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ASPB *News*



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

President's Letter

Looking to the Future

BY RICHARD A. DIXON
University of North Texas

This is my last President's Letter, although it seems like only a few months since I was struggling over my first! I'd like to reflect on several events that have happened in the world of plant biology since last October, to pick up some of the pieces from my previous letters, and to look toward the future.

The most recent big event in plant biology was, of course, ASPB's annual meeting in Austin. That seemed to pass like a blur, and unfortunately I got to listen to far fewer talks than I would have liked. Nevertheless, I came away with a number of deep impressions. In spite of the many problems we face surrounding funding and public perception, plant biology is in great shape, as was made clear by the large number of young scientists attending



Rick Dixon

and the quality of their presentations.

The awards ceremony, at which the Society recognizes the leaders in its field, showcased the breadth of our scientific and advocacy achievements and the diversity of those who have dedicated their careers to promoting plant biology and agriculture, from Xiaobo Li, an early career scientist winning the Robert Rabson Award for research on bioenergy, to Joe Key, recipient

of the Adolph E. Gude, Jr. Award and a founding father of plant molecular biology, to philanthropist Howard Buffett, recipient of this year's ASPB Leadership in Science Public Service Award.

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Sally Mackenzie Assumes Presidency October 1



Sally Mackenzie

Sally Mackenzie is ASPB's new president. She succeeds Richard A. Dixon, University of North Texas, Denton. The Society's new president-elect is Harry Klee, University of Florida, Gainesville.

Sally is the Ralph and Alice Raikes Professor of Plant Science at the University of Nebraska–Lincoln (UNL), and from 1999 to 2010 she was

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Publications assistant	Diane McCauley, diane@aspb.org
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Managing editor	Patti Lockhart, plockhart@aspb.org
Science writer, <i>Plant Physiology</i>	Peter Minorsky, peminorsky@aspb.org
Production manager, <i>Plant Physiology</i>	Jon Munn, jmunn@aspb.org
Manuscript manager, <i>Plant Physiology</i>	Ashton Wolf, awolf@aspb.org
Senior features editor, <i>The Plant Cell</i>	Nan Eckardt, neckardt@aspb.org
Features editor, <i>The Plant Cell</i>	Mary Williams, mwilliams@aspb.org
Production manager, <i>The Plant Cell</i>	Susan Entwistle, susan@aspb.org
Manuscript manager, <i>The Plant Cell</i>	Annette Kessler, akessler@aspb.org

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Contact: Nancy A. Winchester, Editor, *ASPB News*, 15501 Monona Drive, Rockville, MD 20855-2768 USA; nancyw@aspb.org; 301-296-0904.

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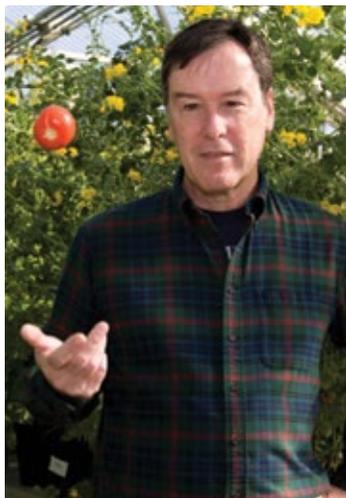
Harry Klee Elected to Lead ASPB in 2017–2018

Harry Klee holds the Dickman Chair for Plant Improvement at the University of Florida (UF) in Gainesville. Harry earned a bachelor's degree in psychology and then a PhD in biochemistry from the University of Massachusetts, Amherst. He did postdoctoral research on *Agrobacterium tumefaciens* at the University of Washington with Eugene Nester, working on the mechanisms of crown gall tumor growth that led to characterization of the *Agrobacterium* auxin and cytokinin biosynthetic genes.

He moved to Monsanto in 1984. There, he developed technologies for plant transformation and transgene expression and was part of the team that developed Roundup-resistant cotton, canola, and soybean. He continued work on the molecular biology of phytohormones, pioneering the use of transgenic plants to elaborate in vivo hormone function.

In 1995, he moved to UF. There, he established a program to understand the biochemistry and genetics underlying flavor in tomato and other fruit crops.

Harry was elected a fellow of AAAS in 2009 and to the National Academy of Sciences in 2012. He has served on the editorial boards of *The Plant Journal*, *Plant Physiology*, *Molecular Breeding*, and *Critical Reviews in Plant Sciences*. He was editor-in-chief of *The Plant Journal* from 2002 to 2009. At UF, he served two-year terms as graduate coordinator and then director of the interdisciplinary Plant



Harry Klee

Molecular and Cellular Biology program. He has held visiting professorships at École Nationale Supérieure Agronomique de Toulouse (2001), Heilongjiang University (2012–2014), and Zhejiang University (2014 to present). He was an external reviewer of plant science research for the Swedish Research Council, the New Zealand Foundation for Research Science & Technology, and New Zealand Crop & Food Research. He is a member of the science advisory boards for Mars Chocolate Plant Science Research and Vineland Research and Innovation Centre, Ontario.

The central theme of Harry's research has been phytohormones. Hormones are central to plant biology, cutting across physiology, biochemistry, and developmental biology; to understand hormone biology, one must reach out across disciplines. His time in industry had a profound impact on his career, demon-

strating that one can do groundbreaking fundamental research that has real-world outcomes. That emphasis on translational research is illustrated by his current research focus based on ethylene and tomato fruit ripening. The emphasis of the lab is to elaborate the biochemical genetics of flavor, with the ultimate goal of restoring flavor to the commercial product. His laboratory identified many of the genes responsible for synthesizing important flavor volatiles. That work has transitioned into large-scale genomics approaches for tomato flavor and fruit quality improvement. The program integrates biochemistry, genetics, and molecular breeding with human sensory and consumer science, together emphasizing the theme of interdisciplinary, collaborative research.

Harry served as a member of the ASPB Early Career Award Committee (2006–2009) and currently serves as a member of the Science Policy Committee. He was part of a group that raised funds to endow the ASPB Innovation Prize for Agricultural Technology. His background is uniquely suited to ASPB's future. Central is his experience as editor-in-chief of *The Plant Journal*, a society-owned publication. Following are some of Harry's thoughts as he prepares to serve the Society over the next few years:

Journals are the major source of revenue for all of the good work that ASPB does. Without that revenue stream, we would not be able to have a presence on

Capitol Hill. We would not have scholarships for students, post-docs, and early career scientists to attend the annual meetings. The push to open access and competition from commercial publishers starting new journals is a major challenge to the Society that is only going to increase. Being an editor of a high-visibility journal also provides training in management and communications and a much broader understanding of issues across all of plant science.

Another issue that is vital to the future of ASPB is membership. The work to endow the Innovation Prize is an important step in acknowledging the contributions of our colleagues in the private sector and enlisting them in our cause. Broadening our membership base is a major point of emphasis.

Yet another critical priority for the Society must be education. We need to emphasize all aspects of science education. The GMO "debate" illustrates the challenges we face and the potential role of ASPB as an engine of change. This issue is only a symptom of society's failure to grasp basic scientific principles. We need to be more proactive in addressing polarizing issues such as GMOs and climate change, both in formal education and by reaching out to our elected representatives. We need to be the trusted source of unbiased solid science on all things related to plants and agriculture. We need to do this in a way that is both forceful and fair. We can make a real difference in public policy. ■

PRESIDENT'S LETTER *continued from page 1*

The critical importance of both basic and applied plant biology for the future of the planet is becoming more broadly appreciated across the scientific spectrum, as reflected in Austin by, for example, the special events and workshops organized by the Howard Hughes Medical Institute and the newly initiated Foundation for Food and Agriculture Research. It has been an uphill battle, but the perception that we need to increase the interest of young students in the plant sciences and make sure that there is adequate funding to address the grand challenges facing agriculture in the 21st century seems to have finally hit home. I feel certain that the best days of plant biology are ahead of us.

That being said, ASPB does face problems, both as a society and as a broader plant science community. As already mentioned in previous newsletters by me and my predecessor, the recent radical changes in scientific publishing have necessitated that ASPB look toward new models for raising the revenue necessary to fund its good works, including career support and advocacy. To this end, a group of ASPB presidents—past, present, and future—met in Austin to discuss new plans for fundraising in support of the Society's activities. We are hoping to have instruments in place to enable ASPB members and others to make donations for either specific activities or the general fund within the next year. Other societies of similar size and function as ASPB list and recognize donors on their websites, and it is clear that their memberships see donating as a worthwhile activity. ASPB may

start small, but we will be ramping up fundraising efforts as we approach our 100th anniversary in 2024.

In my previous letter, I mentioned the difficulties in advocating for plant biology in a complex social and political world. It is good to know that groups beyond our Society are now joining the fight; witness the recent letter from the community of Nobel Laureates that condemned Greenpeace and its allies for failing to recognize the recommendation of scientific bodies and government regulatory agencies on the safety of genetically modified crops (<http://bit.ly/299bhttp>). ASPB's Science Policy Committee regularly puts out statements and comments in support of scientifically proven approaches for improving crop productivity and quality, and in the past few weeks such representation, with support from some of the membership, helped avert a potential block on an important bill to have our government ratify the International Plant Germplasm Treaty. This activity highlights the importance of engaging with your congressional and senate representatives either as individuals or groups of individuals (better) or by providing your name in support of ASPB-led petitions. I can't over-emphasize the importance of such activities by the membership; our representatives in Washington do respond to comments from their constituents, particularly when a number of people are delivering the same message.

Individuals can also contribute to the fight for science-based policy through their own activities on Facebook, Twitter, and other social media outlets. For example, Kevin Folta, ASPB nominee and

recipient of the 2016 Borlaug Council for Agricultural Science and Technology Communication Award, recorded and reblogged nearly the entire workshop on the recent National Academies GE crops report (<http://www.talkingbiotechpodcast.com/?p=438>) from the Austin meeting. As many of you may be aware, Kevin was recently the recipient of a different kind of recognition, namely unwanted attention from anti-GMO groups who attacked him by requesting his e-mails under the Freedom of Information Act. The more plant biologists stand up and defend science-based decision making for agricultural improvement, the more the public will hear the "other side" of what is currently a successful argument from those who oppose agricultural biotechnology.

The above are obviously social and political as well as scientific issues, but we must not lose sight of the fact that some of the present negativity concerning plant biotechnology is directed at obscuring the truth for financial gain. For example, labeling a food or food product as GMO free is now being used to justify a price increase even if that particular product could never be produced by genetic modification. President Obama recently signed into law a new bill that allows for labeling of GM-derived foods; part of the thinking behind this bill was to prevent a series of state-imposed laws that would greatly complicate the commercial landscape. GMO labeling is, in my opinion, useful as a means of giving the consumer a choice based on information as to what they are eating, but this argument becomes bogus if there is no existing GMO alternative or if

the product (e.g., sugar or an oil) does not contain genetic material.

