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ASPB *News*



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

Seen and Heard at the 2013 White House Easter Egg Roll!

BY KATIE ENGEN
ASPB Education Coordinator



After shaking hands with Michelle Obama, ASPB President Peggy G. Lemaux enjoys the First Lady's focus on youth.

Along with the egg roll, First Family sightings, and musical and athletic talent extraordinaire, a lot of excitement about plants was seen and heard during ASPB's third consecutive visit to the

White House South Lawn for the 2013 White House Easter Egg Roll. Visitors and ASPB volunteers enjoyed interacting over three distinct activities in our "Growing Strong with
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President's Letter

"Egg-citing!" ASPB's STEPs at the White House

PEGGY G. LEMAUX
ASPB President
University of California, Berkeley

It's 4:30 a.m. at the Capital Hilton in Washington, DC. A little groggy having arrived late the evening before, I wondered if I was really ready to participate in ASPB's educational efforts at the yearly Easter Egg Roll at the White House, an event that has been taking place since 1978 on the White House South Lawn the Monday after Easter. Although it started with—and still involves—rolling real hard-boiled eggs, the Easter Egg Roll has progressed over the years to also offer a wide array of events, including live music, games and activities, and cooking stations, such as this year's event featuring First Lady

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ASPB staff are dedicated to serving our members.
We welcome your questions and feedback.

For quick response, e-mail us at info@aspb.org
or visit our FAQ at www.aspb.org/faq.

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PRESIDENT'S LETTER
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Michelle Obama, Anne Burrell of the Food Network, and Al Roker of the Weather Channel.

The theme of this year's egg roll was "Be Healthy, Be Active, Be You," consistent with Michelle Obama's focus on her "Let's Move" initiative. The opportunity for ASPB to participate in this "egg-citing" activity was certainly consistent with one of our key missions—bringing **STEPS** (Science, Technology, Engineering with Plants)—to young people. ASPB's invitation to participate—the third in three years—was due in part to the message of our activities, which fit in with the First Lady's focus on healthy lifestyles, but also a welcome recognition of the impact of ASPB's extensive outreach activities. The emphasis on healthier lifestyles is predicated on increased attention to healthy eating—consuming more fresh fruits and vegetables. Hey, we're plant biologists! Those are the things we work with every day! What could be a better fit?

ASPB's booth volunteers greeted thousands of young "plant biologists" as they dissected imbibed lima bean seeds to find the young plants inside, used forceps to fish sunflower seeds out of the center of a sunflower made from cloth, and assembled a puzzle with pictures of familiar materials and then guessed which ones were made—or not—from plants! Watching the wonder in the eyes of these young "scientists" reminded me of the excitement I felt when, as a young "scientist" myself, I peered at the little tomato seedlings poking out of the ground on our family farm!

Over the years, I have participated in other such educational



Al Roker of the Weather Channel, First Lady Michelle Obama, and Anne Burrell of the Food Network cook some healthy veggies for the kids.

efforts with members of the ASPB Education Committee and other volunteers. But I never cease to be amazed at the excitement with which these dedicated individuals explain plant "miracles" to the 315th child of the day, flanked by a doting parent, only to turn around and, with the same enthusiasm, face child 316!

I first experienced these kinds of science-enriching efforts for young people when working at a pharmaceutical company that was reaching out to local junior high schools to enrich their biology experiences. But, despite the high hopes of the scientists involved, their attempts to engage teachers and students fell short. Teachers appeared intimidated by the idea of introducing their students to, for example, the meaning of pH using the newly purchased (and expensive) pH meters or to the intricacies of enzymatic reactions



"What's inside this lima bean anyhow?"

using newly purchased (and also expensive) micropipetting devices.

I suggested a different approach to these "pharmaceutical types": that perhaps teachers would be more successful in engaging students in biology and

chemistry using plants rather than costly equipment! Fast Plants was just emerging as a teaching aid, and I suggested that we introduce teachers to it. A key difference in this approach was

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that it allowed students to ask and explore their own questions. What would happen if they used lemon-lime soda to water the little seeds? What would happen if they left the germinating seeds in a drawer instead of putting them on the windowsill? What would happen if they put the seeds in the freezer for two days before putting them in soil?

The program's success in engaging students and their teachers encouraged me to continue to be involved in efforts to interest young students in science and biology—using plant biology. Allowing students to explore with their own minds and hands—rather than being given a preformed set of instructions—awakens their creative minds to think of new challenges and questions they can pose. This was the same excitement I saw in the eyes of the youngsters participating in plant activities at the White House Easter Egg Roll. I saw it in the excited smile of one three-year-old girl, who spent 15 minutes struggling to use tweezers to pluck seeds out of the cloth sunflower head and put them into a brightly colored microfuge tube. How beautiful was the success when she finally got the little seed into the “mouth” of the microfuge tube!

Members of ASPB have been engaged in these types of activities for years, and they speak directly to the need articulated



“I know I can get the sunflower seed into that little tube!”



“You mean my jeans are made from plants?”

by Bruce Alberts in his editorial in the December 14, 2012, issue of *Science*. In that article, Alberts challenged the scientific community to meet the critical need for materials to inspire students in America's schools with engaging science. The “egg-citing” activities in which we engaged the young people at the White House are embodied in a modest, but real, example of these efforts. If you haven't checked out these and other ASPB educational resources recently, take a look at ASPB's K–12 resources page and our Higher Education resources page, both of which offer a rich range of teaching options. Also inves-

tigate some of the tools funded by ASPB's Education Foundation (http://my.aspb.org/?page=EF_ProgramsResources), such as *My Life as a Plant* coloring and activity book, which was eagerly received by our young “plant biologists” as a prize for finishing one of our ASPB activities at the Easter Egg Roll.

Scientific societies *can* and *must* be active in replacing, as Alberts describes them, “mile-wide and inch-deep” science busywork with resources that entice students and teachers alike with engaging and effective scientific explorations. To participate in such efforts, maybe

you will decide you want to be involved in activities like those of ASPB volunteers at AAAS's Family Science Days in Boston this past February. Maybe you will decide you want to be a one of ASPB's “Master Educators.” Or maybe you will think more seriously about your own STEPs effort that could be featured in the Education Booth Competition at the annual meeting (<http://ebc.aspb.org>). You might want to consider competing in the next call for Education Foundation Grants (<http://efg.aspb.org>). You might find participating in such events more “egg-citing” than you ever imagined! ■

ASPB Announces 2013 Awards

Each year, ASPB honors excellence in research, education, outreach, and service through its numerous awards to those individuals who promote the mission of our Society. We are proud to announce this year's recipients.

Adolph E. Gude, Jr. Award Natasha Raikhel

Natasha Raikhel (University of California, Riverside) is this year's recipient of the Adolph E. Gude, Jr. Award, which is given in recognition of outstanding service to the science of plant biology. Natasha has made significant contributions through her research into protein trafficking and through her service to the discipline, most notably as editor-in-chief of *Plant Physiology*. Her efforts in establishing the visionary Center for Plant Cell Biology (CEPCB), which provides the perfect atmosphere for cutting-edge science and which established a new paradigm for excellence in plant research and training, are also recognized and appreciated.



Natasha Raikhel

mitochondria and bioinformatics. Harvey's work on the purification, proteomics, and metabolomics of mitochondria, and on the effects of oxidative stress on mitochondrial proteins, has provided important new insights into plant mitochondrial composition and function. In addition, the genome browser developed initially in his research group for proteo-genomic mapping has facilitated collaborative studies that resulted in publication of single-base resolution methylomes for *Arabidopsis* and humans. Harvey will address the Society at the annual meeting in 2014.

Charles Reid Barnes Life Membership Award

Robert Turgeon

This year's recipient of the Charles Reid Barnes Life Membership Award, ASPB's oldest award, is Bob Turgeon (Cornell University), who is recognized and honored for his meritorious work in plant biology. In particular, Bob has made towering contributions to our un-



Harvey Millar



Bob Turgeon

derstanding of phloem transport. He was the first to describe the conversion of importing phloem to exporting phloem in developing leaves, and his work has uncovered three distinct phloem loading mechanisms—apoplastic, polymer trapping, and passive.

Early Career Award

Michael Gore

The Early Career Award acknowledges outstanding research by a scientist generally not more than five years post-PhD. Michael Gore (USDA-ARS, Maricopa, AZ, and



Michael Gore



Daisuke Urano

Cornell University) is recognized this year for his extraordinary contributions to the development and application of large-scale genomic tools for crop improvement through quantitative genetics, including the first haplotype map (HapMap) and genome-wide association resources for maize.

Eric E. Conn Young Investigator Award

Daisuke Urano

The Eric E. Conn Young Investigator Award honors Eric Conn's contributions to plant biology by recognizing young

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scientists who are inspired to follow in his footsteps. This year's recipient, Daisuke Urano (University of North Carolina at Chapel Hill), is recognized both for his outstanding contributions to our understanding of the regulation of G protein activation in plants and for his great mentoring skills. Daisuke demonstrated the mechanism of self-activation of G protein signaling in plants, work that was published in *Nature Cell Biology*. In addition to his research activities, Daisuke has made significant contributions to a number of ASPB activities and to mentoring students and postdocs.

Excellence in Education Award

Erin Dolan

The 2013 Excellence in Education Award is being given to Erin Dolan (University of Georgia). Erin is recognized for her development of innovative teaching methods; extensive record of mentoring; leadership as both former chair of the ASPB Education Committee and member of the Education Foundation Board; and widespread, influential outreach efforts. Erin has initiated several federally funded outreach programs at multiple institutions, thereby reaching countless educators and students. She has also published numerous science education research articles and is currently editor-in-chief of *CBE Life Sciences Education*.

Martin Gibbs Medal

Jen Sheen

The Martin Gibbs Medal, which is being awarded this year to

Jen Sheen (Harvard Medical School, Massachusetts General Hospital), was instituted in 1993 to honor Martin Gibbs, former editor-in-chief of *Plant Physiology*. Jen's receipt of the Gibbs Medal recognizes her seminal and innovative contributions to our understanding of the molecular mechanisms underlying the plant signal transduction cascades that mediate nutrient, hormone, and environmental stress responses and pathogen defenses in plants. Jen's work is characterized by a penchant for developing and implementing powerful research strategies, as well as integrating a number of complementary experimental approaches to develop new and deeper understanding of plant biology. Jen will convene the Martin Gibbs Medal Symposium at the annual meeting in 2014.

Stephen Hales Prize

Brian Larkins

The Stephen Hales Prize honors the Reverend Stephen Hales for his pioneering work in plant biology and is given to an ASPB member who has served the science of plant biology in a noteworthy manner. This year's recipient, Brian Larkins (University of Nebraska-Lincoln), is recognized for his early pioneering work that brought molecular biology to plant studies and his continued dedication to understanding the regulation of seed development while aiming to improve the nutritional quality of seed storage proteins. Brian is also recognized for the many outstanding examples of his leadership in promoting plant sciences. Brian will address the Society at the annual meeting in 2014.



Erin Dolan



Jen Sheen



Brian Larkins



Rachel Egger

ASPB-Pioneer Hi-Bred International Graduate Student Fellowship

Rachel Egger

The ASPB-Pioneer Hi-Bred International Graduate Student Fellowship, made possible by the generosity of Pioneer Hi-Bred International, supports innovative graduate work in areas of plant biology that relate to important commodity crops. Rachel Egger (Stanford University) is the 2013 recipient of this fellowship; she is a PhD student studying maize anther

development in Virginia Walbot's laboratory. Rachel's dissertation research focuses on understanding the mechanisms that regulate asymmetric cell division, a critical event in anther patterning and pollen formation.

Corresponding Members

Corresponding Member status is conferred by election on the annual ballot. This honor, initially given in 1932, provides life membership and Society publications to distinguished plant biologists from outside the United States.

