASPB's mission and about how the society serves its members. Then, Dr. Shockey presented awards to the winners of the student competitions.



*Elspeth Murday from Clemson University won the graduate student oral competition. Presented by Dr. Jay Shockey.*



*Left-to-right. Caleb Kirkpatrick, Kala Peek and Cody Mullins from Charleston Southern College won the Aubrey Naylor undergraduate poster competition. Presented by Dr. Jay Shockey.*



*Dr. Crispin Taylor, Executive Director of ASPB says a few words about ASPB at the 2012 Banquet.*

## Student Presentation Competitions

The winners of the graduate and undergraduate student competitions were announced at the banquet. This year, the judges had a particularly difficult time choosing the winners of the competitions. There were many outstanding presentations and the rest were merely excellent. Congratulations to all the students who presented the results of their research.

**Dr. Elspeth Murday**, a Ph.D. student in **Dr. Halina Knap's** laboratory at Clemson University, took home the prize for best graduate student oral presentation for her talk "*Velvetbean: de novo transcriptome assembly.*"

A team of undergraduate students, **Kala Peek**, **Caleb Kirkpatrick** and **Cody Mullins** who performed their research in **Dr. Charlotte Song's** lab at Charleston Southern University, won the Aubrey Naylor prize for best undergraduate poster presentation "*Genetic Mapping of a Novel MicroRNA Translational Regulation Mutant in Plants*"

# The 2012 Kriton-Hatzios Symposium on Chloroplast Biology.

Monday morning March 5 was the date of the Kriton Hatzios Symposium. At the break in the middle of the Symposium, Dr. Janet Donahue, a Professor from Virginia Tech spoke to us for a few minutes about the legacy of Dr. Kriton Hatzios (pictured to the right), who was Head of the Virginia Agricultural Experiment Station, and Associate Dean for Research at Virginia Tech College of Agriculture and Life Sciences, and who died in 2003.



The featured speakers this year and their presentations were:

**Dr. Klaus Apel**, Boyce Thompson Institute for Plant Research, Ithaca, New York *"How plants sense their environment: The role of chloroplasts in the perception of and response to environmental stress."*

Dr. Kriton Hatzios; <http://www.cfast.vt.edu/newsletter/previous/Aug2003/persomews.html>

**Dr. Elizabeth Haswell**, Dept. of Molecular Biology & Microbiology, College of Medicine, University of Central Florida, *"Chloroplast genomics and genetic engineering"*

**Dr. Henry Daniell**, Dept. of Biology Washington University in St. Louis, *"A Feeling for the Organelle: Multiple Roles for Mechano-sensitive Channels in the Chloroplast Envelope"*

This symposium was organized by Dr. Paul Stephenson. A summary of the presentations can be found on the next page.



*Left to Right: Dr. Paul Stephenson, Dr. Elizabeth Haswell, Dr. Klaus Apel, Dr. Henry Daniell, and Dr. Becca Dickstein*

# Summary of the symposium...

*by Dr. Paul Stephenson*

## **Dr. Klaus Apel**

Dr. Apel's talk focused on plant perception of stress and the role of the chloroplast. He described work involving flu conditional mutants in *Arabidopsis*. FLU is a nuclear-encoded protein imported to the chloroplast and associated with plastid membranes. It affects tetrapyrrole biosynthesis and suppresses accumulation of protochlorophyllide (Pchl<sub>id</sub>). In contrast to etiolated wild-type seedlings, etiolated flu seedlings are no longer able to restrict the accumulation of Pchl<sub>id</sub>. When these seedlings are transferred from the dark to the light they rapidly bleach and die because of the photosensitizing activity of excess amounts of free Pchl<sub>id</sub> and the sudden release of singlet oxygen. Dr. Apel showed that singlet oxygen acts as a stress signal that can lead to cell death mediated by the Executer (ex1) gene. Under non-permissive dark/light conditions ex1/flu double mutants generate similar amounts of singlet oxygen as parental flu lines, but in contrast, behave like wild type (they do not bleach and mature plants continue to grow). It seems, as if flu plants, because of the ex1 mutation, lose the ability to perceive the presence of singlet oxygen within their chloroplasts and to activate singlet oxygen-mediated response programs.