Plant scientists must stand up and defend the scientific truth. Because of the complexity of the issues, our arguments may be nuanced, but we should never allow scientific truths to be misrepresented and should speak up when bogus scientific arguments are used to support financial gain.

I am optimistic that plant biology will become a proportionally greater part of the scientific endeavor as the 21st century progresses and that there will come a more broadly understood realization that plant biotechnology is beneficial, from the scale of the individual consumer to the world ecosystem. The blueprint laid out in ASPB's Decadal Vision document (<http://bit.ly/1Fj1IC3>) articulates key areas for new and renewed investigation that will move us toward more rapid and predictive crop improvement and fuller exploitation of the biosynthetic capabilities of plants for new bio-based products. Hoped-for changes in the ways biotechnology is regulated, increased funding in the public sector for both basic and applied biotechnology, and a revolution in teaching that couples scientific understanding with the acquisition of political, social, and entrepreneurial skills can result in a new bio-economy that will seem to be a different world from what is currently viewed as a few multinational corporations controlling plant traits that the public does not see as beneficial. This new vision is pro-science, pro-industry, and pro-progress.

After talking to some of the presenters at the Undergraduate Poster Session held on the first

day of the Austin meeting, I am confident that a new generation, facilitated by the power of social media and other communication platforms such as Plantae.org, can deliver on this vision. ASPB is both undergoing change and positioning itself as an agent for change. ■

Andrew Bent Is Secretary-elect

Andrew Bent is a professor in the Department of Plant Pathology at University of Wisconsin–Madison. He also trains students through the Cell and Molecular Biology, the Plant Breeding and Plant Genetics, and the Genetics graduate programs. At Oberlin College he did undergraduate research on photosynthetic roots of epiphytic orchids. He started graduate school at the Michigan State University–DOE Plant Research Lab (doing rotation projects with Lee McIntosh, Andrew Hanson, and Chris Somerville) before two-career couple concerns brought him to MIT, where he did his PhD research with Ethan Signer on gene regulation in *Sinorhizobium* bacteria. In postdoctoral work with Brian Staskawicz at UC Berkeley, Andrew helped establish *Arabidopsis* and *Pseudomonas syringae* as study systems for plant–microbe interactions research and led cloning of one of the first known plant NB-LRR-encoding R genes, *RPS2*.

Andrew began as a faculty member at University of Illinois at Urbana–Champaign in 1994 and has remained active in both the *Arabidopsis* and crop plant (especially soybean) research communities for the past 17 years at UW–Madison. His lab's contributions include many mechanistic insights regarding the plant immune system receptor FLS2, discovery of plant immunity roles for the “*dnd*” cyclic nucleotide gated ion channels CNGC2 and CNGC4, discovery



Andrew Bent

that multiple pathogens cause host DNA double-strand breaks early in infection, discovery of roles for poly(ADP-ribosylation) in plant responses to infection, studies on ethylene-insensitive soybeans, and isolation/molecular characterization of the economically important *Rhg1* disease resistance locus of soybean. He is also known for contributions to the development of floral dip transformation of *Arabidopsis*. As a teacher, Andrew has been active in adopting modern STEM teaching approaches and in training multiple lab members who have gone on to specialize in effective scientific teaching. He teaches courses on plant disease resistance, plant–microbe interactions, and introductory plant biology.

One of the main jobs of ASPB secretary is to chair the Program Committee, which plans and organizes the national ASPB meeting each year. Andrew served

on the Program Committee from 2011 to 2015 and was nominated for secretary-elect largely because of his successful approach to both the big picture and the details while on that committee. He has been an ASPB member since 1995. He has also served as an executive officer of the International Society of Molecular Plant–Microbe Interactions (2003–2007), contributing to the stability of that society and to successful organization of four iterations of their popular biannual meeting.

In his other committee and panel activities, Andrew has been known for seeking and representing broader grassroots input and for gaining input from students and postdocs as well as faculty and senior scientists. Regarding ASPB issues, he is alert to the evolving landscape of journal publishing and scientific society finances, as well as legislator and funding agency outreach, and he strongly supports ASPB's promotion of plant science teaching approaches. His perspective regarding near-future ASPB activities might be characterized as follows: “Change with the times to keep doing the good things ASPB has been doing. Add new organizational activities only if they pass a high bar for likely benefit to members and the discipline.” ■

SALLY MACKENZIE
continued from page 1

founding director for the Center for Plant Science Innovation at UNL. Before that, she served on the faculty as assistant to full professor at Purdue University, which she joined in 1988.

A native Californian, Sally and her family were involved in fresh market vegetable agriculture, and she gained an interest in agricultural innovation from this experience. Sally earned her bachelor's degree in botany from the University of California, Davis, and she received her PhD training from the University of Florida in Gainesville, where she worked with Mark Bassett in plant breeding and Daryl Pring in plant molecular biology. From 1988 to 2003, research in Sally's lab focused on plant mitochondrial genome recombination behavior, in particular investigations of the dynamic process of substoichiometric shifting and its nuclear control. Under natural conditions, mitochondrial DNA recombination confers the ability of the plant to transition between male sterility and fertility, an important component of facultative gynodioecious plant species. These studies have lent insight into the inherent instability of cytoplasmic male sterility systems for agriculture, as well as the evolution of

mitochondrial genome structural diversity and DNA sequence stability among plant lineages.

In studies of nuclear-organellar interactions, several nuclear-encoded organellar proteins are shown to co-localize to mitochondria and chloroplasts. Studies of dual targeting protein behavior in Sally's lab have demonstrated the role of alternative translation initiation in facilitating the regulation of dual targeting proteins. During studies of organelle behavior, Sally's lab cloned the *MSH1* gene and demonstrated its involvement in mitochondrial and plastid genome stability. Recent and more detailed studies have shown that disruption of *MSH1* in plastids also results in epigenetic, heritable, and programmed changes in plant development. These observations represent the first and most direct indication of linkage between organellar signaling and epigenetic response in plants. These studies suggest that organelle-triggered epigenetic changes may participate in plant environmental sensing and transgenerational response. Incorporation of *MSH1*-modified crop lines to a plant breeding strategy have produced measurable enhancements in both crop productivity and abiotic stress tolerance. The *MSH1* effect has, therefore, opened the door to epigenetic plant breeding as a

novel non-GMO agricultural strategy, influencing plant growth potential with the possibility of significant agricultural benefit in both perennial and annual crops.

Sally was appointed a Quishi Chair Professor at Zhejiang University in Hangzhou, China, from 2012 to present. She was elected a fellow of AAAS in 2004 and a fellow of ASPB in 2013. She served on the ASPB Executive Committee as chair of the Publications Committee from 2007 to 2014, and she has been a member of the Science Policy Committee since 2009. She participated with others in development of the recently released ASPB-sponsored document *Unleashing a Decade of Innovation in Plant Science: A Vision for 2015–2025*, also referred to as the Decadal Vision. The document was designed to inform U.S. policy makers about national priority research objectives in the plant sciences as a means of encouraging support for U.S. plant science research. The document is designed to underscore the value and immense potential of fundamental plant science research to address the food security issues facing the United States as we confront climate change.

As a follow-up to release of the Decadal Vision, Sally is participating with others in the development of a National Plant Science

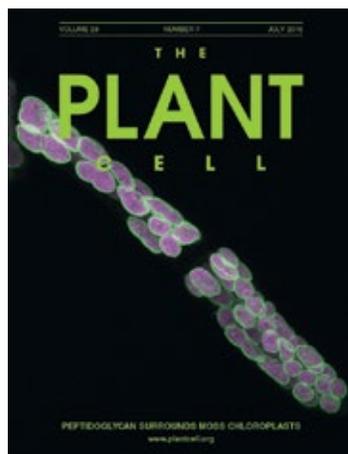
Council (NPSC) that will seek to heighten national visibility of plant science research, inform the public on issues related to crop production and modern plant improvement technologies, and enhance the alignment among various entities within the plant science community so that they are able to speak with one voice to policy makers. Sally is strongly committed to these goals and currently serves as chair of the NPSC as it launches these new efforts. The immediate goals of this council will be to identify ways to unify community vision and draw greater attention to the outstanding achievements of plant science research in the United States in order to convince Congress of the significant long-term negative implications of recent funding reductions. One important way in which Sally hopes to heighten the visibility of emerging plant research is in chairing the steering committee for the February launch of Phenome 2017, a new, annual, U.S.-based meeting focused on the emerging technologies and science of plant phenotyping. This meeting is being designed to link plant biology, computation, engineering, and agronomy to accelerate the science of crop production and to address the ecological challenges of climate change. ■

The Plant Cell Begins Opt-in Publishing of Peer Review Reports

SABEEHA MERCHANT, Editor-in-Chief, *The Plant Cell*
NANCY A. ECKARDT, Senior Features Editor, *The Plant Cell*

As of January 2017, *The Plant Cell* will offer authors the option of associating a Peer Review Report with each research article. Reviewer anonymity will be strictly maintained. The reports will include the major comments from reviewers and the editors' decision letters along with the authors' response to reviewers for each submission of the manuscript (including original, revised, and previously declined versions), as well as a timeline documenting the path of the manuscript from submission to publication. The decision letters typically include the substance of comments from any post review consultation among editors and reviewers.

ASPB members, as well as *The Plant Cell* authors, reviewers, and readers from whom we have heard, have been enthusiastic about this venture, especially those in training (student, post-doctoral researcher) or early (junior group leader, assistant professor) stages of their career. Benefits to publishing Peer Review Reports include their ability to demonstrate the criteria used for evaluating papers, usefulness for journal club discussions, and value as a tool for learning how to write good papers and responses to reviewer comments, as well as how to be a good reviewer. These factors are the main reasons we have chosen to launch this policy. However,



preparation of the Peer Review Reports comes at some expense. We will monitor feedback and access/download statistics for two years and may discontinue the program if the expense is found to outweigh the perceived value to the community. So please let us know!