Luis Herrera-Estrella

Luis Herrera-Estrella is nominated for his pioneering work on



Luis Herrera-Estrella



Ray Chollet



John Cushman



John Harada



Youngsook Lee



Susanne von Caemmerer

the development of transgenic plants, which included some of the first reports of the genetic manipulation of plant cells and the early use of selectable markers and reporter genes, as well as for his recent work on crop adaptation to acid soils and the role of root architecture in phosphorus acquisition.

Youngsook Lee

Youngsook Lee is nominated in recognition of her outstanding contributions toward our understanding of the extraordinarily diverse roles of ABC transporters in plants, including micronutrient transport, tolerance to toxic metals and metalloids such as arsenic, the transport of abscisic

acid, and lipid metabolism, all of which provide new avenues for engineering plants for phytoremediation, resistance to drought, and production of oil.

Susanne von Caemmerer

Susanne von Caemmerer is nominated for her groundbreaking research on photosynthetic carbon dioxide assimilation by plants, including the development and testing, through elegant and careful experimentation, of models for C₃, C₃-C₄ intermediate, and C₄ photosynthesis, and for her use of

transgenic plants to address key questions on limitations to photosynthesis under varying light, CO₂, and temperate regimens.

2013 ASPB Fellow Awards

Established in 2007 and granted to no more than 0.2% of the current membership, the Fellow of ASPB Award may be given in recognition of distinguished and long-term contributions to plant biology and service to the Society by current members in areas that include research, education, mentoring, outreach, and professional and public service.

Current members of ASPB who have contributed to the Society for at least 10 years are eligible for nomination.

Raymond Chollet

University of Nebraska-Lincoln

Ray is widely recognized for his groundbreaking research on key metabolic enzymes in plants, especially in the area of regulation by reversible protein phosphorylation. He has an extensive record of ASPB service, including as a member of the editorial board of *Plant Physiology* (1984–1998),

as ASPB's representative to the American Association for the Advancement of Science (1996–2002), and as a member of the Corresponding Membership Committee (1999–2002).

John Cushman

University of Nevada, Reno

John has made fundamental contributions to our understanding of plant abiotic stress biology, particularly in the area of salt tolerance mechanisms. He is a highly regarded teacher and mentor and has served ASPB as president of the Western Section (2004–2007) and as an active member of the Education Committee (2007–2013).

John Harada

University of California, Davis

John is internationally recognized for his outstanding contributions to our understanding of the cellular and molecular basis of embryo and seed development. He is an inspiring teacher who engages students at all levels in plant biology. He served as a coeditor of *The Plant Cell* (1996–2004), and he has been instrumental in ex-

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panding the activities of ASPB's Minority Affairs Committee (2007 to present), which he has chaired since 2012.

Jeffrey Harper

University of Nevada, Reno

Jeffrey is internationally recognized in the field of calcium dynamics and pollen biology and has made key contributions to our understanding of how calcium signaling contributes to plant survival following abiotic stresses. His contributions to ASPB include serving on the Program Committee (2009 to present) and as a monitoring editor of *Plant Physiology* (1999–2000; 2002–2007).

Sally Mackenzie

University of Nebraska–Lincoln

Sally is a leader in the field of organelle genetics. She has made important contributions to our understanding of the role of mitochondrial genome rearrangements in plant development and stress adaptation, including mechanisms by which mitochondria contribute to vital crop traits of male sterility and hybrid seed production. Her



Jeffrey Harper



Sue Wessler



Sally Mackenzie

longstanding dedication to ASPB is exemplified by her service on the editorial board of *Plant Physiology* (2000–2003) and on numerous ASPB committees, including the Executive Committee (2007 to present), the Public Affairs Committee (2009 to present), and the Publications Committee, which she has chaired since 2006.

Susan Wessler

University of California, Riverside

Sue is a pioneer in the identification and study of plant transposable elements and the roles of these elements in shaping genomes. Her groundbreaking contributions to plant biology have been widely recognized,

including through her election to the National Academy of Sciences (1998) and as a recipient of the ASPB Stephen Hales Prize (2011). She is an innovative educator who is passionate about bringing the excitement of plant science to undergraduates. She has taken on many leadership and service roles,

including NAS home secretary, organizer of many conferences, and service on advisory and editorial boards, including coeditor of *The Plant Cell* (1990–1995) and associate editor of *Plant Physiology* (2000–2004). ■

ASPB's 2013 Women's Young Investigator Travel Award Winners Announced

Each year, ASPB awards travel grants to early career women investigators through a competitive process to attend the Plant Biology annual meeting. The goal of the Women's Young Investigator Travel Award (WYITA) program is to increase attendance of female investigators who are within their first five years as an independent scientist in academia, industry, or government at the annual meeting by providing travel funds. Selection is based on (1) the science and quality of the abstract submitted relative to the amount of time as a young investigator, (2) a statement describing why travel should be supported, and (3) financial need.

Seven women were selected this year, and each will receive a \$1,000 award to support their attendance at Plant Biology 2013 in Providence, Rhode Island. A list of the recipients and their abstract titles follows.

Jill T. Anderson

University of South Carolina, Columbia

Advancing flowering phenology in a warming world: Contributions of phenotypic plasticity and adaptive evolution

Csengele Barta

Missouri Western State University, St. Joseph

Do extreme drought conditions alter the relationship between photosynthesis and isoprene emission in oak species? An inter-annual study



Jill T. Anderson



Csengele Barta



Sharon A. Kessler



Marian D. Quain



Jessica R. Lucas



Jill Christine Preston

Sharon A. Kessler

University of Oklahoma, Norman

Intercellular communication during pollen tube reception

Jessica R. Lucas

Santa Clara University, California

Interphase microtubule arrays are organized separately from microtubule nucleation upon entry into G1 in the Arabidopsis leaf epidermis

Jill Christine Preston

University of Vermont, Burlington

Evolution of petal fusion in the asterid core eudicots

Marian D. Quain

University of Leeds, UK

Ectopic phytocystatin expression modulates plant development and increases seed protein accumulation in Soybean



Charlotte Song

Charlotte Song

Charleston Southern University, Charleston

Finding a novel translationally regulated microRNA mutant

Congratulations to each of the 2013 WYITA winners. ■



New Developments at the Global Plant Council

Appointment of an Executive Director and Election of Council Officers

BY RUSSELL JONES

University of California, Berkeley, ASPB Representative to the Global Plant Council

In my last piece about the Global Plant Council (GPC), I reported on the developments in establishing a formal structure within the council, including the election of five members to its executive board and the planned appointment of an executive director. I am very pleased to report that these initial activities and plans have quickly progressed. Within the executive board, Wilhelm Gruissem (Switzerland) will continue as acting GPC president, Gustavo Habermann (Brazil) will serve as treasurer, and Henry Nguyen (USA) will serve as vice president. Kasem Ahmed Zaki (Egypt) and Zhihong Xu (China) are at-large executive board members. Through these elections, the GPC board has successfully achieved broad international representation.

With Willi Gruissem functioning as GPC's acting president,

the council is actively seeking a candidate to fill the position of GPC president—someone with broad experience with plant science on the international level and with the contacts in government who can immediately help advance the council's broad agenda. If you or someone you know fit these criteria and would be interested in the possibility of serving GPC in this capacity, please respond to Willi Gruissem.

The announcement of an opening for an executive director for GPC was made in January, and more than 30 highly qualified applications were received. After interviewing a short list of candidates, Dr. Ruth Bastow from the United Kingdom was selected and will assume the GPC executive director position May 7. Ruth joins GPC with more than 18 years of experience in plant science. She obtained



GPC Executive Director Ruth Bastow

her PhD at the University of Warwick, UK, in 2000 and did a year of postdoctoral research with Julie Gray at the University of Sheffield, followed by two years with Caroline Dean at the John Innes Centre, Norwich.

Ruth became the coordinator of the UK Network for Arabidopsis Researchers (GARNet) in 2004, a position that she will hold until she joins GPC in May. Since 2011, she has also served as scientific advisor to the UK Plant Sciences Federation. Ruth has built an extensive network of scientific connections across Europe, Asia, and the United States. She has worked and partnered with a range of stakeholders, including learned societies, industry, academic networks, and educational providers. She also has experience in project management, mediation, administration, and financial monitoring. Her appointment will be instrumental in establishing GPC as an organization that will be a strong advocate of plant science internationally. ■

2013 Plant Biology

JULY 20-24 PROVIDENCE, RHODE ISLAND

RHODEISLAND2013.ASPB.ORG



Plant Biology 2013—The Ocean State Awaits You!

Get ready to make waves in Providence, Rhode Island. The “Ocean State” may be small, but it packs plenty of things to do within its borders. Here are a few of the highlights.

Experience the Local Flavor

Providence was recently voted the #1 Food City in the United State by the readers of *Travel + Leisure* magazine in its “America’s Favorite Cities” poll. The city is home to Johnson & Wales University, the world’s largest culinary educator, and plenty of those graduates stick around. Among foodies, Providence is known as a red-hot destination and has been featured in magazines such as *Food & Wine* and *Bon Appetit*.

Don’t miss: Providence’s Federal Hill, which Mario Batali has called one of the best “Little Italys” in the United States.

On a budget: Sample affordable, authentic Italian cuisine at Angelo’s Civita Farnese, a Federal Hill institution since 1924.

Make History

Founded in 1636, Providence has rich colonial history. Scores of immaculately preserved Colonial, Federal, Greek Revival, and Victorian homes and buildings can be found throughout the city. The first Baptist church in the United States is located in Providence.

Don’t miss: The Rhode Island State House was designed in 1892

by the legendary New York architectural firm McKim, Mead and White, the creative force behind Penn Station. Made of white Georgia marble, it has the fourth largest self-supporting marble dome in the world.

On a budget: Stretch your legs and take a walk on Benefit Street, Providence’s Mile of History. Benefit Street has the most impressive collection of original Colonial homes in the United States, with 200 pristine 18th- and 19th-century buildings, brick sidewalks, and antique gas lamps.

Smarten Up

Providence is home to seven colleges and universities, including Brown University, Providence College, and the Rhode Island School of Design. From John F. Kennedy, Jr., to the Talking Heads, Emeril Lagasse to Seth MacFarlane, scores of college students have gotten their start in Providence.

Don’t Miss: The Museum at the Rhode Island School of Design (RISD, pronounced “riz-dee”) houses more than 80,000 works of art, ranging from Greek sculpture to French Impressionist.

On a budget: Take a walk through the Brown University campus and continue on to Thayer Street to browse college-friendly boutiques and coffee houses.

Get Up and Go

Centrally located, Providence is the perfect launching pad for day trips throughout Rhode Island. Visit the breathtaking beaches of Narragansett. Relive the splendor of the Gilded Age in Newport. Take in a minor league baseball game in Pawtucket. You can get from Providence to virtually every corner of the state in under an hour.

Don’t Miss: Just 12 miles off the coast of Rhode Island, Block Island beckons with unspoiled beaches and charming lighthouses. Ferry service to the island departs from both Newport and Point Judith, Rhode Island.

On a budget: Newport’s Cliff Walk provides stunning views of Narragansett Bay on one side and the city’s famed mansions on the other. Two-thirds of the 3.5-mile trail is paved and easy to walk, while the final section is a bit more rugged but hiker-friendly.

For more information on what to do in Providence and Rhode Island, visit <http://www.GoProvidence.com>.

Family Fun in Providence!

The Providence Children’s Museum

The Providence Children’s Museum (<http://www.childrenmuseum.org>) presents hands-on exhibit areas and lively programs designed for children ages 1 to 11 that explore the arts, culture, history, and science. The museum offers exhibits and programs that are based on the developmental needs of children and embrace a wide range of learning styles and forms of expression. **You especially don’t want to miss the giant dragon!** You can visit the museum’s Facebook page for hours and special events.

Roger Williams Park Zoo

The Roger Williams Park Zoo (<http://www.rwpzoo.org>) is the third-oldest zoo in the country (since 1872). The zoo’s population numbers nearly 1,000 animals, with some 165 species on display at any given time, including mammals, birds, reptiles, amphibians, fish, and insects.

Roger Williams Park Zoo is offering a once-in-a-lifetime experience.

