ASPB Executive Committee 2012 Election Results

Thanks to those of you who took the time to vote, and congratulations to the incoming Executive Committee members! They will begin their new cycle of service to ASPB on October 1, 2012. Look for more information about each winning candidate in an upcoming issue of the ASPB News.

President-elect
Alan Jones,
University of North Carolina,
Chapel Hill

Secretary-elect
Karen Koch,
University of Florida

Elected Member
MariaElena Zavala,
California State University,
Northridge

President’s Letter

ASPB Can Prosper—But Only with Your Help!

STEVE HUBER, ASPB PRESIDENT
schuber1@illinois.edu

Without you, and others like you, ASPB would wither like an unwatered plant. That is, perhaps, a statement of the obvious, but what I mean is that each member is essential to the Society. Working together, we can collectively advance successive generations of scientists while shaping the course of plant science research. We work toward these objectives by advocating for funding to support national research missions; fostering and facilitating collaborations within and across the public and private sectors; and, of course, by communicating information about plant science through our journals, our meetings,

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### ASPB Executive Committee

- **President**: Steven C. Huber
- **Immediate past president**: Nicholas Carpita
- **President-elect**: Peggy Lemaux
- **Secretary**: Julia Bailey-Serres
- **Treasurer**: Jonathan Monroe
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- **Chair, International Committee**: David Horvath
- **Chair, Membership Committee**: Richard Vierstra
- **Chair, Committee on Public Affairs**: Giona Muday
- **Elected members**: Marguerite Varagona

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- **Midwestern**: Sarah E. Wyatt
- **Northeastern**: Estelle Hrabak
- **Southern**: Kent Chapman
- **Mid-Atlantic**: Zhongchi Liu
- **Western**: David Logan

### ASPB Staff

- **Executive director**: Crispin Taylor, ctaylor@aspb.org
- **Executive and governance affairs administrator**: Sylvia Lee, slee@aspb.org
- **Assoc. director of finance and administration**: Kim Kimnach, kkimnach@aspb.org
- **Accounts receivable and payable specialist**: Stephanie Liu-Kuan, sliu@aspb.org
- **Senior staff accountant**: Jotee Pundu, jotee@aspb.org
- **Director of meetings, marketing, and membership**: Jean Rosenberg, jean@aspb.org
- **Manager of marketing and web services**: vacant
- **Membership manager**: Shoshana Kronfeld, shoshana@aspb.org
- **Subscriptions manager**: Susanne Cholwek, scholwek@aspb.org
- **Subscriptions assistant**: Linda Palmer, lpalmer@aspb.org
- **Assoc. director of public affairs**: Nancy A. Winchester, nancyw@aspb.org
- **Education coordinator**: Diane McCauley, diane@aspb.org
- **Director of publications**: Richard Vierstra
- **Publications assistant**: Annette Kessler, akessler@aspb.org
- **Managing editor**: Patti Lockhart, plockhart@aspb.org
- **Science writer, Plant Physiology**: Peter Minorsky, peminorsky@aspb.org
- **Production manager, Plant Physiology**: Jon Munro, jmunro@aspb.org
- **Manuscript manager, Plant Physiology**: Ashton Wolf, awolf@aspb.org
- **Senior features editor, The Plant Cell**: Nan Eckardt, neeckardt@aspb.org
- **Features editor, The Plant Cell**: Mary Williams, mwilliams@aspb.org
- **Production manager, The Plant Cell**: Susan Entwistle, susan@aspb.org
- **Manuscript manager, The Plant Cell**: Annette Kessler, akessler@aspb.org

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

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and our public outreach efforts. The results will span basic and applied outcomes, contributing not only to fundamental knowledge but also impacting societal needs.

We all belong to ASPB for some “reason(s),” whether tangible or not. For many members, ASPB is their primary professional society, and they wouldn’t consider for a moment letting their membership lapse. For others, there are some tangible and immediate benefits, such as lower registration fees for the annual Plant Biology meeting and the opportunity to submit an abstract. If you’re not a member, at least for the year, you can’t present a poster or a minisymposium talk at Plant Biology, the 2012 version of which we just enjoyed in Austin, Texas. There are, in fact, many tangible benefits of membership (http://my.aspb.org/?page=M_Index), but I would like to focus on the intangible benefits that arise because ASPB—with your support—is as strong as it is.