Starting immediately, invitations to review a manuscript for *The Plant Cell* will include information about the Peer Review Report. As noted above, *reviewers will remain anonymous* in these reports. The editorial board is committed to preserving the power and utility of peer review, and we feel strongly that reviewer anonymity is integral to the process. Statistics from other journals that have published similar peer review reports for a number of years indicate that publishing referee reports does not affect a journal's ability to

Wenna Zhang, Christoph J. Thieme, Gregor Kollwig, Federico Apelt, Lei Yang, Nikola Winter, Nadine Andresen, Dirk Walther, and Friedrich Kragler
tRNA-Related Sequences Trigger Systemic mRNA Transport in Plants
Plant Cell 2016 28: 1237-1249. Advance Publication June 7, 2016; doi:10.1105/tpc.15.01056
» Abstract » Full Text » Full Text (PDF) » Supplemental Data
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Specific tRNA-derived motifs present in an endogenous dicistronic transcript mediate mRNA transport along the phloem.

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AMERICAN SOCIETY OF PLANT BIOLOGISTS

Peer Review Report for 10.1105/tpc.15.01056

tRNA-Related Sequences Trigger Systemic mRNA Transport in Plants

Wenna Zhang, Christoph Thieme, Gregor Kollwig, Federico Apelt, Lei Yang, Winter Winter, Nadine Andresen, Dirk Walther, and Friedrich Kragler Plant Cell. Advance Publication June 7, 2-16; doi: 10.1105/tpc.15.01056.

Corresponding author: Friedrich Kragler kragler@wipac-scpm.mpg.de

Review timeline:

TPC2015-01056-BR	Submission received:	Dec. 23, 2015
	1 st Decision:	Jan. 29, 2016 revision requested
TPC2015-01056-BRR1	1 st Revision received:	Apr. 15, 2016
	2 nd Decision:	May 10, 2016 accept with minor revision
TPC2015-01056-BRR2	2 nd Revision received:	May 25, 2016
	3 rd Decision:	May 30, 2016 acceptance pending, sent to science editor
	Final acceptance:	June 7, 2016
	Advance publication:	June 7, 2016

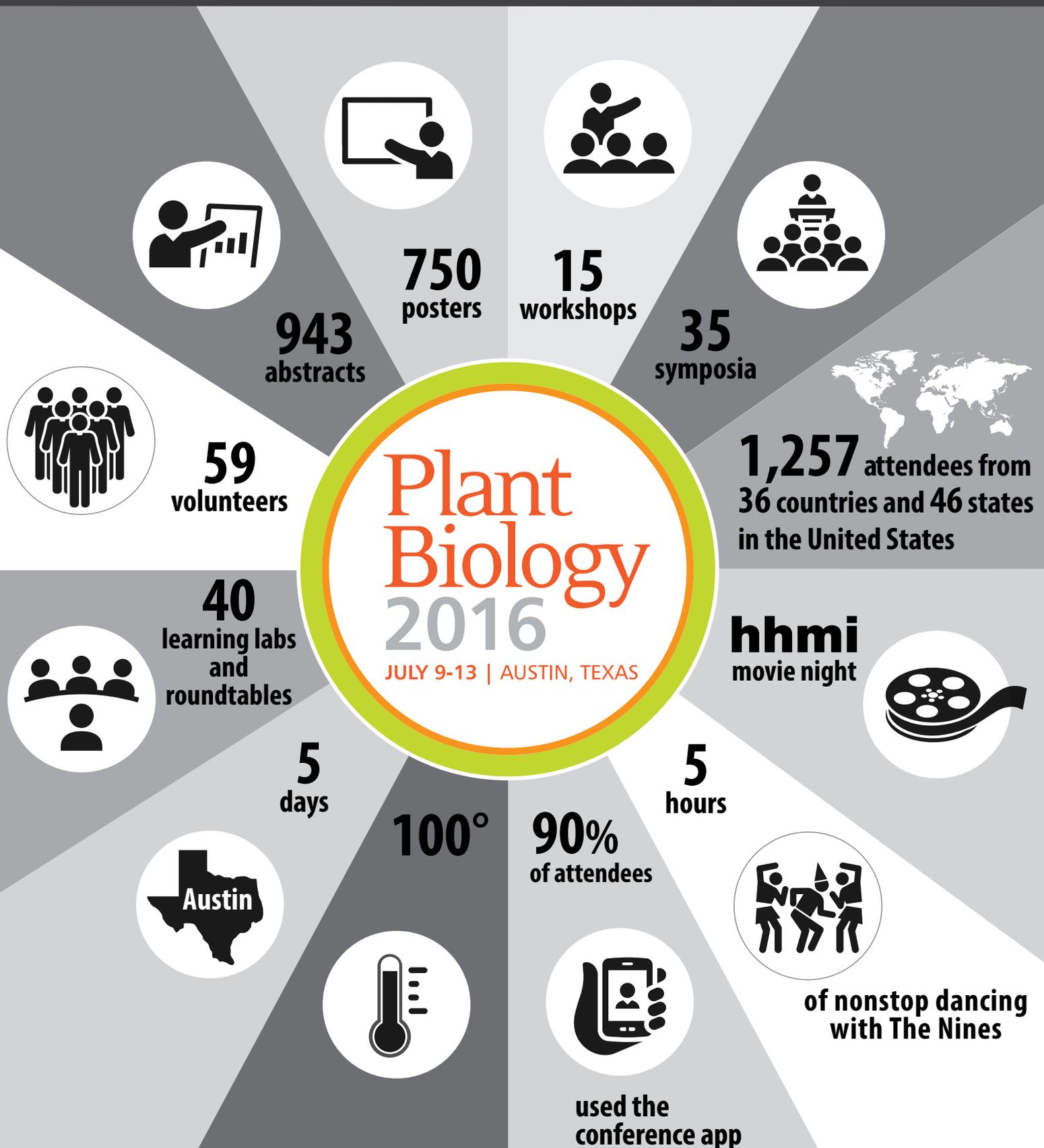
secure reviewers for papers, and we hope that the same will prove true for *The Plant Cell*.

After acceptance of a manuscript by the reviewing editor, the Peer Review Report (with author approval) will be prepared by the science editor handling the paper. The reports will follow a standard format and will reflect editing to remove the more minor comments, miscellaneous and mundane correspondence, and information that might identify a reviewer. Beginning with the

June 2016 issue, examples of Peer Review Reports will be published for a small set of articles each month to introduce our readers, authors, and reviewers to the concept and test the format. Links to articles and reports included in this pilot program can be accessed via the Instructions for Authors (<http://bit.ly/2b99Mz3>). As always, we welcome feedback from our readers to help us improve the quality of *The Plant Cell*. ■

Austin + Plant Biology 2016

Amazing science, new connections, creative ideas, and professional insights!





27 blog posts

documenting the meeting experience through the written word

<http://bit.ly/2cc2IID>



246 photos

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2016 ASPB award winners. Back row, left to right: Cora MacAlister, Karen Koch, and David Kramer. Front row, left to right: ASPB President Richard A. Dixon, C. Robin Buell, Xiaobo Li, Jian-Feng Ma, Ikuko Hara-Nishimura, MariaElena Zavala, and Pal Maliga.

Letter to the Editor

BY BOB CHASSON

ASPP Executive Director, 1982–1985

I thoroughly enjoyed the history of the ASPB headquarters building (*ASPB News*, Vol. 43, Issue 4) and wanted to share a few additional comments. By way of pre-history, let me describe the Gude property before the acquisition by the Society as related to me by Pat Richter and Marty Gibbs. The Gude family nursery occupied some 300+ acres bounded by Gude Drive and the Rockville Pike. Along Gude Drive was a small private airstrip and an accompanying hangar, both of which were removed in the mid-1970s. At the intersection of Gude and the Pike was a large coal-fired steam plant with a 50-foot smokestack that could be viewed for miles. The steam plant provided heat for the nursery's greenhouses as well as for the mansion. At the time of the acquisition (1980), the greenhouses had been removed and all that remained was the iconic smokestack. The final demolition of the smokestack in late 1982 was extensively covered by the local newspapers and all three local TV channels.

Indeed, Pat Richter played a huge role in the acquisition of the property. Never sufficiently recog-

nized was her work with Mrs. Doonan (Gilbert Gude's sister) in restoring the family mansion to its former glory. When I joined the headquarters in August 1982, it looked as if the Gude family had just vacated and left all their beautiful antique furniture. The magnificent chandelier over the dining room table was the only ceiling lighting fixture in the house (except for the kitchen). The scattered desks of the four members of the staff were lit by antique lamps, and the only signs of an office environment were the clunky IBM Selectric typewriters on the desks (replaced a year later by some Wang computers). The kitchen was remodeled, but the original wood-burning stove remained for three years before it was sold for a healthy sum to an antiques dealer.

The barn mentioned in the article was a two-story structure with six stalls for cows on the lower level and straw storage on the main level. Poster sessions had become a significant activity at the annual meetings, and the Society had a large number of poster boards built because the universities were unable to

provide them at our meetings. The barn provided the only storage space for some 30 poster boards along with a few remaining bales of hay.

No formal meetings were ever held in the barn. However, on one occasion the Mid-Atlantic Section's annual crab fest, normally held on the back lawn, was threatened by rain. So several members came early and swept out the barn, pushed aside the poster boards, and set up the tables, leaving enough room for the dance floor. Dancing to live music was always a part of the crab fest.

In 1984, bids were submitted by several contractors to remove the barn. The oak timbers were worth a small fortune, and the Society was rewarded handsomely for the barn's removal.

The article notes that "Additional space was secured by enclosing both levels of the screened porch at the back of the house." When a work crew started removing the original porch timbers, they exposed a massive hornet infestation. The crew left all their tools in their haste to flee and did not return until the infes-

tation had been treated for a week by an exterminator.

The picture in the article reminded me of a reference in Jack Hanson's *History of the American Society of Plant Physiologists* (ASPP, 1989). The trustees wanted to remodel the several rooms on the third floor for use by staff or for rental to other small biological societies. Such a renovation would have required the addition of a fire escape accessed from the third floor window shown in the picture. The fire escape would have had to arc over the side porch to reach the ground. Such an architectural monstrosity convinced the trustees to abandon this project.

On a personal note, I remember a visit from an event planner we had just hired to assist at the annual meeting to be held at Washington University in St. Louis. She came from a sterile office facility in Boston. She leaned across my desk and whispered, "This office facility is to die for." The Society has been the fortunate recipient of the Gude family's largesse. ■

ASPB/AAAS Mass Media Fellow Reports Back After Summer at NPR

BY CAROLYN BEANS

I would like to thank ASPB for giving me the amazing opportunity to work at National Public Radio (NPR) as an ASPB/AAAS Mass Media Science & Engineering Fellow this summer.

Writing for NPR has been an incredible learning experience. I've worked with numerous editors who have taught me how to pick stories that will engage the public, as well as how to write those stories with clarity and speed.

I've also learned a lot of practical tricks of the trade, such as how to pitch a story to an editor, how to track down hard-to-reach sources, and when it is and isn't acceptable to conduct an interview over email.