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rience starting May 1! Zoo visitors will have the exciting opportunity to participate in a group feeding session, an unforgettably close animal experience. There will be limited capacity for the feedings, and tickets will be sold on a first-come, first-served basis. For more details, visit the zoo's website at <http://www.rwpzoo.org>.

There's a new environmentally sensitive and hassle-free way to get to the zoo! Take RIPTA's Route 6 Prairie Ave/Roger Williams Park Zoo trolley. This is part of the Providence LINK route, which is serviced by trolleys that run on a new state-of-the-art hybrid parallel drive diesel/electric system. Fares are just \$2 per person, per ride. See the RIPTA website for more information at <http://www.ripta.com>. ■



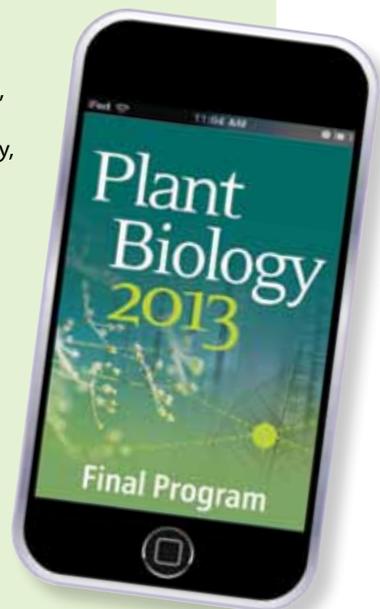
Relaxing on the Providence river. © RICC

Go Green with This Year's Mobile App—Rhodelsland2013

Beginning June 30, you can download the Plant Biology meeting mobile app (RHODEISLAND2013) to your smartphone, tablet, laptop, or desktop. The meeting app can be used across a variety of operating systems, including Apple iPhone, Google Android, RIM Blackberry, and Windows mobile devices. It is also compatible with iPad, iTouch, and all Windows Mobile-based Tablets. So leave your program book in your room—we're going mobile again! Once you have downloaded the app, you need only to enter your registration ID one time to have all the information at your fingertips.

All the Details in the Palm of Your Hand

- Complete schedule of symposia, minisymposia, workshops, and special events, including links to speaker information
- Day-by-day complete timeline of the conference—including poster hours and exhibit hours—all in one place and easy to find
- Abstracts and their respective locations in the exhibit hall
- Alerts about upcoming events and any changes made during the conference
- Local resources, including restaurants, where to find the shopping, parks, and more—everything that's around the convention center and beyond
- Maps of the convention center
- Exhibitors
- The Career Center
- Attendee list so that you can find your colleagues during the meeting
- Plan ahead and make the best use of your time at the event.



Foodies looking for the source of the modern food truck craze don't have to travel any farther than Providence, RI. © RICC

Mid-Atlantic Section

2013 Winter Meeting Highlights

BY HUA LU

Secretary/Treasurer of MAS-ASPB, University of Maryland

The Annual Mid-Atlantic Section ASPB Winter Meeting was held February 22 on the campus of the University of Maryland, College Park. The meeting drew 55 plant scientists from institutes and universities in Delaware, Maryland, and the Washington, D.C., area. In particular, Mark Holland, from Salisbury State University, brought a team of four faculty members and nine undergraduate students. Some undergraduate students came from other campuses in the region, including George Washington University. Students, postdocs, and faculty mingled to exchange research ideas, information on teaching plant biology, and other updates in a relaxed environment.



The audience enjoys the talk given by ASPB President Peggy G. Lemaux.

During the meeting, the president of the MAS-ASPB section, Dr. Jung-Youn Lee, announced that the annual MAS-ASPB Spring Meeting (<https://secure.dbi.udel.edu/registration/MAS-ASPB2>) would be held

April 6 on the University of Delaware campus. In addition, Crispin Taylor, executive director of ASPB, made us aware of several upcoming events and opportunities, including the on-site child care program at Plant Biology

2013, the global “Fascination of Plants Day” on May 18, and ASPB’s plans to significantly improve its value and utility to members.

The highlight of the meeting was an after-dinner talk by ASPB President Peggy G. Lemaux. The title of her talk was “From Basic to Applied Research: How Modifying Thioredoxin Expression in Cereals Led to Unexpected Improvements in Grain Properties—So Where Are the Improved Crops?” The talk stimulated lively discussions about science and science policies. The education tools developed by Peggy also drew great attention from the audience. ■



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From Around the Web

Your Guide to Plant Biology Newsmakers

Articles on the science news website *Science Daily* recently featured several ASPB members, including **Debra Mohnen**, professor of biochemistry and molecular biology at the University of Georgia, for her lab's work demonstrating a direct link between certain glycans and an arabinogalactan protein in plant cell walls—findings that challenged previously held views of cell wall structure (<http://bit.ly/158dsWU>); **Samuel Fox**, from Oregon State University, for his work on developing genetic resources for the invasive weed slender false brome, *Brachypodium sylvaticum* (<http://bit.ly/YhDHCT>); **Christoph Benning**, professor of biochemistry and molecular biology at Michigan State University, for engineering *Arabidopsis* with increased leaf oil content (<http://bit.ly/ZPghLp>); **Kent Bradford** and **Heqiang Huo**, both at the University of California, Davis,

for their research on lettuce germination temperatures, which may help the industry overcome challenges associated with climate change (<http://bit.ly/113W2Gn>); and **Dominique Loque** and **Fan Yang**, of the Joint BioEnergy Institute, and **Henrik Scheller**, from Lawrence Berkeley National Laboratory, for altering plants' lignin content to enhance sugar availability for biofuel production (<http://bit.ly/1537giL>).

Additional ASPB members were recently featured on a smattering of news blogs. **Harry Klee**, professor in the Horticultural Sciences Department at the University of Florida, was featured on NPR's *The Salt* answering the question of why organic tomatoes seem to have higher levels of nutrients (<http://n.pr/11016uA>). Professor of plant sciences **Alison Berry** and professor of plant pathology **Douglas Cook**, both at UC Davis, were featured in the

California Aggie for their work on the chickpea genome (<http://bit.ly/16ZJH6Q>). **Joe Ecker**, professor at the Salk Institute for Biological Studies, was featured in an article on the future of epigenetics in improving crop responses to climate change on the Governors' Biofuels Coalition website (<http://bit.ly/17vbj73>). The *Science on NBC News* blog recently revealed its fascination with plants by

featuring Duke University professor of botany **Dan Johnson** discussing how acoustic sensors might aid in the identification of drought tolerant plants (<http://nbcnews.to/158dSg9>) and University of Montreal's **Anja Geitmann**'s examination of the influence of gravity on cellular transport in pollen tubes (<http://nbcnews.to/158dRZx>). ■

Please visit the *Plants in the News* blog post at <http://my.aspb.org/blogpost/700968/Plants-in-the-News> for easy access to all the articles highlighted in this column.

"From Around the Web" represents a subset of the news posted on ASPB's *Plants in the News* blog, Facebook page, and Twitter feed. To stay up-to-date, subscribe to the blog (www.aspb.org/plantsinthenews), "like" us on Facebook (www.facebook.com/myASPB), and "follow" us on Twitter (www.twitter.com/ASPB).

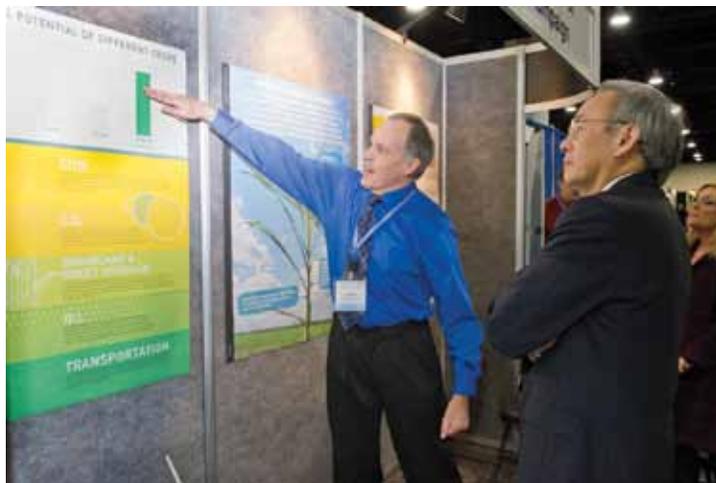
If you or your colleagues have been featured in the news and would like to be included in an upcoming issue of the *ASPB News*, please contact ASPB's associate director of public affairs, Kathy Munkvold (kmunkvold@aspb.org).

Will Tobacco or Sugarcane Fuel the Future?

ASPB Members Present Innovative Biofuel Research

ASPB member **Stephen Long** and president **Peggy G. Lemaux** showcased their latest research on new biofuel crops at the 2013 ARPA-E Innovation Summit (<http://tinyurl.com/cap6d7m>) in Washington, D.C., in February. The summit brought together researchers, business leaders, and government officials to share discoveries supported by the DOE Advanced Research Projects Agency–Energy (ARPA-E) and to facilitate partnerships to move those discoveries from the bench to the marketplace.

ARPA-E is known for its support of high-risk, high-reward research on novel energy sources and energy utilization and storage methods. In an attempt to bridge the “valley of death” between fundamental research findings and product development, ARPA-E supports research that has the potential to be transformative but is too early in its development to attract private investments. Through its Plants Engineered to Replace Oil (PETRO) program (<http://tinyurl.com/bmaberw>), ARPA-E has funded 10 projects that aim to use nonfood crops to produce fuels that will “drop in” to existing infrastructure for transportation energy.



ASPB member Stephen Long speaks with departing Secretary of Energy Steven Chu at the ARPA-E Innovation Summit.

Steve discussed genetic modifications to sugarcane and sweet sorghum for improved biofuel production with departing Secretary of Energy Steven Chu. The PETRO project (<http://tinyurl.com/dxrab3v>) aims to increase the photosynthetic efficiency, cold tolerance, and stem oil accumulation of sugarcane and sweet sorghum, and the team—including ASPB members **Don Ort** and **Steve Moose** at the University of Illinois and **John Shanklin** at Brookhaven National Laboratory—has made significant progress over the first year. Steve commented, “We have managed to increase leaf CO₂

uptake by 30%, made *Miscanthus* x sugarcane hybrids with greatly increased cold-tolerance, and have discovered a gene combination which increases oil (tri-acyl glyceride and fatty acid accumulation) 27 times.” Secretary Chu also announced Steve’s reappointment to the Biomass Research and Development Technical Advisory Committee (<http://www.usbiomassboard.gov/committee/committee.html>) at the summit.

In addition to presenting her work at the summit, Peggy was featured on the *New York Times Green* blog for her participation in a PETRO project ([\[tinyurl.com/d8jngw\]\(http://tinyurl.com/d8jngw\)\) to extract oil from tobacco leaves \(<http://tinyurl.com/b98gaar>\). The team aims to leverage the extensive existing infrastructure for tobacco production to generate a fuel equivalent to diesel oil. When asked about her experience at the summit, Peggy commented, “The ARPA-E Summit was like no other scientific meeting I have ever attended. There were some awesome and inspirational speakers, like Steven Chu, Michael Bloomberg, and Elon Musk. But there was also a parade of senators and representatives.” She continued, “The most enjoyable part to me was the Technology Showcase where we stood by our posters and people came by to talk with us about our projects.”](http://</p>
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Other ASPB members in attendance included **Kristi Snell** (Metabolix), **Danny Schnell** (University of Massachusetts), **Om Parkash Dhankher** (University of Massachusetts), **Ling Yuan** (University of Kentucky), and **Don Ort** (University of Illinois). ■

ASPB members share a common goal of promoting the growth, development, and outreach of plant biology as a pure and applied science. This column features some of the dedicated and innovative members of ASPB who believe that membership in our Society is crucial to the future of plant biology. If you are interested in contributing to this feature, please contact ASPB Membership at info@aspb.org.