Here are just a few of the intangible benefits that I find particularly compelling:

- increased diversity in plant biology with inclusion of under-represented groups
- networking, training, and career development for successive generations of scientists (also a tangible benefit for those involved)
- outreach activities that help connect the 98+% of the U.S. population that has no direct ties to agriculture, many of whom do not appreciate the importance of plants in our daily lives or have a good understanding of where their food comes from
- educational programs and resources for students and teachers at all levels that help attract the best students to plant biology and related fields
- visits to Washington, D.C., to share information with legislators on Capitol Hill and federal agencies about the importance of plants and fundamental plant science research as a major foundation for innovation and discoveries that drive private-sector investments and economic growth
- sharing of information with the general public and elected officials about the need for GMOs to be part of the mix if we’re going to have any hope of feeding the 9 billion people predicted to be on this planet in 2050
- promotion of research integrity as well as enforcement of ethical guidelines—in the journals and beyond!

The bottom line is that ASPB speaks with authority as an unbiased source in the public domain to promote plant biology in ways that benefit each of us—regardless of what sector we work (or study) in. Accordingly, we all need to support the Society however we can, with annual membership and personal involvement. But that’s not all. Importantly, some of us may be in a position to offer more substantive financial support for ASPB. The Society is exploring the possibility of establishing a development office to receive such gifts and bequests. Of course, whether or not a new development office is formed, we will gratefully accept donations and gifts, and there are numerous sponsorship and naming opportunities to choose from (http://my.aspb.org/?page=AF_SponsorNaming).

The important thing is that we must all do what we can, and that, I believe, starts with each of us recalling and acknowledging the incredible array of good works done by ASPB.

Do you have thoughts on any of these topics? Please share them with me (schuber1@illinois.edu)! ■

ASPB is acutely aware of the need to provide meaningful benefits to its membership and is constantly striving to enhance those benefits. Accordingly, ASPB has contracted with an outside consultant to seek input from members through an in-depth survey targeted to a subset of members (chosen at random) from diverse groups (academia, industry, government) and membership status (active as well as lapsed members). Thanks to all of you who participated. Results will be shared and, of course, recommendations implemented as soon as possible, so look for more information on this in the near future.
SAVE THE DATE!

JULY 20-24, 2013
Providence, Rhode Island
Plant Biology 2013

ASPB
www.aspb.org
Jessica McDonald is 2012 ASPB/AAAS Mass Media Fellow

Jessica McDonald, a graduate student at Yale University, is the recipient of this year’s ASPB/AAAS Mass Media Science & Engineering Fellowship. Beginning in June, Jessica will spend 10 weeks making science accessible to the public at KUNC-FM, an NPR-network radio station in Greeley, Colorado. There, Jessica will write and produce local science news stories for the radio as well as contribute online content.

Jessica is currently finishing her PhD in immunobiology with Dr. David Schatz, studying the inner workings of B cells, antibody-producing immune cells that protect animals from infections. Her thesis work is focused on understanding how B cells improve their effectiveness by modifying their own genomes yet avoid dangerous DNA alterations that could result in cancer.

While at Yale, Jessica has demonstrated interest in engaging with the community about a broad range of science topics. As a first-year graduate student, she helped co-found a campus science policy and outreach group, now known as Yale Science Diplomats. For the past two years, she has been integral in the Diplomats’ flagship program, Science in the News, a lecture series for New Haven citizens covering topics such as genetically modified foods, personalized medicine, and evolution, among others.

Since 2010, Jessica has been a columnist for the Science & Technology section of the Yale Daily News and was editor-in-chief of the Yale Journal of Biology & Medicine. Previously, she combined her dual love of science and writing at Haverford College, where she received her BS in both Biology and English in 2006.

Jessica is excited to make her news radio debut in Colorado, thanks to ASPB’s generosity. If you’re in the area, tune in to KUNC at 91.5 FM, or go to kunc.org to check out the latest updates. We’ll hear again from Jessica at the end of the summer.