Writing for the NPR blogs Shots and The Salt has allowed me the flexibility to explore a wide range of writing styles and subject matters.

For Shots, a health blog, I published a Q&A with the World Anti-Doping Agency's science director on how a drug is banned from sport (<http://n.pr/260Bcc4>). I also wrote a breaking news story about a Centers for Disease



ASPB/AAAS Mass Media fellow Carolyn Beans

Control and Prevention advisory committee that decided to recommend against using a nasal spray flu vaccine popular with pediatricians (<http://n.pr/28Oo9nN>). And I drew on my own experiences to write a first-person piece on what scientists are learning about a pregnant woman's "waddle" (<http://n.pr/29wnGYu>).

For The Salt, a blog exploring the culture and science of food, I covered research on the microbiome of wine grapes (<http://n.pr/1W3YTgX>). I also wrote about whether the way we cut our vegetables really affects flavor (it does!) (<http://n.pr/29yT1c2>). And I wrote a more personal post about what my father-in-law has

taught me about *hing*, a common ingredient in Indian cooking (<http://n.pr/28OlV0s>).

My favorite aspect of this job has been the endless opportunities to talk with both scientists and members of the public. I've spoken with everyone from epidemiologists, food scientists, and physical therapists to James Beard Award-winning chefs, Olympians, and artists. Each week I conducted anywhere from five to a dozen interviews.

My experience as an ASPB/AAAS Mass Media Science & Engineering Fellow has confirmed my desire to be a science journalist. I know that the skills I've gained and the stellar reputation of the fellowship will help me greatly as I begin freelance science journalism. Thank you again for giving me the support I needed to jump-start my science writing career. ■

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Welcome to the *ASPB News* “Luminaries” column. Student and postdoc members are invited to submit their ideas for a 500- to 750-word interview they might like to conduct with a prominent scientist. Contact Membership Committee Chair Jill Deikman at jill.deikman@monsanto.com, who will help you develop some questions to frame your story. If we publish your interview, you will receive a \$50 Amazon gift card.

Philip N. Benfey

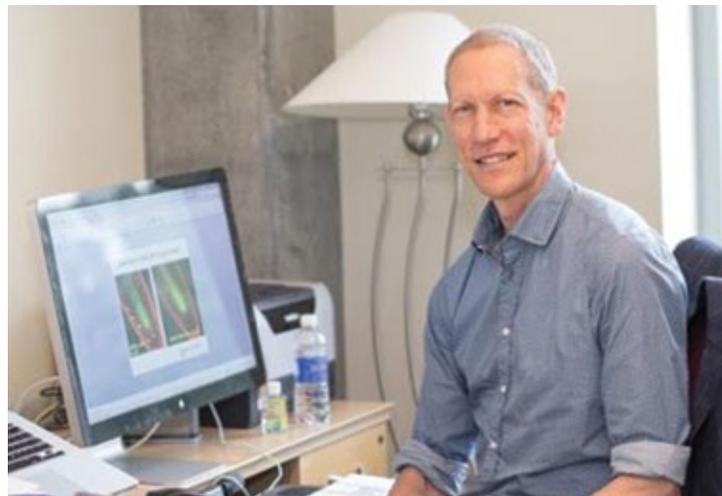
Professor, Duke University, Durham, North Carolina

BY ARIF ASHRAF

ASPB Student Ambassador and Research Student, Cryobio Research Center, Iwate University, Japan

Philip N. Benfey graduated from the University of Paris and received his PhD in cell and developmental biology from Harvard University under the guidance of Dr. Philip Leder. He did postdoctoral research at Rockefeller University in the field of plant molecular biology with Dr. Nam-Hai Chua and was appointed assistant professor there in 1990. In 1991 he moved to New York University, where he became an associate professor in 1996 and full professor in 2001. He was the founding director of the Center for Comparative Functional Genomics at New York University. In 2002 he was named professor and chair of the Biology Department at Duke University and in 2003 was named a distinguished professor.

Philip is the recipient of an NSF predoctoral fellowship and a Helen Hay Whitney postdoctoral fellowship. He was named a fellow of AAAS in 2004 and was elected to the National Academy of Sciences in 2010. In 2011, Philip was named an investigator by the Howard Hughes Medical Institute and the Gordon and Betty Moore Foundation under



Philip Benfey

an initiative to support fundamental plant science research. He currently serves on the editorial boards of *Science*, *Developmental Cell*, and *BMC Plant Biology*.

Philip’s research focus is to understand how cells acquire their identities. To answer this question, he uses *Arabidopsis thaliana* root as a model system because of its simplicity, organization, and organized pattern. His lab uses a combination of genetics, molecular biology, and genomics to study the genes necessary for root development

along with radial and longitudinal patterning. His lab discovered two genes, SHORT-ROOT and SCARECROW, important in radial patterning of roots. His long-term goal is to understand how cells are generated from a stem cell population and how they become patterned and integrated to form a functional organ.

Philip is also a pioneer in the cutting-edge technology of plant biology. His lab invented a device called RootArray, which allows scientists to grow 60 to 120 seedlings at a time. With this device,

it also is possible to observe the response of plants and tagged genes. In 2007, he formed a start-up company, GrassRoots Biotechnology, based on this technology that uses systems biology approaches to develop new crop traits for the bioenergy, food, and industrial markets.

How did you get interested in plant biology, and who influenced your scientific thinking early in your career?

I consider myself to be an “accidental” scientist; I originally wanted to be writer. I dropped out of college after a year and worked for a logging company in Oregon and then for a ski area in Utah. At that point, I had to decide if I wanted to go back to college, and I opted instead to hitchhike around the world on sailboats. Unfortunately, I kept hitting hurricane season, so I didn’t do any long journeys on sailboats, which may be why it took me five years to get around the world.

I worked as a mechanic in the South Pacific, as a bricklayer’s laborer in Melbourne, and on the railroad for the Mt. Newman

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LUMINARIES*continued from page 15*

Mining Company in Western Australia, and then I traveled through Singapore, Indonesia, and the Philippines. I worked as a gardener in Japan and began a novel. A year and nine months later, I was only halfway through the novel and ready to move on. So I took the Trans-Siberian railroad across the USSR, arriving in Moscow after eight days and seven nights, very hungry and in need of a shower.

I left the USSR on a boat from Odessa and traveled through Europe, ending up in Paris. There, I worked as a carpenter on a barge that was being transformed into a community center. About the same time, I fell in love with a French woman who was attending law school in Paris. I thought it was a pretty good arrangement—she would be a wealthy lawyer who could support me as a struggling writer—until she made clear that her goal was to be an actress. At some point she said, “Not that I don’t have entire faith in your writing ability, but maybe a day job would be a good idea,” to which I replied,

“But what would I do?” And she suggested biology. So I finished my undergraduate education at the University of Paris, then did my thesis at Harvard.

What scientific discoveries over the past couple of years have influenced your research directions, and how?

The primary influence over the past few years has been technology breakthroughs. These have included the drastically reduced cost of sequencing, the elucidation of genome editing systems, and the availability of enhanced imaging platforms.

What do you think will be the next big thing in your specific area of study?

In the field of plant developmental biology, we now have the ability to design and test synthetic circuits, which should help us understand how gene regulatory networks function.

What inspires you to continue in science?

Science is one of the few professions in which we consciously try

to reduce obscurity. It is all about adding new knowledge, understanding something that was previously hidden. There is also the creative aspect—you can have an idea in the morning and act on it the same day.

If you had six months off, what would you do with your time?

I’d devote more time to running my new company, whose aim is to use sophisticated data analytics to improve crop breeding and human health.

If you were able to repeat your years as a graduate student, would you do anything differently?

I don’t think so. I had a great graduate adviser in Phil Leder at Harvard. He was very supportive as I learned humility in the face of science. He also had a life outside of the lab, which was a very good example.

What do you think are good career moves for young scientists, and why?

I think there is real value in working outside of academia for some

period of time. The easiest time to get out is between undergraduate and graduate school, but it could be at other times as well. This time away can provide valuable perspective, particularly during the frustrating periods of science. I also suggest that you should watch out when you feel too comfortable. Stretch yourself in terms of areas of interest, techniques, and approaches.

As an employer, what are the four key qualities you look for in a potential team member?

I look for people who are smart, have good hands, have quantitative skills, and are socially adept.

What advice would you give to a student interested in plant biology today?

If you want to address the critical issues facing the world, most of them involve plant biology. Food and energy security, climate change, and social inequality can all be addressed through improved understanding of plants. ■

Policy Update

BY LAUREN BROCCOLI
Lewis-Burke Associates, LLC

Global Food Security Act of 2016 Signed into Law

In July, the House of Representatives considered and passed the bipartisan Senate legislation the Global Food Security Act of 2016 (Public Law 114-195). The House legislation was cosponsored by Representatives Adam Smith (D-WA) and Betty McCollum (D-MN), and the Senate version was cosponsored by Senators Johnny Isakson (R-GA) and Bob Casey (D-PA). On July 21, President Obama signed the bill into law, a figurative kickoff to the White House Summit on Global Development. The law reauthorizes programs related to international food aid, resilience, agricultural development, and antipoverty initiatives and emphasizes a whole-of-government approach to global food security. Additionally, the legislation supports the president's signature Feed the Future program, created in 2009, ensuring the program's continuation after his term.

Sources and Additional Information

- The full text of the law can be found at <http://bit.ly/1nzKaLV>.
- President Obama's statement on the passage of the law can be found at <http://bit.ly/29lrRUP>.

Congress Passes, President Signs GMO Labeling Bill Into Law

In July, Congress reached an agreement on legislation to develop a federal labeling system for food

containing genetically modified organisms (GMOs) on the heels of the implementation of Vermont's law requiring GMO labeling. The bill was championed by Senate Agriculture Committee Chairman Pat Roberts (R-KS) and Ranking Member Debbie Stabenow (D-MI) after many months of negotiations and criticism from Senator Bernie Sanders (I-VT) and others. The Senate cleared the bill in early July, leading the way for a bipartisan vote of 306–117 in the House. On July 29, President Obama signed the bill into law.

The bill requires the Secretary of Agriculture to develop a method for identifying products with GMO ingredients within two years, although the method is not yet determined. Some potential options include QR codes, a website or phone number, or a symbol, all to be placed on food product packaging. The USDA Agricultural Marketing Service (AMS) has established a working group to oversee the process and launched a new website for public comments and updates.

Sources and Additional Information

- The full text of Public Law 114-216 can be found at <http://bit.ly/1qmlyYw>.
- The AMS GMO disclosure and labeling website can be found at <http://bit.ly/2aQVqSl>.