Yiping Qi

Professional Title: Research Associate

Place of Work or School: University of Minnesota

Research Area: Plant disease resistance and plant genome engineering

Member Since: 2010



What would you tell colleagues to encourage them to join ASPB?

Joining ASPB provides many opportunities and resources to help you succeed as a plant biologist.

What do you think is the next “big thing” in plant biology?

The combination of high-throughput DNA sequencing and the development of tools for precise genome editing will soon make many transformable “non-model” plants (including economically important crops) amenable to basic research and trait improvement.

What advice would you give to a plant scientist just starting out?

Find interest and excitement with your research. Not only will this be motivating, it will also be helpful for succeeding in your field. Think of publishing your work early because the thought motivates you to learn, improve, and save your time eventually.

Why has being a member of ASPB been important?

ASPB membership has kept me connected with the large research community in plant science and provides an excellent platform to communicate, share, and learn.

Have you enhanced your career using ASPB job postings or through networking at an ASPB function?

I have met with many scientists from both academia and industry during annual ASPB conferences. These long-lasting connections will be very helpful as my career develops.

What person, living or deceased, do you most admire? Why?

I admire Norman Borlaug and Yuan Longping. Norman Borlaug has been called the “Father of the Green Revolution,” while Yuan Longping has been called the “Father of Hybrid Rice.” They have made great contributions in the development of high-yield crops (wheat and rice, respectively) in developing countries, which has made a big impact on humanity. I feel their strong leadership and ingenuity are highly admirable, making them great role models for the younger generation of plant scientists.

What are you reading these days?

At work, I keep up-to-date on research involving plant disease resistance, genome engineering, and small RNAs. At home, I read sports and news articles, scientific blogs, and history books.

What are your hobbies?

I enjoy watching almost any major sport if possible, playing tennis, and learning magic tricks.

Has the ASPB network (job bank or other ASPB website functions, ASPB sectional gatherings or national meetings, ASPB committee functions, etc.) helped you find a job or hire anyone? If so, please describe which services were most helpful and how.

Although I have not yet used any ASPB website function to find a job, I think the Career Center can be most helpful, as it provides job postings and funding resources.

Do you still read print journals? If so, where do you usually read them: work, home, library, in the car, on the bus?

The majority of the articles I read are electronic; however, I do still read printed *Nature Methods* journals. Usually I read them at work.

What do you see as the most important role for scientific societies such as ASPB?

ASPB promotes science and education by bringing people, information, resources, and opportunities altogether.

What could ASPB do better?

It would be great if plant science-related positions posted elsewhere could be reposted onto the ASPB job bank. This would not only help researchers seeking a job, but also help increase the interest in the ASPB website as well. ■

As the years churn on, many esteemed members of ASPB have passed the torch to their younger colleagues and stepped out of the limelight to allow others to bask in its glory. Yet, many continue their good works to the benefit of plant biology and the world. Edited by Beth Gantt, University of Maryland, "Where Are They Now?" is part of the *ASPB News* suite of columns focused on the personal and scientific life and insights of ASPB members at all stages of their career. This column offers a look into the current activities of influential members of ASPB who continue to make a positive mark on our Society. We hope you all enjoy this addition to your newsletter.

Please feel free to submit your own article to "Luminaries," "Membership Corner," or "Where Are They Now?" For details please contact me, David Horvath, Membership Committee chair, at david.horvath@ars.usda.gov. As always, we are open to suggestions for articles or features of interest to readers of the *ASPB News*. Enjoy!

John A. Raven

Emeritus Professor of Biology, University of Dundee

As they get older, many scientists move into more managerial and administrative roles in academia or elsewhere. Perhaps they feel that they can make a greater contribution in these other fields or have grown tired of spending more of their time than they would wish pursuing ever-scarcer research funding. Others continue to generate important hypotheses, and they retain their appetite for seeking funding to test those hypotheses through laboratory experimentation, modeling, field-work, or some combination of these. I am vain enough to think I belong in the second category, and I am still active in research five years after my contractual retirement age of 67. While not describing myself as a "retirement denier," I regarded my official retirement as an evolutionary rather than a revolutionary event.

"Where are they now?" should be seen in the context of "where they were before," both geographically and intellectually. After a bachelor's degree in botany and a doctoral degree (on membrane transport and bioenergetics in algae under the supervision of the



John Raven

incomparable Enid MacRobbie) from the University of Cambridge (UK), I had a three-year, fixed-term lectureship in Cambridge. In 1971, I moved to the University of Dundee, becoming a full professor in biology in 1980 and Boyd Baxter Professor of Biology in 1994. In the 45 years between my bachelor's degree and my official retirement, my research interests became broader but not, I hope, shallower. My work became more ecophysiological, with more work on what some would term "real plants" as well as algae. I've had

a particular interest in acid-base regulation and how plants deal with weak electrolytes, which are partly dissociated at the pH of the plant's environments or of compartments in the cells, and this underlies my contribution to the development of the chemi-osmotic hypothesis of polar auxin transport. An interest in the source of inorganic carbon for photosynthesis led, among other things, to an expedition to the Altiplano of Peru (Andean Plateau) to investigate the endemic Andean lycophyte *Stylites* (= *Isoetes*) *andicola* with Jon Keeley and Barry Osmond in 1982, resulting in a paper in *Nature*. Several years before this, I had started work on modeling the ecophysiology of the earliest land plants based on the structure of well-preserved remains from Silurian and Devonian sediments.

Of course, I had an active research laboratory with external funding before retirement, and I greatly value the work of my post-doctoral and postgraduate collaborators and their contribution to my intellectual development and scientific output. However, a minor part of my output has

always been in areas not directly funded by outside bodies (e.g., auxin transport, palaeo-ecophysiology, and [until my recent involvement as cosupervisor of a PhD student] astrobiology). I've greatly valued this aspect of my work and gladly acknowledge my academic managers for allowing me this freedom. I have also enjoyed teaching, both for its own sake and the stimulus it has given to my research; this applies not just to higher-level teaching but also in earlier parts of undergraduate programs. I know that having active researchers teaching in all of the years of undergraduate studies has not been a common trend in many universities, but I have greatly valued it.

So, retirement! After a very pleasant Retirement Symposium featuring many of my previous and present collaborators, followed by a banquet and (on the next day!) a hill-walk, organized by the University of Dundee and partly funded by scientific societies and publishers, I've carried on much as before. I still teach, although major curriculum changes mean that the earlier

continued on page 18

WHERE ARE THEY NOW?
continued from page 17

years teaching in which I participated have sequentially been discontinued, and the 2013–2014 session will see the final delivery of my two final-year courses on Colonization of Land by Plants, Arthropods, and Vertebrates, and Quaternary Palaeoecology and Environment Change. I also continue to teach a module in a master's (MRe) course. I can no longer be principal investigator on research grants, which is a release from writing research proposals, and I no longer have a research laboratory. However, I still supervise senior undergraduate and master's degree research projects,

and I am a cosupervisor of PhD students at the Universities of Edinburgh and St. Andrews and at the University of Technology Sydney. Through the generosity of colleagues in other universities, I am also involved in their research projects, and I am an honorary professor at the School of Plant Biology at the University of Western Australia and a distinguished visiting scholar in the Plant Functional Biology and Climate Change Cluster at the University of Technology Sydney. The Australian connection allows me a “snow bird” escape from some of the winter in Dundee (56° N, though it is warmed by the Gulf Stream).

Outside the universities, I have some roles in scientific administration for research councils and governance of a learned society. Since retirement, I've not been involved in anything on the scale and exposure of the 2005 Royal Society of London's policy document on Ocean Acidification, where I chaired the international panel of scientists who drew it up. Showing how far I've strayed from plant physiology, I'm a member of Sectional Committee 5 (Earth Sciences and Physical Environmental Science) of the Royal Society. Acting as associate editor for several journals also occupies some of my academic time.

I have had a very fortunate life, with very little planning, in plant biology and associated (sometimes remotely) disciplines; science has done much more for me than I have done for science. Retirement has mainly meant more of the same. However, I work at home in the early part of the morning and have a leisurely breakfast with my wife, arriving later than I used to at my

office in the James Hutton Institute (formerly Scottish Crop Research Institute), where I'm an honorary fellow and which houses the University of Dundee plant scientists. The institute is a pleasant 35-minute walk from our house taking the longer, scenic route. I also go home for lunch before a few more hours in the office. So far, the publication of my science has not had problems with a shortage of appropriate journals where authors do not have to pay a fee or where the fee is waived if they have no research funding. I am in favor of open access publishing, but I also enjoy being able to publish without needing a coauthor with a research grant! It will be interesting to see the outcome of this revolution in science publishing, with implications not just for independent scholarship, but also for the income of learned societies. On a less grouchy note, I shall continue in science as long as I am able to make a contribution and get it published, using publication as a sometimes imperfect measure of contribution. ■



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Policy Update

BY ALISON THOMPSON
Lewis-Burke Associates, LLC

On March 21, Congress approved the *Consolidated and Further Continuing Appropriations Act of 2013* and sent the bill to the president, who signed the legislation into law on March 26. The bill completes the fiscal year 2013 appropriations process and will allow operations of the entire federal government to continue through September 30. The final agreement prevented a government shutdown that could have occurred when the Continuing Resolution (CR) expired on March 27.

The legislation included five regular appropriations bills, including those that fund USDA and NSF. For USDA's major research agencies, the bill allocates a total of \$2.279 billion (after the 2.5% reduction included in the bill). Within USDA, the Agricultural Research Service (ARS) will receive \$1.074 billion, which is approximately \$21 million below the FY2012 level, and the National Institute for Food and Agriculture (NIFA) will receive a minor increase in funding for a total of \$1.205 billion, with the Agriculture and Food Research Initiative (AFRI) receiving \$290 million, an increase of nearly \$25.5 million above FY2012. The bill will also provide NSF with \$7.25 billion, which is an increase from the FY2012 enacted level of \$7.03 billion.

The bill also included appropriations at approximately the

FY2012 enacted levels for NIH and DOE for the remainder of FY2013. Research accounts at DOE were reduced below the FY2012 level, including \$13 million from the Office of Science and \$10 million from the Advanced Research Projects Agency–Energy (ARPA-E). NIH will receive a \$71 million increase over its FY2012 enacted funding level of \$30.7 billion.

The final bill did not address sequestration, the across-the-board reductions that went into effect on March 1. As such, additional sequestration cuts will be applied to all of the funding levels in the bill, including those levels mentioned above. However, each federal agency will decide internally how to proceed with sequestration.

Sequestration's Impact on NSF and NIFA

On February 27, NSF released a notice describing the impact that sequestration's estimated 5% cut would have on the foundation's budget and priorities. In an effort to minimize the impact of the mandated budget reductions in FY2013, NSF will prioritize programs critical to its core mission, existing awards and commitments, the NSF workforce, and investments in human capital development programs. The announcement notes that NSF will manage the effects of sequestration by applying cuts to new research grants and cooperative

agreements, resulting in an estimated 1,000 fewer new awards in FY2013.

On March 11, NIFA Director Sonny Ramaswamy released a letter outlining sequestration's impacts for the remainder of FY2013. The letter says NIFA expects "a reduction of \$13 million for [AFRI] competitive grants program, potentially resulting in fewer new proposals that may be funded during FY2013...[,] reductions totaling almost \$37 million for capacity/formula funding...[and] reductions for other research, education, and extension programs totaling over \$10 million." Unlike NSF, NIFA does expect AFRI continuation awards from previous fiscal years (FY2012 and prior) to be affected.

The NSF notice is available at <http://www.nsf.gov/pubs/2013/in133/in133.pdf>. The NIFA letter is available at http://www.csrees.usda.gov/email_prntrs_seques.pdf.

Leadership Changes at DOE, USDA, NSF

Following Energy Secretary Steven Chu's resignation in February, President Obama has officially nominated Ernest J. Moniz, The Cecil and Ida Green Professor of Physics and Engineering Systems at the Massachusetts Institute of Technology, as the next secretary of energy. During his Senate confirmation hearing, members from both parties expressed support for

Moniz, leading to his unanimous confirmation in May.