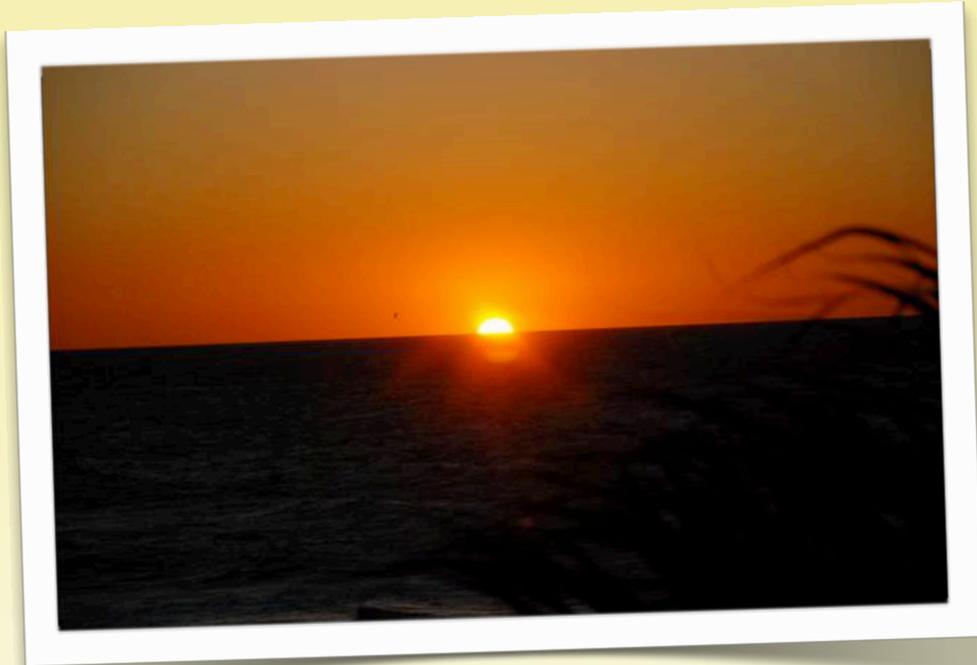
## **Dr. Elizabeth Haswell**

Dr. Haswell's talk focused on her current structural and functional analysis of a family of ten mechanosensitive (MS) ion channels in *Arabidopsis thaliana*. In particular for this presentation, she described two proteins in *Arabidopsis*, MSL2 and MSL3, that are localized to the inner chloroplast envelope and are required for normal plastid shape and size. These are related to Msc channels in *E. coli*, which contribute to survival in the event of osmotic shock. Her presentation began with an analysis of interactions between MSL2, MSL3, and the chloroplast division machinery and then progressed to provide evidence that MSL2 and MSL3 are required to relieve hypoosmotic stress in leaf epidermal plastids. She also addressed recent results indicating that MSL2 and MSL3 serve to integrate plastidic osmotic stress with cytoplasmic dehydration stress pathways. Dr. Haswell concluded her presentation with a discussion of the evolutionary implications of these studies.

## **Dr. Henry Daniell**

Dr. Daniell's talk focused on his research group's progress with chloroplast transformation and outlined the unique advantages of this technique including: high levels of expression and transgene containment via maternal inheritance. He noted that because of exclusive homologous recombination and species-specific proteins that bind to regulatory sequences, it is essential to use endogenous intergenic spacer regions and regulatory elements in chloroplast vectors to achieve successful transformation and high levels of transgene expression. This has led to the full sequencing of over thirty crop chloroplast genomes. Dr. Daniell then addressed the significant advances that have been made in expressing vaccine antigens against human bacterial, viral, and protozoan pathogens in chloroplasts. This has been coupled with a method for bioencapsulation and oral delivery of vaccine antigens which is more efficacious than injectable vaccines and can be accomplished at low cost through elimination of expensive purification, cold storage/transportation, and sterile delivery by injections. Dr. Daniell concluded with new results involving the modification of chloroplast genomes to express industrial enzymes for biofuel production. One of these enzymes, beta-glucosidase, releases active hormones from their inactive conjugates stored within chloroplasts, and caused a near doubling of plant biomass.

By early morning Monday March 5th, the weather had cleared completely and many of us saw the sun rise over the ocean, which was captured on film. We all breakfasted again in the Ocean Reef's restaurant facing the ocean.



*Next year's meeting is in Little Rock, AR. The date will be announced later this spring. I hope to see you then!*



## Plant Biology 2012

Austin, Texas July 20-24

THE ANNUAL MEETING OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

### Remember...

This year's national ASPB meetings are on our turf in Austin, TX. (<http://austin2012.aspb.org>)

Symposia planned for this year include...

- *Metabolism and Metabolic Networks, Chair: Mark Stitt*
- *Abiotic Stress: From Sensing to Survival, Chair: Julia Bailey-Serres*
- *Martin Gibbs Medal Symposia: Clock Biology, Chair: Steve Kay*
- *Translational Biology, Chair: Roger Beachy*
- *President's Symposia: Post-translational Modifications Key to Signaling and Metabolism, Chair: Steve Huber*

# SS-ASPB

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

## Current Officers

### **Chair**

Dr. Paul Stephenson  
Rollins College  
Department of Biological Sciences  
1000 Holt Ave - 2643  
Winter Park FL 32789-4499  
Phone: (407) 646-2481  
Email: pstephenson@rollins.edu

### **Vice-Chair**

Dr. Jay Shockey  
USDA-ARS, Southern Regional Research Center  
1100 Robert E. Lee Blvd.  
New Orleans LA 70124  
Phone: (504) 286-4296  
Email: Jay.Shockey@ars.usda.gov

### **Secretary/Treasurer**

Dr. Ashlee McCaskill  
Assistant Professor of Plant Biology  
North Georgia College & State University  
436 HNS Building  
Dahlonega, GA 30597  
(706) 864-1954  
Email: amccaskill@northgeorgia.edu

### **SS Representative to ASPB**

Dr. Kent Chapman  
University of North Texas  
Division of Biochemistry & Molecular Biology  
Department of Biological Sciences  
University of North Texas  
Denton TX 76203-5220  
E-mail: chapman@unt.edu

### **Executive Committee Members**

Dr. Stephen W. Banks  
Department of Biological Sciences  
Louisiana State Univ. at Shreveport  
One University Place  
Shreveport, LA 71115  
Phone (318) 797-5220  
Email: stephen.banks@lsus.edu

Dr. Paxton Payton  
USDA-ARS Cropping Systems Research Laboratory  
3810 4th Street  
Lubbock, Texas 79415  
Phone: (806) 723-5218  
Email: paxton.payton@ars.usda.gov

Dr. Rebecca Dickstein  
University of North Texas  
Department of Biological Sciences  
1155 Union Circle, #305220  
Denton TX 76203-5017  
Phone: (940) 565-3359  
Email: beccad@unt.edu

### **Financial Oversight Committee:**

Dr. Marc Cohn (mcohn@lsu.edu)  
Dr. Kent Chapman (chapman@unt.edu)

### **Communications Officer:**

Dr. Tim Sherman (tsherman@jaguar1.usouthal.edu)

### **Southern Section Historian**

Dr. Joyce Foster (jgfoster@suddenlink.net)