New National Academies Prize in Food and Agriculture Sciences Announced

On July 13, the National Academy of Sciences (NAS) announced

the creation of the NAS Prize in Food and Agriculture Sciences. The \$100,000 award will be presented annually, starting in 2017. This new prize is endowed by a partnership between the Bill and Melinda Gates Foundation and the Foundation for Food and Agriculture Research.

The prize will recognize a midcareer scientist at a U.S.-based institution or may be shared by a team of scientists who collaborated closely on a discovery. Areas of science deemed appropriate for nomination for this prize include “plant and animal sciences, microbiology, nutrition and food science, soil science, entomology, veterinary medicine, and agricultural economics.” Nominations for the inaugural prize are open through October 3, 2016.

Sources and Additional Information

- The NAS announcement of the prize can be found at <http://bit.ly/29EP4DY>.
- To submit a nomination, visit <http://bit.ly/2aASGYs>.

OSTP Seeks Input on Agricultural Workforce for the 21st Century

Following an original call for action in January 2016, the White House Office of Science and Technology Policy (OSTP) is seeking input for materials and an upcoming event focused on the agricultural workforce for the 21st century. The objective is to profile commitments and investments that will “increase the number

and diversity of agriculturally trained workers in the U.S. at all levels of education and expand research and training in higher education areas that are experiencing particularly serious workforce shortages and are central to meeting future food needs.” OSTP is currently seeking examples of new or expanded programs to support these objectives.

Source and Additional Information

- More information and details on submissions are available at <http://bit.ly/2aQUDAQ>.

Request for Comment on Interagency Arctic Research Plan 2017–2021

The National Science and Technology Council's Interagency Arctic Research Policy Committee (IARPC) announced a request for comment on the IARPC Arctic Research Plan for fiscal years 2017–2021. Pursuant to the Arctic Research and Policy Act of 1984, the IARPC is tasked with developing federal research plans to support a national arctic research policy. The draft plan outlines nine priority objectives for the next five years: health and well-being, atmospheric composition and dynamics, sea ice cover, marine ecosystems, glaciers and Greenland ice sheet, permafrost, terrestrial and freshwater ecosystems, coastal community resilience, and environmental intelligence.

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ASPB/AAAS 2017 Mass Media Science & Engineering Fellows Program

Are you interested in science writing?

Do you want to help people understand
complex scientific issues?

Apply for the ASPB/AAAS Mass Media Science & Engineering Fellows Program and learn how to increase public understanding of science and technology. Fellows in the 10-week 2017 summer program will work as reporters, researchers, and production assistants in mass media organizations nationwide. **Deadline: January 15, 2017.**

Visit <http://www.aaas.org/MassMedia> for more details and to download an application brochure, or call 202-326-6441 for more information.



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Sacramento Bee

Scientific American

Slate

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Voice of America

WIRED

Advocacy-Related Activity Recap of Plant Biology 2016

BY TYRONE SPADY

ASPB Director of Legislative and Public Affairs

At this year's Plant Biology meeting in Austin, there was quite a bit of advocacy-related activity. The conference started with Howard G. Buffett receiving the 2016 ASPB Leadership in Science Public Service Award. The ASPB Science Policy Committee gives this award annually to recognize individuals who have advanced the mission of ASPB and its members through significant contributions to plant science and public policy leadership. Awardees generally have made contributions to the broader society that are relevant to the work of plant biologists.

Mr. Buffett was recognized for his leadership and efforts in support of agricultural research and innovation for smallholder farmers across the globe. Mr. Buffett is chairman and CEO of the Howard G. Buffett Foundation (<http://www.thehowardgbuffettfoundation.org>), a private charitable organization working to catalyze change to improve the lives of the most impoverished and marginalized populations. In particular, Mr. Buffett and his foundation focus on global food security and conflict mitigation. As part of his efforts, Mr. Buffett oversees four foundation-operated research farms comprising 18,500 acres spread across the United States and South Africa.

For his philanthropic contributions to agriculture, Mr. Buffett

has also received the National Farmers Union Meritorious Service to Humanity Award, the Leader in Agriculture Award from Agriculture Future of America, the Special Service Award from the Association for International Agriculture and Rural Development, the Gene White Lifetime Achievement Award from the Global Child Nutrition Foundation, the Norman E. Borlaug Award from the International Maize and Wheat Improvement Center, and numerous other honors. He held a brief question-and-answer session as part of the awards symposium at Plant Biology 2016.

On the second day, ASPB member Kevin Folta spoke about relationship building in science communication. Kevin is the 2016 recipient of the Borlaug Council for Agricultural Science and Technology Communication Award, which is presented annually in recognition of outstanding achievements in advancing science in the public policy arena. Specifically, he spoke about the value of branding oneself within the context of public engagement and striving to meet members of the public "where they are" in an effort to establish shared values and trust and to facilitate meaningful dialogue around charged issues such as the safety of consuming foods made from GE crops.

On the third day, the inaugural director of the Foundation for Food and Agriculture Research (FFAR), Sally Rockey, hosted a session to update the community. FFAR was created as part of the 2014 Farm Bill and infused \$200 million in federal matching funds into the nation's agricultural research enterprise. The foundation operates as a nonprofit corporation and leverages public and private resources to increase the scientific and technological research, innovation, and partnerships critical to boosting America's agricultural economy and addressing problems of national and international significance. Among the topics covered by Dr. Rockey, who is also a former deputy director for extramural research at NIH, was FFAR's late July convening event on the phytobiome. Representatives from the public and private sectors were invited to come together to help prioritize phytobiome research opportunities. She also highlighted the newly created NAS Prize in Food and Agriculture Science, which will recognize extraordinary research accomplishments of midcareer food and agricultural scientists.

On the fourth day, ASPB president Rick Dixon, Science Policy Committee member Neal Stewart, and ASPB member Robin Buell held a panel discussion on the recently released NAS report on GE crops (<http://bit.ly/25aFctB>).

They all served on the NAS study committee that was convened to examine evidence accumulated over the past two decades to assess both the purported negative effects and benefits of current commercial GE crops. The committee examined almost 900 research and other publications on the development, use, and effects of genetically engineered characteristics in maize (corn), soybean, and cotton, which account for almost all commercial GE crops to date. After hearing from 80 diverse speakers at three public meetings and 15 public webinars and reading more than 700 comments from members of the public, the committee ultimately affirmed the safety of GE crops.

The ASPB Science Policy Committee is currently developing its session ideas for Plant Biology 2017. Please stay tuned for future announcements. ■

POLICY UPDATE *continued from page 17*

Source and Additional Information

- The full text of the draft plan and details on how to submit comments are available at <http://bit.ly/2aoBLFc>. ■

CALL FOR APPLICATIONS

American Philosophical Society, Research Programs

Information and application instructions for all of the Society's programs can be accessed at our website, <http://www.amphilsoc.org>. Click on the "Grants" tab at the top of the homepage.

Information About All Programs

Purpose, Scope

Awards are made for noncommercial research only. The Society makes no grants for academic study or classroom presentation, for travel to conferences, for non-scholarly projects, for assistance with translation, or for the preparation of materials for use by students. The Society does not pay overhead or indirect costs to any institution or costs of publication.

Eligibility

Applicants may be citizens or residents of the United States or American citizens resident abroad. Foreign nationals whose research can only be carried out in the United States are eligible. Grants are made to individuals; institutions are not eligible to apply. Requirements for each program vary.

Tax information

Grants and fellowships are taxable income, but the Society is not required to report payments. It is recommended that grant and fellowship recipients discuss their reporting obligations with their tax advisors.

Contact information

Questions concerning the FRANKLIN and LEWIS AND CLARK, programs should be directed to Linda Musumeci, Director of Grants and Fellowships, at LMusumeci@amphilsoc.org or 215-440-3429

Questions concerning the LIBRARY RESIDENT Research Fellowships should be directed to Earle Spamer, Library Programs Coordinator, at libfellows@amphilsoc.org or 215-440-3443.

Brief Information About Individual Programs

Franklin Research Grants

Scope This program of small grants to scholars is intended to support the cost of research leading to publication in all areas of knowledge. The Franklin program is particularly designed to help meet the cost of travel to libraries and archives for research purposes; the purchase of microfilm, photocopies or equivalent research materials; the costs associated with fieldwork; or laboratory research expenses.

Eligibility Applicants are expected to have a doctorate or to have published work of doctoral character and quality. Ph.D. candidates are not eligible to apply, but the Society is especially interested in supporting the work of young scholars who have recently received the doctorate.

Award From \$1,000 to \$6,000

Deadlines October 1, December 1; notification in January and March.

Lewis and Clark Fund for Exploration and Field Research

Scope The Lewis and Clark Fund encourages exploratory field studies for the collection of specimens and data and to provide the imaginative stimulus that accompanies direct observation. Applications are invited from disciplines with a large dependence on field studies, such as archeology, anthropology, biology, ecology, geography, geology, linguistics, and paleontology, but grants will not be restricted to these fields.

Eligibility Grants will be available to doctoral students who wish to participate in field studies for their dissertations or for other purposes. Master's candidates, undergraduates, and postdoctoral fellows are not eligible.

Award Grants will depend on travel costs but will ordinarily be in the range of several hundred dollars to about \$5,000.

Deadline February 1 (letters of support due January 30); notification in May.

Library Resident Research Fellowships

Scope The Library Resident Research fellowships support research in the Society's collections.

Eligibility Applicants must demonstrate a need to work in the Society's collections for a minimum of one month and a maximum of three months. Applicants in any relevant field of scholarship may apply. Candidates whose normal place of residence is farther away than a 75-mile radius of Philadelphia will be given some preference. Applicants do not need to hold the doctorate, although Ph.D. candidates must have passed their preliminary examinations.

Stipend Stipend \$3,000 per month.

Deadline March 1, notification in May.

Planting Seeds for a Reflective Harvest

The Role of ASPB in Enhancing Diversity in Plant Biology

BY BERONDA L. MONTGOMERY and ADÁN COLÓN-CARMONA

Disciplinary societies have been defined as “an important organizational structure through which scientists build communities of practices, reward achievements, and enable members to share information” (Frehill, 2012). Such societies, including ASPB, have a responsibility to support and advocate for all members in these endeavors.

Over the years, ASPB has accomplished many activities related to improving access and success of individuals from diverse racial and ethnic backgrounds underrepresented in STEM fields, primarily through efforts spearheaded by the Minority Affairs Committee (MAC). Specific MAC outreach and educational activities have included sponsored visits of ASPB members to present seminars and interact with students and faculty at minority-serving institutions (Montgomery, 2012) and the Recognition Travel Award program (<http://rta.aspb.org/>; see photo), which supports travel fellowships for diverse individuals to attend the annual meeting (Montgomery, 2013).