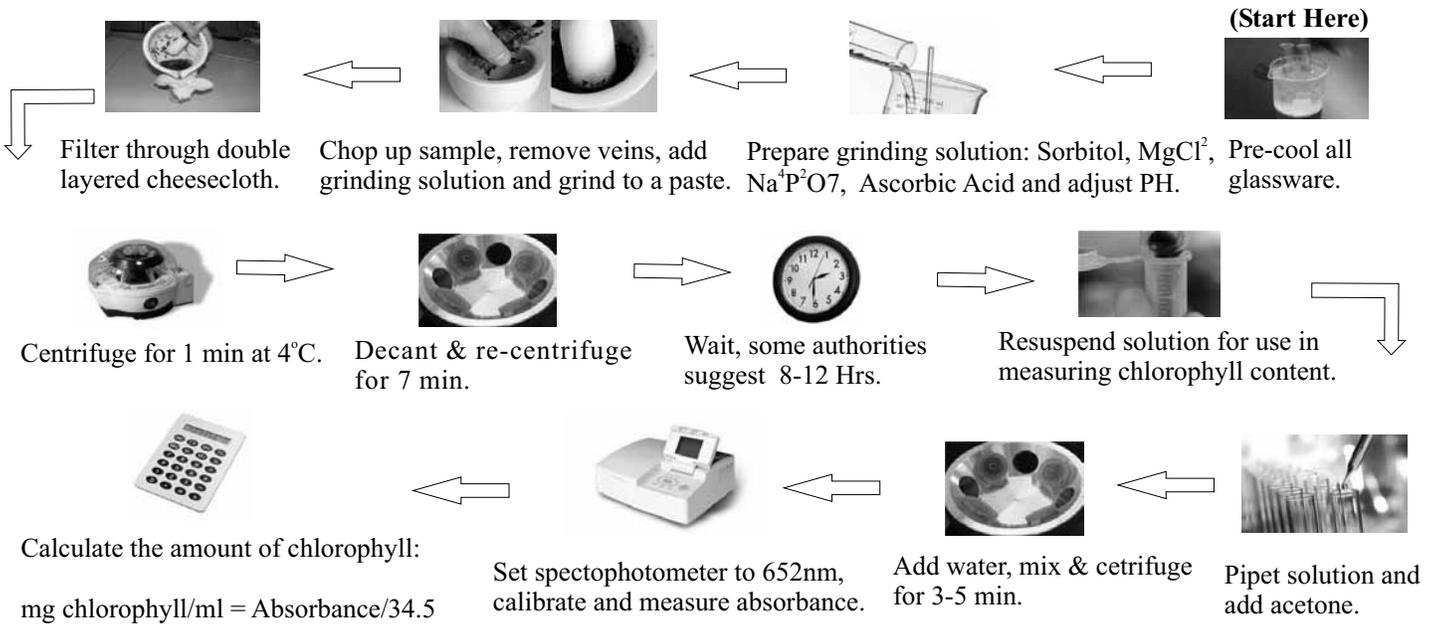
The head of the DOE Office of Science, Bill Brinkman, resigned effective April 12. At USDA, Kathleen Merrigan announced on March 15 that she will be leaving her position as the deputy secretary of the department. Meanwhile, NSF has named Deputy Director Cora Marrett as the acting director of the agency following Subra Suresh's departure last month.

President Obama's FY2014 Budget Request

President Obama released his budget request for FY2014 on April 10—more than two months after the required February submission to Congress and in the midst of federal agency implementation of budget sequestration. The budget largely reflects the FY2013 budget request and offers an optimistic vision for the federal science enterprise with strong support for research agencies and for important programs to universities and nonprofit organizations. While the total investment proposed for individual agencies, accounts, or programs is not likely to be fully realized given the significant differences between the president and the Congress, the proposed increases for research, assessment, education, and infrastructure reflect future agency investment areas for the next three-and-a-half years of the Obama administration.

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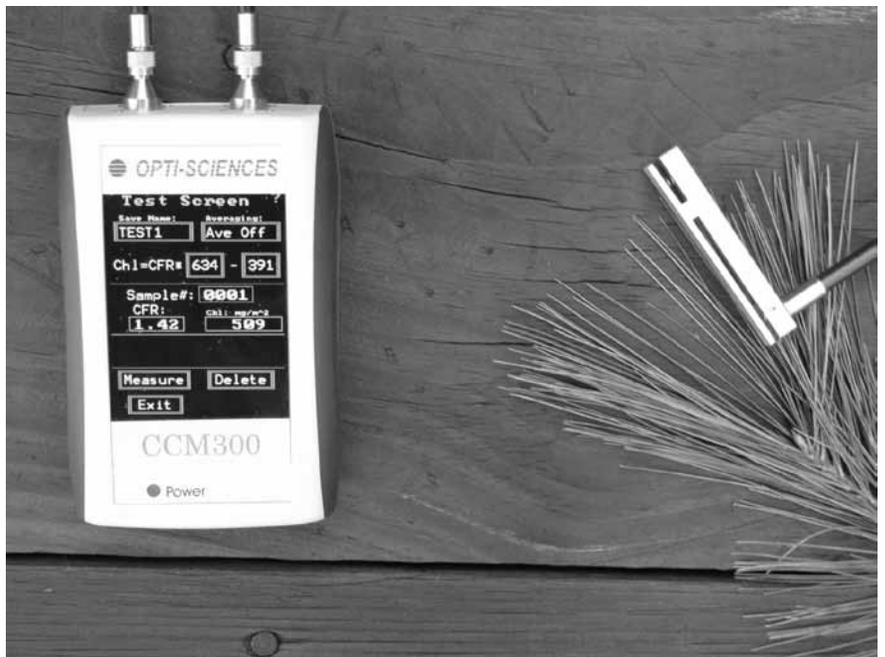
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Jonathan Lynch Testifies in Support of NSF, Visits with Capitol Hill Offices

BY KAREN MOWRER

Lewis-Burke Associates, LLC, karen@lewis-burke.com

Jonathan Lynch, ASPB member and Penn State University professor of plant nutrition, was among those who testified before the House Commerce, Justice, Science (CJS) Appropriations Subcommittee during a public witness hearing on March 21. Delivering remarks on behalf of ASPB, Jonathan urged the subcommittee to support the highest funding level possible for NSF in fiscal year 2014 and explained that “sustained investments in scientific research will be a critical step toward economic recovery and continued global competitiveness for our nation.” A number of CJS subcommittee members were in attendance during Jonathan’s testimony, including Chairman Frank Wolf (R-VA), who throughout the hearing expressed his support for investment in science but voiced concerns that

continued growth of entitlement programs would overwhelm other areas of government spending. Following Jonathan’s testimony, an interested Representative John Culberson (R-TX) discussed the possibility of transferring nitrogen fixation to non-nitrogen fixing plants with Jonathan.

While visiting Capitol Hill, Jonathan also represented ASPB in meetings with the offices of members of the Pennsylvania delegation, including Representatives Glenn Thompson (R-PA) and Tom Marino (R-PA) and Senators Bob Casey (D-PA) and Patrick Toomey (R-PA). The discussions revolved around the importance of federal research funding to advances in agriculture and Jonathan’s own research on plant adaptation to drought and low soil fertility. The congressional staff members who participated in the meetings expressed strong support for the

agricultural research enterprise, asked about the process of translating basic research discoveries into agricultural products for farmers, and acknowledged the key role of food security in ensuring national defense.

In addition to Jonathan’s oral testimony, ASPB has also submitted written statements to House Appropriations Subcommittees in support of FY2014 funding for NSF, DOE, USDA research programs, and NIH (http://my.aspb.org/members/group_content_view.asp?group=68890&id=99039).

These activities are part of ASPB’s ongoing advocacy efforts to educate members of Congress and their staff on plant biology-related issues in order to advance plant biology research. ■



Jonathan Lynch

POLICY UPDATE *continued from page 19*

tion. These investments also set benchmarks for which congressional champions will advocate during the remainder of the appropriations process.

Of particular interest to the plant science community, NSF

would be funded at \$7.625 billion overall, a proposed increase of 3.2% over the FY2013 CR level. Within the Directorate for Biological Sciences, the Plant Genome Research Program would receive an overall increase of \$4 million. At the DOE Office of Science, the Biological and Environmental Research account would receive

\$625.35 million, which is level funding compared to the FY2013 budget request and a 2% increase compared to the FY2013 CR. The DOE ARPA-E would receive \$379.00 million in FY2014, which is an increase of 28.7% compared to the FY2013 CR level. Within USDA, AFRI was one of the bigger winners in the budget request:

AFRI would receive \$383.38 million, which is an increase of 28.7% compared to the FY2013 CR level. ARS would receive \$1.279 billion, which is an increase of approximately 16% compared to both the FY2013 budget request and the FY2013 CR. ■

SURF 2013: Another Wave of ASPB Summer Undergraduate Research Fellows

BY KATIE ENGEN
ASPB Education Coordinator

Recipients of the ASPB Summer Undergraduate Research Fellowship (SURF; <http://surf.aspb.org>) receive support to conduct 10 consecutive weeks of plant biology research under the direction of a mentor who is an ASPB member. SURF participants hail from institutions all over the world and represent diverse interests. Because institutions tend to have distinct resources for sustaining research, the SURF committee separately reviews applications received from doctoral-granting (group A) and primarily undergraduate (PUI; group B) institutions and makes awards proportionally on the basis of the number of applications received from each group. This year's 15 award recipients (11 from group A and four from group B) will present their SURF-funded research at the undergraduate and general poster sessions during Plant Biology 2014 in Portland, Oregon.

Once again, the applications for this increasingly competitive award were both plentiful and outstanding. A veteran SURF reviewer explains:

As has been the case in recent years, we had a very competitive group of proposals and selecting the award recipients was no easy task. The review process is always an invigorating one for me. With the advantage of a rather

long historical perspective of reviewing SURF proposals (more than 10 years, give or take), I am really struck by the way that the quality of the proposals has steadily risen over the years. It is truly inspiring to see such accomplished young scientists joining our ranks and to see that the original intent of SURF—to attract promising undergraduates to careers in plant biology—is being fulfilled by this wonderful program.

The ASPB SURF Committee would like to thank all the students and mentors who applied this year. The students receiving honorable mentions must be recognized for the hard-won merit this status conveys. The committee anticipates that their position within the scientific community will continue to bloom. And along with well-deserved congratulations, the 2013 SURF award recipients should know that positive expectations already are attached to their upcoming work. As one reviewer quipped, “I think we will have a great group of students getting their hands dirty during the summer!”

And as the following remarks from this year's SURF awardees indicate, making SURF a part of the early undergraduate years is proving to be invaluable to the students' academic experience and career decisions.

Group A Research and Doctoral Universities



Caitlin Brownell, St. Louis University

Mentor: Brian Downes

Project: *Genetic analysis of membrane-anchored ubiquitin-fold genes in Arabidopsis thaliana*

Thanks to the SURF internship, I will be able to continue researching with the Downes lab full-time this summer. This will give me valuable experience needed not only for my graduate school applications, but also to develop my skills as a plant biologist.



Nicole Dakin, University of Western Australia

Mentor: Patrick Finnegan

Project: *Identifying the genes underlying phospholipid replacement in Hakea prostrata*

The ASPB SURF award is a chance to help answer the questions that I asked in lectures and to which no one had the answers. It will allow me to experience research and to immerse myself in native plant biology.

SURF demonstrates that excellent research is being done at PUIs everywhere. The quality of the research programs at these institutions, much of which is performed with minimal funding (compared to that more typically available at doctoral-granting institutions), is very impressive indeed. Further, it is evident that the students in the PUI laboratories are receiving excellent training while also gaining valuable research experience.



Rachel Dannay, University of Massachusetts Amherst
Mentor: Samuel Hazen
Project: *Determining the function of three homeobox transcription factors in Brachypodium distachyon*

I am very honored to receive this year's ASPB SURF award so that I am able to continue my research this summer on transcription factors and biofuels traits in a model grass. SURF has provided a great

first experience with the process of applying for a scientific grant and will aid in my future pursuit of a research career.