2013 WSSA Undergraduate Research Award

The Weed Science Society of America (WSSA) has developed an Undergraduate Student Research Grant designed to encourage and involve exceptional undergraduates in agricultural research. Interested faculty members are encouraged to identify potential award candidates and discuss the possibility of sponsoring a research project. Awards may be used as a stipend, for research budget expenses (travel, supplies, etc.), to defray fees, to defray living expenses for summer research, or any combination of these items.

AWARD: Up to $1000 for support of undergraduate research to be conducted over a minimum of one quarter/semester during 2013. This award may be used to defray the cost of research supplies or as a stipend. Support of a faculty sponsor is required. Awards will be made to the student, to be administered by the faculty sponsor’s department.

APPLICANT: The applicant is an undergraduate student with a strong interest in Weed Science. Students majoring in all related disciplines may apply.

TO APPLY: Applicants should prepare a 2-3 page research proposal including name, address, phone number, E-mail address, title, objective, experimental approach, discussion, budget and references. The discussion section of the proposal should describe the expected results and their possible significance to Weed Science. The student should provide a cover letter in which general academic and career goals are discussed. A copy of the student’s academic transcripts must also be provided.

FACULTY SPONSOR: Any faculty member who is actively engaged in Weed Science research is qualified to be a sponsor. The faculty sponsor should review the research proposal with special attention to the budget; the distribution of funds should be approved by both the student and sponsor. In addition, the sponsor should provide a letter of reference including a statement of his/her willingness to supervise the proposed research and to provide any needed space, equipment and supplies above those requested in the proposal. The sponsor is encouraged to assist the student in presenting his/her results at a regional Weed Science Meeting.

HOW TO APPLY: The completed proposal, academic transcripts, cover letter and faculty letter of support should be forwarded to: Dr. John Jachetta, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268-1054; Phone: (317) 337-4686, Fax (317) 337-4649, E-mail: jjjachetta@dow.com. Proposals should be received no later than November 16, 2012. Funding decisions will be made by January 25, 2013 and presented at the 2013 WSSA National Meeting Awards Ceremony.
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Plant biology research was well represented in this year’s selections to the National Academy of Sciences (NAS). Four ASPB members were elected as new members and two as foreign associates. Each year, the academy elects a maximum of 84 members and 21 foreign associates based on their exemplary achievements in original research. Congratulations to the following plant biologists and ASPB members selected for this highest honor.

Xinnian Dong
Howard Hughes Medical Institute and Duke University

Xinnian is a Howard Hughes Medical Institute–Gordon and Betty Moore Foundation Investigator and professor of biology at Duke University. She received her PhD from Northwestern University, followed by a postdoctoral position at Harvard University studying the plant immune system. In 1992, she started her own laboratory at Duke. Building on her postdoctoral work, Xinnian embraced Arabidopsis as a model system and identified a key regulator, NPR1, required for systemic acquired resistance, a type of broad spectrum resistance experienced by the entire plant after localized pathogen infection. Throughout her career, she has continued to unveil additional molecular details of plant immunity.

When asked about her reaction upon receiving this prestigious recognition, Xinnian stated, “Words cannot express my heartfelt appreciation and gratitude for the support of the plant research community and for family members (especially my husband), friends, and colleagues in different disciplines who helped me with my research. It feels so wonderful to be recognized by fellow scientists. I will have to try even harder to live up to this great honor.”

Earlier this year, Xinnian was also named a AAAS Fellow. She currently serves as a coeditor for The Plant Cell and has previously served as a monitoring editor for Plant Physiology.

Harry Klee
University of Florida, Gainesville

Harry received his PhD from the University of Massachusetts. He completed his postdoctoral studies with Eugene Nester, a pioneer of Agrobacterium-transformation of plants, and in 1984 took a position with Monsanto in research and development. After 11 years at Monsanto, he made the jump from industry to academia, dispelling the myth that you can never go back (see Harry’s commentary on the subject in a 2001 edition of Plant Physiology at http://www.plantphysiol.org/content/126/3/924.full). He is now the Lyle C. Dickman Eminent Scholar Chair in Plant Improvement and a professor of horticultural sciences at the University of Florida, where his lab focuses on the biology of flavor quality in fruits and vegetables, with an emphasis on tomatoes.