In addition, MAC has participated in the Annual Biomedical Research Conference for Minority Students (ABRCMS; <http://abrcms.org/>) and the national meeting of the Society for Chicanos and Native Americans in Science (SACNAS; <http://sacnas.org/events/national-conf>). The ABRCMS and SACNAS conferences are two of the largest national gatherings for promoting

involvement in research of undergraduates, especially those from backgrounds underrepresented in STEM. Through these activities and others, MAC members and other participating ASPB scientists seek to increase access, engagement, and full integration of a diverse base of individuals in the ASPB community.

ASPB's Ventures in Promoting Diversity and Inclusion

Professional societies play key roles in promoting entry into and success along specific career paths. In a report responding to recommendations by the Committee on Equal Opportunities in Science and Engineering to increase diversity in STEM fields, an NSF work-

ing group specifically highlighted scientific societies as important for their potential to “play a major role in deploying best practices to the community and pursuing broadening participation” (NSF, 2014). ASPB-driven initiatives in this domain serve members who seek to broaden participation and outreach activities and increase the effectiveness of ASPB in developing best practices and encouraging its members to effectively serve a diverse pool of individuals.

Among many strategies that have proved effective in increasing access and success for individuals from diverse backgrounds, mentoring has emerged as a critical factor in promoting recruitment, retention, and persistence. In this regard, MAC has for several years focused on promoting the development

and dissemination of strategies for sustaining effective mentoring relationships (Montgomery and Colón-Carmona, 2016). MAC recently sponsored a mentoring-focused panel during the annual MAC dinner at the 2016 Plant Biology meeting (see photo).

Among the many topics discussed, interventions for supporting conversations and engagement across demographic differences were introduced. Given the difficult climate currently surrounding such issues in the United States, MAC recognized a need to facilitate and provide tools to support difficult discussions in this area. The Culturally Aware Mentoring resource available through the National Research Mentoring Network (<https://>

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2016 Recognition Travel Award winners with present and former MAC members and ASPB staff. Back row, left to right: Sylvia Lee (ASPB Staff), Samuel Lopez-Nieves, Juan Hernandez-Vega, Valerie Sponsel (MAC), Gustavo Macintosh (MAC), Adán Colón-Carmona (MAC), John Harada (former MAC), Beronda Montgomery (MAC), MariaElena Zavala (former MAC), Michael Gonzales (MAC). Front row, left to right: Melanie Sacco, Eduardo Ramirez, Evelyn Valdez-Rangel, Daniel MacVeigh Fierro, Carina Sandovill, and Ramesh Katam.

PLANTING SEEDS

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nrmnet.net/), whose resources were highlighted at the panel, was introduced as one practical and valuable tool for promoting effective interactions across racial, ethnic, and other individual differences. Society members can embrace, cultivate, and sustain effective mentoring for diverse individuals by using such resources. MAC intends to continue serving as an advocate and catalyst in providing spaces to discuss topics around diversity and inclusion that affect our work as plant scientists, which does not occur in a vacuum.

Although interventions to improve individual access to communities such as ASPB are critical, research has also indicated that long-term transformation of communities into ones that serve a broad array of individuals from diverse backgrounds will also include targeted attention to community climate and culture (Whittaker and Montgomery, 2014; Whittaker et al., 2015; Zambrana et al., 2015). MAC recently initiated internal discussions regarding whether the breadth and depth of our knowledge about ASPB's culture are sufficient to ensure long-lasting change to broaden participation of current and future members. In addition to continuing to focus on efforts in the domain of mentoring, MAC hopes to spearhead discussions and assessment of ASPB's culture to support a robust and effective framework for broadening participation in the organization. To be effective, this effort will require the input and buy-in of many across ASPB and strategic collaborations.

In considering potential Society-level approaches for broadening participation, MAC is assessing specific efforts that



Plant Biology 2016 Minority Affairs Committee (MAC) dinner and panel on effective mentoring. Left to right: Panel members Adán Colón-Carmona (MAC) and Beronda Montgomery (MAC) and speaker Amber Smith, director of mentor and mentee training, Wisconsin Institute for Science Education and Community Engagement, University of Wisconsin–Madison.

have emerged across a range of societies to increase representation of women and individuals from groups underrepresented in STEM in Society activities and annual meetings. For instance, analyses of the impact of ensuring that women served as symposia organizers indicate that increasing female session and symposia conveners was correlated with a marked increase in the number of female speakers (Casadevall, 2015; Casadevall and Handelsman, 2014; Sardelis and Drew, 2016). Similar results may be anticipated from diversifying symposia organizers across many demographic groups. MAC looks forward to continuing to identify such evidence-based practices and to working with individuals and the Society as a whole to ensure full integration, recognition, and celebration of all ASPB members.

How Can You Participate?

All ASPB members interested in participating in upcoming MAC activities can contact Adán Colón-

Carmona, chair of the MAC committee, at Adan.Colon-carmona@umb.edu. Specific activities include participating in a plant biology disciplinary round table or ASPB symposium and judging student posters at SACNAS 2016 (October 13–15 in Long Beach, California) and ABRCMS 2016 (November 9–12 in Tampa, Florida). The sustained future of ASPB depends on all members' commitment to building and sustaining a community that welcomes all who are drawn to engaging with plants and the scientists who study them. ■

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Plant Biology 2016 Education Committee Writing Science Workshop Was a Hit!

A great crowd of plant science educators learned, and practiced, how to incorporate scientific writing into their undergraduate curriculum and, more importantly, how to get undergraduates to contribute to scientific knowledge early in their career. Sarah Wyatt, ASPB Education Committee chair, kicked off the workshop with an introduction on the importance of writing as a form of science communication and the necessity of integrating writing into the undergraduate curriculum.

Wikipedia Year of Science Initiative

Jami Mathewson, of the Wiki Education Foundation, filled us in on an undergraduate teaching tool students can use to actually contribute their work to scientific knowledge rather than simply re-

cycling their term papers at the end of the semester (<https://wikiedu.org/teach-with-wikipedia/>). Wikipedia is the most accessed source of information on the Internet, outstripping CNN, Fox News, and USA Today combined in terms of mobile views (<https://wikiedu.org/yearofscience/>). The Wiki Education Foundation is seeking to improve science content for the masses through its Year of Science initiative (<https://wikiedu.org/yearofscience/>).

As part of this initiative, the Wiki Education Foundation is helping educators use Wikipedia as a science writing platform. Wikipedia provides instructors with curriculum guidelines, student training, support for instructors and students (via phone, email, and video), and metrics on student progress. Wikipedia is an unusually well-suited testing ground for young science writers as they learn how to research and cite credit-

continued on page 24



Sarah Wyatt kicking off the Education Committee writing workshop.



Jami Mathewson of the Wiki Education Foundation making a strong case for "Don't cite Wikipedia. Write Wikipedia!" (<http://bit.ly/2bcDWM8>).



Above: Samantha Erickson (right) of the Wiki Education Foundation discussing the future of a Wiki article with a workshop participant during the hands-on Wikipedia evaluation activity.



Left: Jami Mathewson (left) of the Wiki Education Foundation fielding questions during the hands-on Wikipedia article evaluation activity.

No Prior Experience Needed: Wikipedia at Plant Biology 2016

In Wikipedia's Year of Science, ASPB has partnered with Wikipedia to improve the plant biology content on the free online encyclopedia. The Simons Foundation hosted a Wiki Edit-a-thon at Plant Biology 2016 in

Austin to improve the coverage and accuracy of plant biology pages and to increase awareness of notable women in plant biology. Students and faculty learned to evaluate and edit the Wikipedia pages of their choice. During the

three-hour session, faculty and students added 6,690 words, editing 26 articles and creating four new ones on a range of topics from cytochrome P450 to translational regulation in plants and abiotic stress to plant senescence.

New articles were added to highlight the careers and science of Dominique Bergmann, Susanne von Caemmerer, and Karen Koch. ■

WRITING SCIENCE WORKSHOP *continued from page 23*

able sources and how to convey scientific ideas and as they gain firsthand understanding of the peer review process (i.e., the Wiki community).

During a hands-on activity, Jami challenged audience members to search Wikipedia for an article on their area of expertise, evaluate its quality, and ask themselves what they would want the world to know about their field of study.

Science in the Classroom

Carl Fellbaum presented an educational tool, *Science in the Classroom*, by AAAS's *Science* magazine that introduces undergraduate students to quality literature by providing an interactive and guided reading experience (<http://scienceintheclassroom.org/>). Annotations include background information, insight on figures, interpretation of results, and links to references in the news. "Thought Questions"

prompt students to ask why the study is important, what the objective is, what the supporting evidence is, and so on.

Professors, lecturers, postdocs, and graduate students volunteer to annotate papers by getting in touch with *Science* editors on the *Science in the Classroom* website (<http://scienceintheclassroom.org/volunteer>). Volunteers interact with *Science* editors throughout the process, which includes a brief online training module, article selection, editing, and submission. The annotating process takes about eight hours, depending on the volunteer's familiarity with the article, and the entire process takes two to three months (the majority of this time is spent waiting for reviews and edits). Carl went on to say that unfortunately, only five of about 60 papers queued up focus on plants, and he encouraged educators to volunteer to annotate a paper of their choice for undergraduate plant scientists in training.

CourseSource

Robin Wright, editor-in-chief at *CourseSource*, pitched the open-access, peer-reviewed journal for educational tools such as teaching activities, approaches, and innovations used in undergraduate classrooms with a focus on active learning. *CourseSource* currently has 44 published articles, 17 articles under review, 24,666 users, and nearly a million page views. Check out the resources, and consider submitting your article at <http://coursesource.org/>.

Volunteers Needed

The well-attended Education Committee Writing Science workshop inspired educators to explore a few nontraditional science writing opportunities that are making a difference for students and encouraged content experts to volunteer their invaluable skill set. Are you interested in learning more about these activities? Check out their websites for more information: <https://>



Robin Wright, editor-in-chief at *CourseSource*, walking workshop participants through the *CourseSource* website, which boasts more than 24,000 users and nearly a million page views.