Samantha Powers, Webster University [research to be done at WUSTL]
Mentor: Lucia Strader, Washington University in St. Louis
Project: *Roles for ABCC members in indole-3-butyric acid response*

I couldn't be more grateful for receiving an ASPB SURF fellowship, and I am excited for the opportunity that it will give me to conduct meaningful research this summer. This fellowship will not only make it

possible for me to gain valuable experience working in a lab, but will also help me toward my goal of continuing to do research in the future.



Rachael DeTar, Colorado State University
Mentor: Elizabeth Pilon-Smits
Project: *Do selenium hyperaccumulators also accumulate and tolerate molybdenum?*

The SURF grant will allow me to apply all of the knowledge I've gained through my studies to a real experiment. I'm excited to practice the critical thinking skills I'll need for a career in science and to meet other plant biologists!



Emma Ray, Oberlin College [research to be done at MSU-Kellogg]
Mentor: Michael Grillo, Michigan State University–Kellogg Biological Station
Project: *Characterizing the genetic basis of self-fertilization in the wild relatives of rice*

I look forward to using this grant to conduct meaningful summer research that is highly relevant to my ultimate goal of using genetic approaches to address important questions in plant evolution.



Elizabeth Majewski, Purdue University
Mentor: Maureen McCann
Project: *Genetic functional analysis of MYST4, a putative rhamnogalacturonan lyase, in Arabidopsis thaliana*

In the coming months, I see myself preparing to apply for graduate school. Participating in the ASPB SURF program will allow me to focus on my project, and then to meet the people whose papers I have been reading. Participating at the

ASPB meeting will give me a broader view of the scope of the plant biology community.



Spencer Schreier, South Dakota State University
Mentor: Senthil Subramanian
Project: *Regulation of auxin and cytokinin activities by microRNA160 during soybean nodule development*

Winning the SURF award is going to offer a wealth of experience and scientific perspective toward my studies in the biological sciences. I also know that I will have a better understanding of biological research and the opportunity it provides that I can pass on to the undergraduate students I hope to work with in the future.

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SURF WINNERS

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Erica Thomas, The Ohio State University
Mentor: Keith Slotkin

Project: *Investigating the interaction of small RNA pathways in the resiliencing of transposable elements*

With the support of the ASPB SURF award, I will be able to begin an honors research thesis over the summer, which will help me become a more independent researcher. This will be invaluable experience in graduate school, where I will

continue to pursue my interest in plant epigenetics.



Alexis Tomaszewski, University of Massachusetts Amherst

Mentor: Magdalena Bezanilla

Project: *Exploring the role of phytolngins in membrane trafficking*

Winning the SURF grant supports my educational and professional goals by providing me the opportunity to continue my research in plant biology so that I can learn how theory is expressed in the laboratory and in real life. It will also give

me the chance to meet with other professionals in the field so that I can learn from them to advance my knowledge.



Kathryn Vescio, Pennsylvania State University

Mentor: Shobha Potlakayala

Project: *Proteomic analysis of the effect of salicylic acid on salt stressed Camelina sativa seedlings*

This fellowship grant would have supported my exploration into the molecular and physiological response of an important oilseed crop to the application of a potent signaling molecule after seedlings were

subjected to varying concentrations of salt-containing media.

Group A Honorable Mentions



Meera Basu, Washington University in St. Louis

Mentor: Elizabeth Haswell

Project: *Exploring redundant functions of mechanosensitive channels in the chloroplast and mitochondria with respect to plant development*

I am grateful to receive an ASPB SURF Honorable Mention because this award recognizes my plan to conduct an independent research project in Liz Haswell's

lab at Washington University in St. Louis this coming summer, exploring how mechanosensitive ion channels affect the interdependent roles of organelles in a cell. I learned a great deal from the process of writing this proposal, and I hope to use my results from this summer in a senior thesis.



Matthew Connell, Queen's University

Mentor: William Plaxton

Project: *Crystallization of novel phosphoenolpyruvate carboxylase for structure-function studies*

I am honored to have received an honorable mention for the ASPB SURE. Applying for an ASPB SURF has introduced me to the process of planning a research project while increasing my exposure to current research in the field of plant and molecular biology.

Group B Primarily Undergraduate Institutions



Danielle Garceau, Stonehill College

Mentor: Irvin Pan

Project: *Identification and characterization of cold-tolerant crop plants for four-season harvesting*

I am very excited to have been selected to receive an ASPB SURF award. Thank you for this opportunity to introduce myself to the members of the ASPB in the newsletter. Being awarded an ASPB research

fellowship is an honor, and I am very grateful for this opportunity to do research in plant biology, a field I am very passionate about. This study in identifying cold tolerance genes for four-season harvest will allow me to further develop and expand my laboratory skills, preparing me for future research, graduate school, and careers.



Jacob Robertson, Reed College

Mentor: David Dalton

Project: *Examination of endophytic eubacterial diversity in the roots of *Cycas revoluta**

Winning the SURF grant will give me the chance to engage in plant research early in my undergraduate career. My professional goals mainly involve furthering our knowledge about plant biology, and this award will facilitate the development of

my experience outside the classroom in working toward these goals.



Kendell Gilmore, Whitman College

Mentor: Daniel Vernon

Project: *Too much of a good thing: Over-expression of the PIRL9 gene in transgenic *Arabidopsis* plants*

I'm very honored to receive the ASPB fellowship, which will allow me to continue my work from last summer and the academic year. Winning this award allows me the opportunity to not only become more

comfortable in the lab and gain experience, but also form the specifics for the research career I'm working toward.



Amelia Asbe, University of Puget Sound

Mentor: Andreas Madlung

Project: *Toward understanding the mechanisms of floral reversion in *Arabidopsis suecica**

Applying for the SURF grant helped to give me practice and experience writing grants, a process that my future research plans will most likely require. The ability to write an effective grant proposal is necessary for both my postgraduate and

professional goals of studying ecology.



Ryan Merry, University of St. Thomas

Mentor: Amy S. Verhoeven

Project: *An investigation of protein reorganization during recovery of eastern white pine (*Pinus strobus*) and white spruce (*Picea glauca*) from cold temperature stress due to winter in northern climates*

Winning the SURF grant will not only help me learn skills vital for plant research, but it will also introduce me to the professional

world of plant biology. I look forward to getting involved in discovering the mysteries that plants hold with fellow plant biologists and leaders in the plant biology fields. Thank you for this opportunity!



Darisha Jhutti, Santa Clara University

Mentor: Jessica Lucas

Project: *Mutant screen to identify MAP65-1 interactors*

Applying to the ASPB SURF program gave me an opportunity to develop my scientific interests by writing a detailed proposal and by digging deeper into something I love: plants. I believe receiving this honorable mention will help me greatly in my career. ■

The Extended “R”—> Mentors’ Influence

BY CHANGBIN CHEN
University of Minnesota

I have been an ASPB member since 2001. Over the years, I have been privileged to mentor many undergraduate and precollege students in various programs, including ASPB SURF. Becoming a mentor was not something I had dreamed about in my youth; rather, it was instilled in me by the numerous mentors who have broadened my world, created opportunities for me, and guided my professional and personal growth. Without them, I wouldn’t have traveled the path that led me to where I am today.

I was born in a remote rural region of China and grew up in the mountains. There were very few schools, and after their toddler years, children usually began their lives as farmers instead of attending school. I was lucky that my parents allowed me to go to school at the age of 7. The school was about one-and-a-half miles away from my home, and it had one teacher and nine students who were first through third graders. Most students would end up with a third-grade education for life. However, my parents saw the importance of education and sent me to another school to complete my elementary education. The school was further away, and I had to walk about five miles each way every day. As graduation approached, my fifth-grade teacher and the school’s principal, Mr. Chen, walked hours to my home deep in the mountains. They convinced my parents that



Changbin Chen
PHOTO BY CHEN’S SIX-YEAR-OLD SON

I should sit for the middle school entrance exam, although we had previously agreed that I would return to a farmer’s life because as an elementary school graduate I would already be among the most educated people in my village. The exam turned out to be life-changing, because I was chosen for admission to the middle school, which was 20 miles away from my home with no other transportation but walking.

In the middle school, I met my class instructor and mathematics teacher, Mr. Liu. Mr. Liu was not only a great math teacher, but also an inspiration to all his students. In one of his lectures, after teaching us about “circle, center point, and radius (R),” he said to his class: *“I hope everybody understands what a circle means. Here is an example: Every one of you should study very hard; if you do not, you will stay within this*

circle for life. (He drew a circle on the blackboard and continued.) *The school is the center point with a radius of 25 miles. The only way for you to get out of this circle and to see the outside world is to study hard and go to high school and college.*” Since that lecture, I was determined to study hard to extend my “R” and became the top student in my class, but my parents had no resources to support me for a high school education. Mr. Liu and other teachers took it upon themselves to negotiate with the county teachers’ school (80 miles away from my home) to give me a chance to study without paying any tuition.

In the teachers’ school, I was trained to teach and mentor elementary school children. My biology instructor, Mr. Xiao, a new college graduate, found my passion for plants. He encouraged me to systematically learn about plants and spent a lot of time teaching me the college biology courses. By the time I graduated

from the teachers’ school, I had completed a number of college biology courses, including botany. When opportunities presented themselves, Mr. Xiao and the school administrators strongly recommended me for admission to college. It was an unconventional way to attend college since I was without formal high school education. They even offered me a teaching position—a condition for me to enroll at the college. As a result, I became the first person from my township and village to attend college and was written into the county Chronicles. The university I attended was Hubei University, 400 miles away from my home.

As a freshman, I started to learn English from the very basic “A, B, Cs” and met Professor Guo, my plant science instructor. Professor Guo offered me an opportunity to work on his research program and mentored me through my college experience. One of the research projects

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Mentoring Choices

Chen’s mentoring experiences have been delightfully and deliberately organic. Some mentoring experiences are more strategic. See p. 22 [SURF 2013 Results article] for ASPB’s latest mentoring successes. And consider this view of some current, eye-opening impacts of mentor choice on career development as shared here: <http://www.scoop.it/t/plant-biology-teaching-resources-higher-education> or here: <http://tinyurl.com/crdyjf8>.

Pursuing POGIL

One ASPB Master Educator's Experience

BY PENNY KIANIAN
Master Educator

As one of the first ASPB master educators (<http://newsletter.aspb.org/2013/janfeb13.pdf>), I was interested in learning about the Process Oriented Guided Inquiry Learning (POGIL) approach. This approach is highly interactive for engaging students in the classroom, and I hoped to learn how it could prove useful for better engagement of students with course materials. So I attended a one-day Introductory POGIL workshop on March 9 at Linfield College in McMinnville, Oregon. The attendees were from throughout the United States and from a range of institutions, including high schools and two- and four-year colleges/universities. This seminar was taught by a college and a high school instructor using this approach with their own students. During the day, we learned and applied the POGIL approach to topics ranging from economics to the environment. There were also opportunities to discuss with the instructors the benefits and pitfalls of this pedagogy. I offer the following summary of POGIL to further your understanding of the technique and inspire you to investigate it for use in your own teaching. More information about POGIL and related events is available at <http://www.pogil.org/>.

What exactly is POGIL?

POGIL is a teaching approach engaging students in the course content through guided classroom activities. Students collaborate in small groups of three to four students to complete a classroom activity, typically a worksheet. Each student has an assigned role (manager, recorder, reflector, presenter) during the activity, and as a group they build their understanding of the course topic. Understanding is built through the instructor-created guided activity and through the interactions with each other. A guided activity would include questions leading to the student group analysis of a diagram/model/data. This exploration leads to the invention/understanding of terms and concepts of the course topic. After the invention of terms and concepts, student groups then apply this knowledge to solve a problem. Through the learning cycle of exploration, concept/term invention, and application, process skills including communication skills, critical thinking, and problem solving are gained by interacting with each other. The instructor's role is creation of guided learning activity, helping students as they encounter problems, and assessing student work.