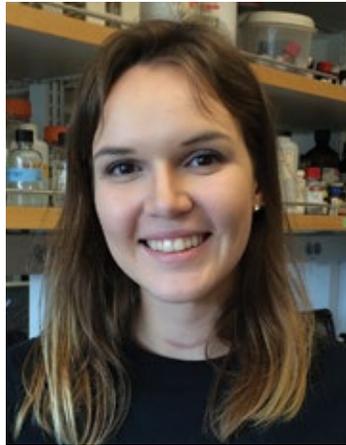
wikiedu.org/teach-with-wikipedia/, <http://scienceintheclassroom.org/volunteer>, and <http://coursesource.org/>. ■

Plant Biology 2016 Undergraduate Poster Session

BY JILLIAN BREault
James Madison University

As an undergraduate who presented a poster at Plant Biology 2016, I had my first experience in the “real world” of science, not sheltered by my university, principal investigator, or other mentors, at this year’s Undergraduate Poster Session. Walking into a room full of accomplished scientists and preparing to present my research was a terrifying thought, but I quickly learned that the Undergraduate Poster Session was there to prepare me for the other sessions, help me grow as a scientist, and allow me to make friends along the way.

The first thing I noticed is how welcoming and supportive everybody was. Professors, students, and professionals from



Jillian Breault

around the world took the time to come over and talk about my work, listen attentively, and suggest possible directions for

the future. Talking to professionals in this calm environment was great practice for the main poster sessions. In addition, the other undergraduates had a very uplifting presence as well. There was no feeling of competition—only support, interest, and the desire to learn more. I could practice my skills at understanding research in other fields while simultaneously learning how to explain my research in a way that made sense to a broad audience.

Additionally, those of us who were undergraduates were able to find each other during the week to watch a movie on genetically modified corn, practice explaining our posters to each other, and converse about the potential bene-

fits of purple tomatoes. Having a network of people with the same level of understanding that I had was beneficial when it came to understanding some of the more complicated talks. After those talks, we could work our way through them together and use our combined knowledge to better understand the presentation.

Perhaps the most beneficial lesson from the Undergraduate Poster Session was that as scientists, we will always continue to learn, and we are not expected to know everything. My research was in plant biochemistry, specifically protein structure and function. Coming into this meeting,

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Plant Biology 2016 Education and Outreach

BY KEN HELM
Siena College

The Education and Outreach Concurrent Session featured five excellently delivered, diverse talks that illustrated many facets of a large continuum of educational practices and issues. The talks were very well attended, and the large number of questions and comments at the end of each talk demonstrated a high level of audience engagement.

Three of the talks can be thought of as studies on how to smooth transitions as students move through their educational experience. Jordan Chapman (Wake Forest University) presented a project that connects science majors, non-science majors, and high school students by having plant physiology students teach non-science majors the basics of

genetics and GMO technology and having the nonmajors then share their knowledge with local high school students. Ursulla Idleman (University of Illinois) described a program to help students at community colleges more easily make the transition to science curricula at four-year institutions. Her program involves outreach and increased

integration between community college and four-year faculty, and it also provides opportunities for promising community college students to do independent study projects with faculty from the four-year institutions.

Finally, Alice Harmon (University of Florida) provided

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Applications Now Being Accepted for the ASPB Master Educator Program

Application Deadline October 31, 2016

The ASPB Education Committee is now accepting applications for the Master Educator Program (MEP). Open to ASPB members, MEP offers successful applicants financial support to participate in professional development activities with the overall objective of generating undergraduate plant biology instructional materials. These materials must align with the recommendations of the AAAS Vision and Change report (<http://visionandchange.org/finalreport>) and ASPB's core concepts in plant biology (<http://bit.ly/2b5elqu>).

For more information, please visit <https://mep.aspb.org>.

PB16 POSTER SESSION *continued from page 25*

I assumed that everybody around me would have a better understanding of this topic than I did. However, I had numerous professors and graduate students ask me

questions about something in my research that they did not quite understand. As a student with only two formal years of biology under my belt, many talks and presentations were hard for me to keep up with. But seeing people who

have studied biology for 30-plus years ask me questions for their own understanding taught me to embrace what I do not know.

The road ahead consists of educating myself and constantly learning new things. It is exciting

to know that 30 years down the road, when I am attending the 2046 ASPB meeting, I will still be learning more about the field that I am so passionate about, perhaps even at that year's Undergraduate Poster Session. ■

EDUCATION AND OUTREACH *continued from page 25*

an overview of a unique program that trains top-performing undergraduates as Learning Assistants, who then assist in introductory biology courses. The Learning Assistants, who are trained in pedagogical techniques, assist with classroom active learning activities and help provide a nonthreatening environment in which students feel freer to ask questions and seek help.

The other two talks in the session described ways to

improve the effectiveness of individual undergraduate biology courses. Valerie Haywood (Case Western Reserve University) presented a novel method of identifying common biological misconceptions, in this case about photosynthesis, and correcting those misconceptions through a combination of lectures and an active learning exercise in which small groups of students create "idea maps." The idea maps are graded, and the efficacy of the exercise is assessed using a few short, targeted questions on midterm exams.

Valerie reported that this method worked quite well.

Tara Phelps-Durr (Radford University) discussed an approach to laboratory teaching using mutations in genes controlling leaf development to create a continuum of linked laboratory exercises that tie together the relationships between genes and gene mutations, the central dogma, and the relationship between protein structure and ultimately phenotype. The projects take place over a period of five weeks and introduce students to wet lab experiences, computational

biology and data mining, and methods of data reporting and communication.

The Education and Outreach Concurrent Session speakers showed us that education in biology is broad indeed and encompasses outreach between different students and institutions, effective classroom teaching, and lab experiences that engage and excite undergraduate students. Taken together, the talks illustrated the many ways in which young minds can be more effectively attracted to and retained in the study of plant biology. ■

Education and Outreach Posters at Plant Biology 2016

BY ERIN J. FRIEDMAN
Lynchburg College

A Plant Biology meeting would not be complete without the lively discussions and networking facilitated by the poster sessions, and the 2016 meeting did not disappoint. The education and outreach neighborhood was well represented, with nearly 20 posters covering a broad range of topics. In addition, four poster authors spoke at the Education and Outreach Concurrent Symposium, which expanded the discussion of these important topics beyond the poster hall.

One prominent theme at this year's meeting was addressing common misconceptions in plant biology. To identify student misconceptions beyond photosynthesis and respiration, April Wynn (University of Mary Washington) and Elizabeth Rueschoff (Indiana University Southeast) performed a meta-analysis and revealed a wealth of topics that educators need to

address. They found that audiences ranging from preschool to undergraduates and even novice teachers held misconceptions such as plants lacking DNA and genes, GMOs providing inferior nutrition, and plant cells not undergoing mitosis or meiosis. Two additional presenters explored individual topics more deeply. Tara Phelps-Durr (Radford University) described how she uses molecular modeling to teach students how changes in DNA sequence alter phenotypes, and Jordan Chapman (Wake Forest University) presented a model of peer teaching to improve understanding and attitudes toward GMOs.

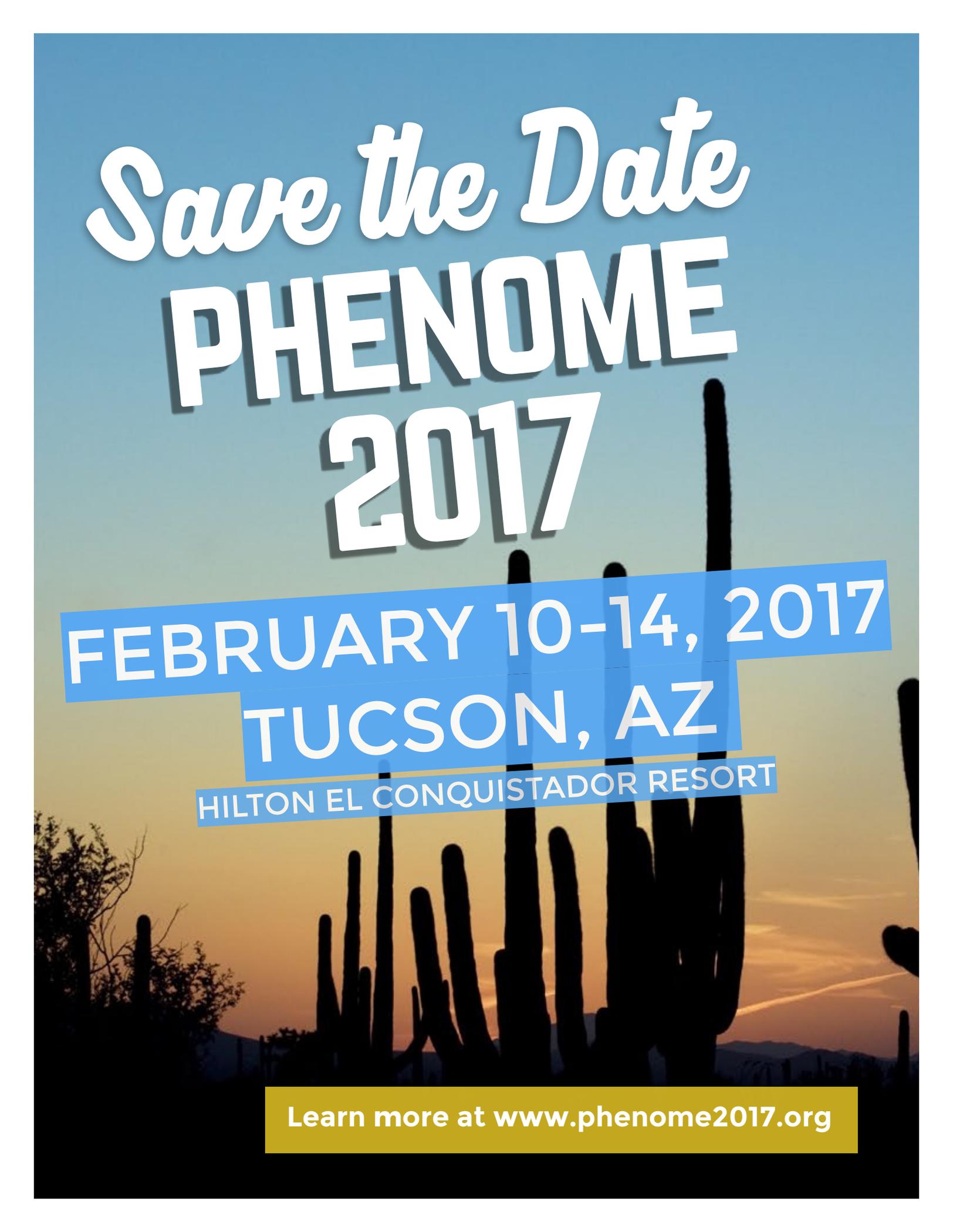
A second theme of the posters involved teaching techniques for incorporating active learning into classrooms. Two presenters described the use of Learning Assistants to facilitate learning in their large undergraduate classrooms. Alice Harmon (University

of Florida) and Robert Donaldson (George Washington University) presented methods and learning outcomes at their respective institutions. Pioneered at the University of Colorado Boulder, Learning Assistants are top students who facilitate active learning in classrooms after participating in a pedagogical training session. Eve Mellgren (Elmhurst College) described the use of active learning in core courses to address common problem areas identified through surveys and exams.