With this approach, students are developing their own understanding of the course topic, so they do not prepare for the activity before class and there is little or no lecturing by the instructor.

How could POGIL work to teach plant biology?

A basic guided activity in a plant biology course may include students building an understanding of monocots and dicots. The activity would include two groups of plants and/or seeds (one group is monocot, the other is dicot). Students would be asked to find and describe commonalities within the group and the differences between the two groups. After completing their initial observations, students would need to define monocot and dicot using their observations, which would be term invention. The completion of the learning cycle may include an activity where the student applies the terms monocot and dicot to new examples of plants previously not seen. During the guided activity, each student would also perform his or her assigned role. The manager would keep students on task, while the recorder would write the students' comments, the presenter would report group con-

clusions to the classroom, and the reflector would provide feedback on group dynamics during the activity.

The POGIL approach at the college level is used in chemistry courses in both small and large classes. Some college chemistry courses use only this approach, while others dedicate one class period a week to POGIL. My discussions with those using the POGIL approach indicate this method engages the students, leading to improved understanding of the course material. However, it will likely require removal of course content to provide students time to work through the guided classroom activities. This reality lends itself to the research-based trend to "go deep" with course content.

There currently are no published resources for college-level biology or plant biology using the POGIL approach. ASPB encourages those of you studying the science of teaching plant biology to consider POGIL-oriented research. Look for more information about my experiences with POGIL in upcoming publications and during Plant Biology 2014 in Portland, Oregon. ■

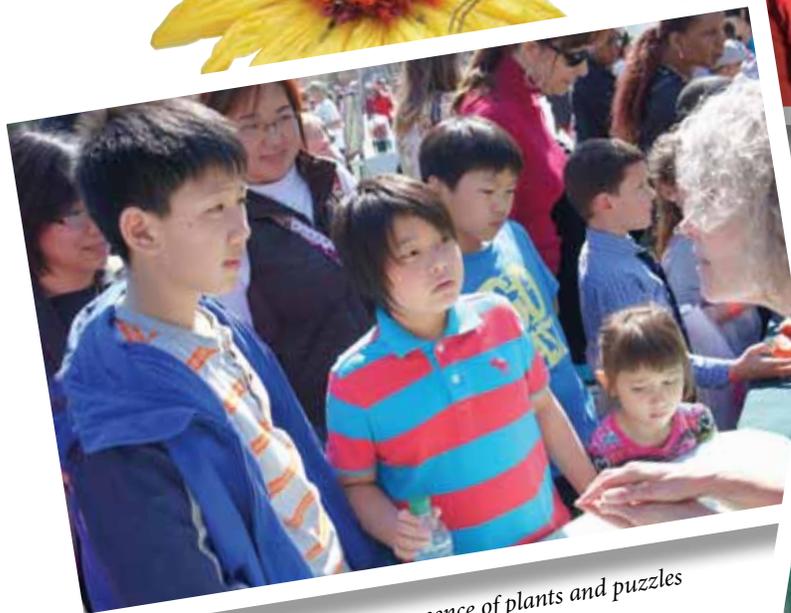
Four-year-old boy: “You mean if we plant this, we’ll get more seeds and more seeds? And plants and plants? Did you hear that, Mama?”

WHITE HOUSE EASTER EGG ROLL
continued from page 1

Plants!” booth. Visitors dug into a thought-provoking puzzle about plants and their presence in our daily lives, collected sunflower seeds to practice field data collection skills, and dissected hydrated lima bean seeds to discover the baby plant inside and earn an intact seed to plant at home. Why these particular seeds? They’re featured in *My Life as a Plant*, the ASPB coloring and activ-

ity book (<http://tinyurl.com/MyLifeasaPlant>) that visitors took home with them, along with “12 Principles of Plant Biology” book-marks, seed growth charts for at-home experimentation, recipes for cooking with sunflower or lima bean seeds, and plenty of new ideas about the many healthy, useful, and interesting things that come from plants. ■

Ten-year-old girl:
“Yes! I want to be a scientist. I really do!”



A posse ponders the ubiquitous presence of plants and puzzles posed by volunteer Janet Slovin (right).

Parent to another parent:
“C’mon over here! There’s a real scientist to talk to!”



Ready to roll!



A focused crowd keeps ASPB booth volunteers (including Rob Donaldson, left) busy sharing plant science adjacent to the First Lady’s garden.



Volunteers Peggy G. Lemaux, Hemayet Ullah, Janet Slovin, and Caren Chang share hands-on fun with curious youngsters.

Eight-year-old boy:
**“Nope, I don’t know what’s inside
 that seed. Hey, can I find out?”**



This young scientist uses tools to collect data—sunflower seeds to plant and track at home.



Hemayet Ullah, Stacey Simon, and Barbara Alonso are ready to help kids dissect imbibed lima bean seeds to discover the “baby plant” inside.



ASPB Volunteers Are a Treat!

The ASPB booth was “egg-ceptionally” successful thanks to the basketful of amazing volunteers who worked through cold, fog, raindrops, high winds, and just enough sun to welcome, delight, and inform thousands of South Lawn visitors about the cool things plants do and offer. Many well-earned thanks go to Society members and associates who joined ASPB President Peggy G. Lemaux for a fun and productive day. Thank you to morning shift volunteers: Barbara Alonso, Caren Chang, Rob Donaldson, Stacey Simon, Janet Slovin, Hemayet Ullah, Amy Zanne; afternoon shift volunteers: Claire Hemingway, Mimi Jackson, Evan Roberts, Susan Singer, Katie Smith, Amarachi Ude, Chinonso Ude, George Ude, Onyedikachi Ude, Steve Van Nocker, Sarah Wyatt, and ASPB staff representatives Katie Engen, Kim Kimmach, Kathy Munkvold, and Crispin Taylor.

A special tip of the Easter bonnet goes to Stacey, Janet, and Rob for the additional time, problem solving, and labor they volunteered on March 30 to do preliminary booth setup on the South Lawn.

For more images of this fun event and the busy volunteers who made it happen, please check out the 2013 White House Easter Egg Roll photo montage posted in the Highlight Box on the ASPB home page.



The First Family and Easter Bunny get the crowds hoppin’!

Visitors of all ages:
**“May I have some seeds to plant,
 please? And the recipes, too?”**

Senior adult:
**“Oh, this is so fun. It makes me
 a little sad I didn’t study plant
 biology in college.”**

MENTOR
continued from page 26

I was involved in was to investigate the distribution and impact of invasive species of *Ambrosia*, also known as ragweed. I spent six weeks in the summer traveling county by county, farm by farm to evaluate the agricultural impact of the weeds in Hubei province. With Professor Guo's support and encouragement, I gained great experiences and took the national examination for graduate school. I was among the four students from a class of 112 students who were admitted to the graduate school. East China Normal University, the graduate school I enrolled in, was 800 miles away from my hometown. A few years later, Professor Guo sent me a photograph of

himself standing on the top of Jigongshan (Rooster Mountain); a note on the back of the photo read: "When you climb high, you can see far away, into new worlds waiting for you to explore them."

I have been very fortunate to have great mentors, like Drs. Huang, Ma, Wagner, Smith, Cohen, and Hoover, just to name a few, at every turn of my life. This was especially true during my professional development as a graduate student, postdoctoral fellow, and junior faculty member. It's no mistake to say that I have basically stepped on my mentors' shoulders to get to where I am today, to extend my "R," and to climb high. My "R" has extended more than 10,000 miles away from the center, my hometown.

When I look back on all my mentors, they are ordinary people who did extraordinary things in their daily lives. The Chinese respect teachers and mentors as candles that burn until the last drop to light the path for others. Hence, to me, a mentor chooses a way of life and doesn't require a reputation and recognition as a world class scientist. Mentors

change people's lives in small but tangible ways every day. As such, I owe great gratitude to programs such as the ASPB Summer Undergraduate Research Fellowship and PlantingScience.org, which provide great opportunities for me, in this digital era, to mentor students from any corner of the world across all levels. ■

Checking in with Chen

I am currently mentoring a high school team at Springfield Central High School (Massachusetts) through www.plantingscience.org. I was also involved with ASPB SURF this year. My lab URL is http://www.horticulture.umn.edu/Who_sWho/Faculty/ChangbinChen/ChenLab/index.htm. I welcome feedback or questions at chenx481@umn.edu.

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Focus on Education at Plant Biology 2013

Events designed to pique your interests and support your efforts as a science educator

Please verify all logistics online at <http://my.aspb.org/page/Rhodelsland2013> or on-site in Providence.

Event	Description	Access Notes
Undergraduate Poster Session Saturday, July 20, 9:30–10:30 a.m.	Welcome the next generation of plant biologists! Undergraduates display their posters and discuss results during this special session.	Free/open to all Pre-registration required Light refreshments
Education Workshop: Applying Vision & Change principles to teaching: Course development using backward design Speaker: TBD Sunday, July 21 12 noon–1:30 p.m.	This workshop will introduce conferees to the backward design method of structuring courses, a technique consistent with the recommendations of the Vision & Change report. Traditional college courses typically focus on what information the instructor will deliver to the students, with assessments, such as exams, often designed while the semester is in progress. In backward design, course development begins by first identifying what students completing the course should know and be able to do. Next, how to measure what they know and can do is determined by choosing the appropriate assignments, projects, papers, or exams that specifically address the desired learning outcomes. Only then is the course design completed by creating the learning activities to introduce students to the knowledge and skills they are to acquire—the readings, discussions, lectures, and other in-class experiences that promote learning. By driving course development with what students should know and do, backward design places the emphasis on learning instead of on content delivery, resulting in a deeper and more meaningful student understanding of the course material. <i>Organized and sponsored by the Education Committee.</i>	Pre-registration required <i>Please pre-order a box lunch when you register online. You will pick up your box lunch near the workshop room.</i>
Education Minisymposium #15 Monday, July 22, 1:30–3:15 p.m.	Learn from plant scientists sharing their education and outreach innovations, including ways to study the efficacy of instructional materials and teaching approaches. <i>Speakers:</i> Thomas Jack, Dartmouth College, and Nitya Jacob, Emory University; Charis Cook, University of Warwick, School of Life Sciences; Kathleen Archer, Trinity College; Christine Fleet, Emory & Henry College; Miranda Haus, University of Illinois Urbana–Champaign	Open to all
Education Booth Competition for Innovative Instruction Daily in the Education Booth	See how colleagues are teaching plant science in the laboratory, classroom, and other venues. Speak with the Education Booth competition winners about their innovative techniques, technologies, and strategies for teaching plant science.	During exhibit hall hours
Teaching & Learning Library Daily in the Education Booth	Peruse selected resources—many created by ASPB members—for effective K–12, undergraduate, and public education. Help yourself to free materials useful for campus instruction and community outreach.	During exhibit hall hours

The Long Life of Roger Hangarter's sLowlife

Insight on Creating an Outreach Exhibit with Staying Power

BY KATIE ENGEN, ASPB Education Coordinator
with ROGER HANGARTER, Indiana University

Roger Hangarter (Indiana University) has created a number of long-lasting outreach resources of artistic, technical, and scientific merit. First, in 2000, Roger established his Plants-In-Motion website (<http://plantsinmotion.bio.indiana.edu>), which continues to serve as a core source for informational time-lapse movies of plants for educators and the public from all around the world. Plants-In-Motion receives more than a million page visits annually.

Next, in 2003, Roger collaborated with photographer Dennis Dehart (currently at Washington State University) to develop a science/art exhibit that was installed for a month at the Indiana University art gallery. The exhibit, called sLowlife, was an experiment to determine if some basic plant biology concepts could be passed on to viewers in settings outside of science museums and classrooms. Based on viewers' enthusiastic responses to that experiment, Roger applied for and, in 2005, won a grant from the ASPB Education Foundation to create a larger version of sLowlife that would function as a traveling exhibit.