The third major poster theme involved the integration of research into the classroom. The research topics ranged from synthetic biology (Britney Moss, Whitman College) to tomato grafting (Kenneth Helm, Siena College) to epigenetics (Christina Garcia, North Carolina State University). Although the details of each topic and course varied, all of the presenters used inquiry-

based learning and mastery of lab techniques to help students understand a core concept over a span of several weeks to an entire semester.

Finally, several posters described educational outreach and available resources. Victoria Bryan (University of Missouri) discussed the Interdisciplinary Plant Group and its outreach activities. DorothyBelle Poli (Roanoke College) presented a project called QUBES (Quantitative Undergraduate Biology Education and Synthesis), which is a virtual community featuring faculty resources and mentoring networks. Sean Fenstemaker of the Arabidopsis Biological Resource Center presented information about the resources provided by the center. Phil Taylor discussed Monsanto's outreach activities with participants, including site tours, panels with scientists, and workshops. ■



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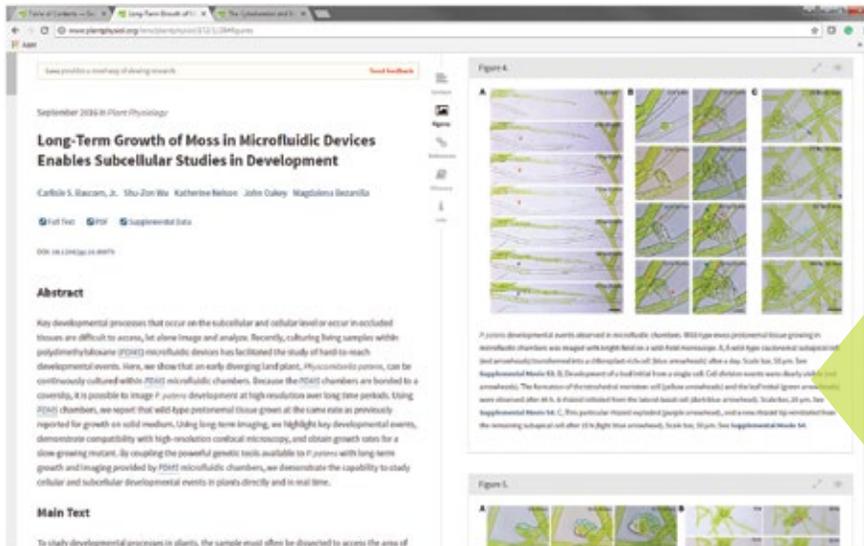
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A graphic element featuring the Wiley logo (a green square with "cp" in white) and a blue circular badge with white text that reads "25% discount for ASPB members with the code ASP25". The background has decorative blue and green curved lines.

WILEY

Carl J. Douglas

1954–2016

BY LACEY SAMUELS and SHAWN MANSFIELD
University of British Columbia

Carl J. Douglas grew up in eastern Washington State and graduated from Lewis and Clark College in 1976, majoring in German and biology. It was in German class that he met his future wife, Lorraine Sharpsteen. They were married for almost 33 years and have a daughter, Jennifer. After working as a technician at the Universität Regensburg in Germany, Carl returned to the University of Washington, where he “found” molecular biology, working with Gene Nester and Milt Gordon on *Agrobacterium tumefaciens* genetics and interaction with plants. At the same time, he took graduate classes from Bob Cleland, who extolled the opportunities of plants. Following his graduation in 1983, he continued postdoctoral work at the University of Washington and then the Max Planck Institute for Plant Breeding Research in Cologne, Germany.

Carl arrived at the University of British Columbia (UBC) Department of Botany in 1987 and progressed up the academic ladder, eventually serving as head of department between 1999 and 2006. His six years as department head were spent building a culture of cooperation and respect, reflecting Carl’s gentle and gracious personality. He hired 14 new faculty members in five years and effectively managed the integration and aspiring careers of the new generation of academics,



Carl J. Douglas

who were mentored to reinvent what it means to be a botanist. Carl’s leadership fostered an effective cooperation among evolution, systematic, molecular, and ecological botany that has resulted in a broad-based but united botany community at UBC.

Carl and his research team made pioneering contributions in phenylpropanoid metabolism, lignin biosynthesis, pollen development, and the regulation of plant cell wall biosynthesis. He was already making contributions on the control of gene expression in lignin biosynthetic genes in the late 1980s, studying key genes such as PAL and 4CL, and setting the foundations for the work still being done in bioenergy feedstocks today.

As the coleader of several large genome projects, including the first Genome Canada forest



The Douglas Lab, in spring 2009, enjoying a get-together in Carl’s garden. From left: Apurva Bhargava, SungSoo Kim, Teagen Quilichini, Carl Douglas, Yuanyuan Liu, Eryang Li, and Michael Friedmann.

genomics project in 2000–2004, Carl was a strong contributor to the international effort to establish poplar as a model tree system, including being a coauthor on a 2006 *Science* paper describing the poplar genome. More recently, he was project coleader of two forest genomics Genome BC/Genome Canada projects attempting to use genomic approaches to improve poplar as a bioenergy crop (2008–2016); projects that brought together several units on the UBC campus, including botany, forestry, and the Michael Smith Laboratories. These large multidisciplinary projects are necessarily collaborative, with the inevitable interpersonal challenges of multiple professors, and Carl not only made critical scientific contributions but also managed

to lead the research collaborators with his reasonable and calm style. The resulting contributions of Carl’s team were greater than the sum of the parts, and the projects would not have blossomed without Carl’s leadership.

Carl was elected a fellow of AAAS in 2010 and a Minjiang Scholar at the Fujian Agriculture and Forestry University and Province of Fujian, China, in 2012. In addition, he was an ASPB Corresponding Member, an honor bestowed on only three distinguished plant biologists residing outside the United States each year. In June 2016, he was awarded the David J. Gifford Award from the Canadian Society of Plant Biologists (CSPB) for outstanding contributions in tree biology.

In 2014, a group of Carl's current and former students nominated him for a Killam Award for Excellence in Mentorship to recognize his effective and kind guidance throughout their careers. Carl was a great mentor because he accepted people as they were and attempted to find the best in all situations. As a successful scientist who produced high-quality scholarly work, he expected his trainees to perform and communicate their science at the highest internationally competitive level. One key attribute of Carl's was his integrity, which was key to his mentoring success. Carl modeled honesty, fairness, and strong principles in simple everyday actions as well as important decisions. Examples are as simple as speaking respectfully of others, insisting on proper controls for experiments, and always doing more than his share of service work in the department and university community.

Carl also worked tirelessly for the international research community. He contributed to ASPB as well as to CSPB. For CSPB, he was western regional director, vice president, and president of the society. As past president, he represented CSPB as an executive member of the Global Plant Council, a group of senior scientists dedicated to using plant and crop science to meet global challenges.

Carl helped organize the joint ASPB-CSPB meeting in Montreal in 2010 and the 2014 joint meeting in Portland. He was also involved in organizing many tree-oriented national and international meetings, such as the International Union of Forest Research Organizations Tree

Biotechnology Conferences, the International Poplar Symposium, and the 11th Congress of International Plant Molecular Biology at Iguazú Falls in Brazil. Carl relished visiting new places and attending meetings. He was always game to discuss science and try new cultural experiences and food; he enjoyed drinking wine and dancing with his scientific colleagues at meetings.

Considering Carl's many accomplishments and his cheerful willingness to help out in any way, he was remarkable for his richly

enjoyed life outside science. He faithfully followed the advice of one of his mentors, Walt Halperin at University of Washington, by pursuing his love of hiking, skiing, and climbing. He had a beautiful garden, religiously rode his bike to UBC (rain or shine), and was a great cook who loved to entertain. In 2015-2016, he took a sabbatical in locations with notable mountains to climb (e.g., Aconcagua, the highest mountain in South America) and fine wine to enjoy, including South Africa, Argentina, New Zealand, and

Austria. He had just returned to Vancouver in July 2016 when a terrible accident took his life on the west ridge of Mount Tupper, in Glacier National Park near Revelstoke, British Columbia. He was 61. UBC will not be the same without Carl. ■

Thora Halstead

1928-2016

Thora Halstead died at age 87 on March 9, 2016. Though not herself a member of ASPB, she had a significant influence on a number of Society members. She headed a space biology program that supported zero gravity research in both plant and animal science. None of this research was being supported by NSF or USDA; Thora worked at NASA Life Sciences, where she was manager of the Space Biology Program, Life and Biomedical Sciences and Applications Division. She was the program scientist for the Space Shuttle launch in September 1992. She published more than 40 research articles on how the cells of living organisms respond to a low-gravity



Thora Halstead

environment. In addition, she was a founding member and past president of the American Society for Gravitation and Space Biology.

Each year, Thora gathered her current and past plant science grantees for a two-day conference near Harpers Ferry, Maryland. In 1985, the executive

director of the Society was invited to attend. About 30 scientists participated, the average age probably around 27 or 28, and everyone present appeared to be a member of ASPP. Thora seemed to take special pride in this group, and her warm feelings were reciprocated. When she retired in 1994, NASA established a young investigator award in her name. About half the awardees from 1994 to 2015 are current members of ASPB.

Thora had degrees in microbiology from Washington State University (BS), the University of Texas at Austin (MS), and the University of Maryland, College Park (PhD). ■

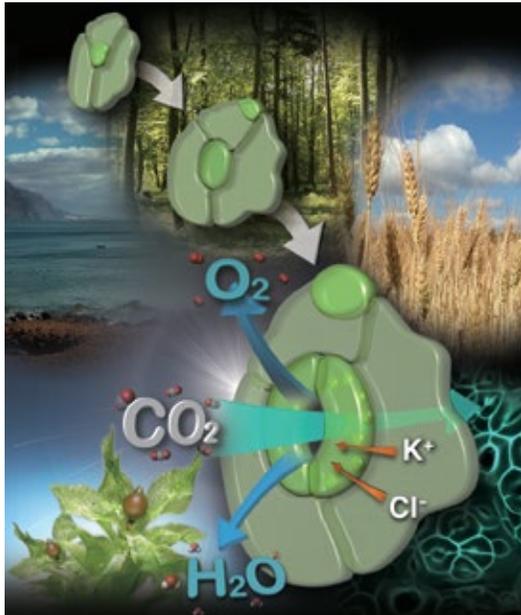


Image by Haruko Hirukawa

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