In 2005, ASPB collaborated with the U.S. Botanic Garden, Washington, D.C., for the debut installation and display of the sLowlife exhibit from October

2005 to March 2006. sLowlife then moved to the Museum of the Earth, Ithaca, New York, where it was installed from December 2006 to April 2007. From there, sLowlife moved to the Chicago Botanic Garden, where it was on display from June to October 2007. It was then installed in the Clifford C.

Hach Gallery at the Chemical Heritage Foundation, Philadelphia, Pennsylvania, from February 2009 to January 2010. More recently (September to November 2012), sLowlife was at the Montshire Science Museum, Norwich, Vermont (<http://montshire.org/about/pressroom/press-releases/slowlife-a-unique-exhibition-opens-at-the-montshire-september-15/>).

In August 2012, National Public Radio contacted and interviewed Roger for NPR's Science Friday piece about the cucumber tendril mystery (<http://www.sciencefriday.com/video/08/31/2012/unwinding-the-cucumber-tendrils-mystery.html>). In the Science Friday blurb, both Roger's Plants-In-Motion website and the sLowlife



sLowlife's "Monument to Photosynthesis," as shown at the Chicago Botanic Garden. PHOTO BY ROGER VANDIVER

exhibit were cited, which speak volumes to Roger's outreach efforts and the long-term value of the content.

When asked, Roger outlined some reasons why his exhibit seems to have what he calls "lasting legs." Anyone creating museum or public space displays may find Roger's comments below helpful. Additionally, the January 16, 2013, issue of *Nature* noted that "the budding field of informal science education offers varied research paths but uncertain funding." In other words, knowing how to create outreach materials of long-lasting and widespread appeal is valuable for many reasons.



Tulip sequence from "Red Tulips in a Vase," a time-lapse movie shown in the exhibit. PHOTO BY ROGER HANGARTER

Roger's suggestions for outreach display longevity

1. Find a knowledgeable and willing partner who does exhibit development for a living. Developing a project with the belief that it is going to be so awesome that places will be lining up to show it is likely to be met with disappointment. Most museums, botanic gardens, and similar institutions normally develop projects internally to meet their own specific goals. Identifying an interested partner from the inception will more likely lead to adoption

of the idea. The partners are going to want to contribute to the development of the project, so being open to others' ideas is important as it can lead to a better product with wider appeal. The professionalism of partners with exhibit development experience played a major role in the design, construction, and marketing of *sLowlife*.

2. Make sure the exhibit is easily accessible to diverse audiences. There should be elements proven to work in venues such as botanic gardens, science museums, and art spaces. It is not necessary to appeal to all age groups, but a sense of beauty, mystery, whimsy, or connection to the human condition tends to boost interest for all.
3. Consider other venues or formats, and adapt accordingly. *sLowlife* requires around 2,000 square feet, which is more than many venues have available. Building an exhibit that is more modular may be better because it would allow more venue options. For example, consider short videos that can be displayed on wall-mounted monitors, web pages, mini-displays for science festivals, or mobile applications.
4. Be prepared to commit significant time. To develop something of the scope of a professional exhibition can require a serious time investment. Roger devoted about 18 months from the time he first enlisted partnership with the U.S. Botanic Garden until the exhibit was complete.
5. Be ready to raise funds. Roger ended up raising far more than the \$30,000 in seed funding initially invested by the

ASPB Education Foundation.

In the end, the project cost about \$450,000. Designing and building an exhibit to the specifications that professional exhibit builders use to make something robust enough to withstand the rigors of traveling is not trivial.

6. Marketing matters. Create a well-designed brochure to promote the exhibit's key concepts and the exhibit itself. With the help of professional designers and editors, Roger helped produce a high-quality brochure that is made available to *sLowlife* visitors. Such a brochure also is useful for marketing or fundraising for future installations. You should also be prepared to adjust to new marketing or exhibition priorities. *sLowlife* was marketed actively by the Chicago Botanic Garden until staff changes created other priorities. Be patient, and then be ready when new staff begin asking about your display. Be prepared to help market your exhibit by cultivating contacts working in public or private museums, display windows or atria installations in malls or commercial buildings, or even the design and marketing experts in departments on your campus.
7. Consider opportunity costs. In addition to the exhibit size/venue availability issue mentioned above, shipping and set expenses also limit potential venues. There are also significant storage costs. Before embarking on building the *sLowlife* exhibit, the Chicago Botanic Garden agreed to act as stewards of the



The beauty of "Un-still Life" greets museum visitors.

PHOTO BY ROGER VANDIVER



Sensing and responding to the "Sensing & Responding" display. PHOTO BY ROGER VANDIVER

exhibit so that Roger didn't have to be burdened by these post-development costs.

8. Define and maintain well-defined roles for exhibit management. After a staffing change at the Chicago Botanic Garden, the exhibit was in limbo until a new exhibit manager became motivated to

get the exhibit traveling again. Initially, Roger was asked to identify venues, but that is a job for professional exhibit managers who know that landscape. It is important to keep in mind that, over time, staffing changes at partner organizations might affect what happens with your exhibit. ■

A Blizzard of Activities at AAAS Family Science Days—Boston

BY KATIE ENGEN
ASPB Education Coordinator

ASPB members hosted an active outreach booth during AAAS Family Science Days (FSD) February 16–17 in Boston. Despite another blast of inclement weather, 3,647 kids and adults from the general public came to the event. This number does not include the many AAAS conference attendees and media that also visited the interactive, “sci-inspiring” exhibits. AAAS offers a one-minute video featuring many FSD booths (although not ASPB’s) at http://news.aaas.org/2013_annual_meeting/0217a-stomping-good-time-at-family-science-days.shtml.

The ASPB booth was designed to convey the vital importance of plants. The welcome table was set up as a voting station to help everyone recognize the ubiquitous presence of plants in our lives. Visitors marked a ballot to show which plant-based products—food, fibers, or fuel—they use the most each day. The ballot boxes were decorated with colorful images of each option so that even the youngest voters could make a well-informed choice.

At the “dig in and get dirty” table, children created Sally Sunflower garden necklaces and chatted with scientists about plants and growth. Sally Sunflower is the main character in *My Life as a Plant*, an ASPB publication viewable at <http://www.aspb.org/coloringbook>. Age-appropriate

conversations touched on listing what plants need to grow, playing with hard words like *photosynthesis*, and emphasizing that plants “bulk up” by using carbon from the atmosphere (and not by sucking up nutrients via the roots/stem). The engaged youngsters took home a child-friendly page with care and transplant instructions for their mini sunflower gardens, as well as a growth-tracking chart for germinated sunflower seeds.

At the free materials table, visitors could color in *My Life as a Plant* or pick up ASPB bookmarks and other interactive learning handouts for home (or to share with teachers). Many stayed to talk

about the “12 Principles of Plant Biology” and other cool, plant-y concepts. Kids also got the “I Dig Plants” hand stamp for actively participating in the booth.

The ASPB booth could not have happened without the strong support of the regionally based scientists who rallied to the call for volunteer help at this event. ASPB members and leadership are extremely supportive of the ASPB Statement on the Importance of Participation of Scientists in K–12 Science Education. These FSD volunteers were the feet, hands, energy, minds, and hearts bringing that statement to life at the Hynes Convention

Center in Boston. Hearty thanks go to Adán Colon-Carmona (University of Massachusetts Boston), Tomáš Závada (University of Massachusetts Boston), Trudi Gulick (University of Massachusetts Boston), Rob McClung (Dartmouth College), Michael Harrington (University of Massachusetts Amherst), Estelle Hrabak (University of New Hampshire), Megan Thompson (University of New Hampshire), Elena Kramer (Harvard University), Chip (John) Celenza (Boston University), Sanda Zolj (Boston University), and Ludmila Tyler (University of Massachusetts Amherst). ■



Michael Harrington



Adán Colon-Carmona
(above left)



Chip Celenza and Tomáš Závada



Trudi Gulick (right)



Rob McClung



Ludmila Tyler (right)



Sanda Zolj (right)

Michael Shaw

1924–2013

Michael Shaw died March 25, 2013. He was a long-time ASPB member. Dr. Shaw was born in the West Indies and came to Canada in 1943. He received a BSc (hons botany) from McGill University in 1946 and MSc



and PhD degrees in botany and plant pathology from Macdonald College of McGill in 1947 and 1949, respectively. Following a period as a National Research Council postdoctoral fellow in Cambridge, UK, Dr. Shaw joined the Department of Biology at the University of Saskatchewan as an assistant professor in 1950 and became professor and head of the department in 1961. An active scientist, he conducted research on the physiology and biochemis-

try of the host–parasite relations of rust fungi on wheat and flax. The severe epidemic of wheat rust in the prairies in the 1950s had prompted him to undertake research on this important disease.

In 1967, Dr. Shaw came to the University of British Columbia

(UBC) as dean of the Faculty of Agriculture and served as dean until his appointment as UBC vice president in 1975. During his deanship, the faculty name was changed to the Faculty of Agricultural Sciences, and the faculty experienced considerable growth and development. Dr. Shaw's philosophy was that faculties of agriculture should continue to expand because of the vital importance of food production. His early concern about agricul-

ture as an ecosystem led to the agro-ecosystem approach forming a framework for the curricula in the faculty. In addition to his UBC activities, he was active in national scientific and academic associations. He initiated the formation of the Association of Faculties of Agriculture in Canada and was president of this group in 1974–1975.

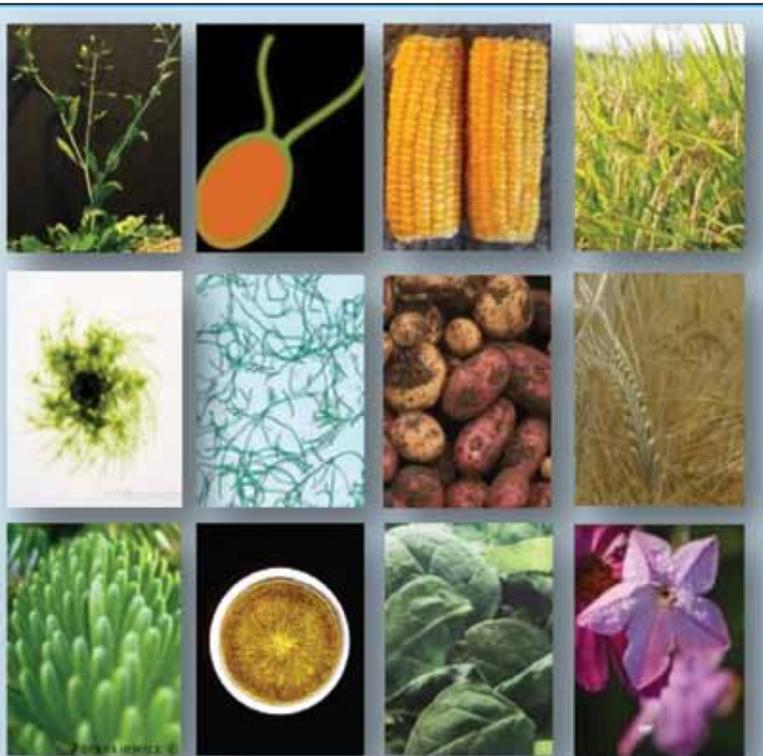
Dr. Shaw received several prestigious honors and distinctions. Particularly noteworthy were his election to the Royal Society of Canada in 1962; the honorary DSc degree he received from his alma mater, McGill University, in 1975; and the Royal Society of Canada's Flavell Medal, the society's highest award for research achievements in the biological sciences, bestowed in 1976. He also received one of nine LFS (Land and Food Systems) Centenary Awards in recognition

of the outstanding achievements of UBC faculty.

Dr. Shaw was editor of the *Canadian Journal of Botany* and served on many advisory committees related to agricultural research and development.

He retired in 1989 after a distinguished association of 22 years with UBC and was named university professor and dean emeritus. In recognition of his distinguished service to the university and to agricultural science, a scholarship fund was established in his name. In retirement, he maintained an active interest in agricultural research and in academic affairs. ■

This tribute was adapted from the University of British Columbia website and appears with permission.



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