Regarding his election to NAS, Harry stated, “My feelings have evolved from initial shock and awe to complete humility. I am humbled both by the recognition that I am now a member of an organization with so many members, past and present, who have served as role models for so long. [I am] also humbled by the thought that there are so many brilliant scientists who are equally deserving of this honor.”

Harry was also named a AAAS Fellow in 2009. He was editor of The Plant Journal from 2002 to 2009.

Sabeeha Merchant
University of California, Los Angeles

Sabeeha received her PhD from the University of Wisconsin–Madison, worked as a postdoctoral scholar at Harvard University, and in 1987 joined the Department of Chemistry and Biochemistry at UCLA, where she is currently a professor of biochemistry. Sabeeha’s laboratory focuses on metal metabolism, photosynthesis, and genomics in the model alga Chlamydomonas.

When asked about being elected to NAS, Sabeeha commented, “My immediate thought was that I miss my father, who would have been the first person I would have continued on page 8
People

Members Elected to NAS
continued from page 7

called. He would have been happy and proud.” She added, “The credit belongs to all the people I’ve had the good fortune to work with—students and postdoctoral researchers, of course, but also collaborators and colleagues—all of whom have generously shared their creativity and work with me.”

Sabeeha has received numerous awards, including the Gilbert Morgan Smith Medal from NAS in 2006, and she was named a AAAS Fellow in 2005. She has also received several ASPB awards, including the Charles Albert Shull Award in 1999 and the Charles F. Kettering Award in 2010. She was named an ASPB Fellow in 2008.

Natasha Raikhel
University of California, Riverside

Natasha received her PhD from the Institute of Cytology in Leningrad, USSR, where she went on to become an assistant professor. After immigrating to the United States, she became a postdoctoral researcher at the University of Georgia. In 1986, she joined the Department of Energy–Plant Research Laboratory (PRL) at Michigan State University as an assistant professor and remained there until 2001, when she moved to Riverside. Natasha currently holds the Ernst and Helen Leibacher Endowed Chair in Plant Molecular, Cell Biology and Genetics and is a distinguished professor of plant biology at the University of California, Riverside. She also serves as the director of both the Center for Plant Cell Biology and the Institute for Integrative Genome Biology (IIGB). Her laboratory has focused on understanding endosomal and vacuolar trafficking in plant cells and was a pioneer in harnessing the power of chemical genomics to elucidate the molecular dynamics of this system.

Regarding her recognition as a new NAS member, Natasha stated, “In general, there are more deserving people than there are awards, so it is wonderful that NAS recognized our research in plant cell biology, and I am eternally grateful. I am sharing this recognition with my former and current students and postdocs, as this award is a result of team work. I also could not have been where I am now without the love and support of my wonderful family, my late very loving parents, and my dear friends.”

Natasha was named a AAAS Fellow in 2003 and an ASPB Fellow in 2007. Additionally, she received the ASPB Stephen Hales Prize for her pioneering work in plant biology in 2004. She served as editor-in-chief of Plant Physiology from 2000 to 2005.

Foreign Associates

George Coupland
Director, Max Planck Institute for Plant Breeding Research

George received his PhD from Edinburgh University, UK, followed by a postdoctoral experience at the University of Cologne and the Max Planck Institute for Plant Breeding Research. In 1989, he joined the Plant Breeding Institute in Cambridge, which shortly afterward became part of the John Innes Centre in Norwich. In 2001, George moved to the Max Planck Institute for Plant Breeding Research, where he has served as director ever since. George’s laboratory has focused on uncovering the molecular details of the timing of floral development in the model plant Arabidopsis in response to changing day length.

In regards to being elected to NAS, George commented, “I am delighted and honored to have been elected, and I thank all the members of my group in Norwich and Cologne over the last 20 years who did the experiments that made this happen.”

Among his many awards, George became an elected member of the European Molecular Biology Organization (EMBO) in 2001 and a fellow of the Royal Society, London, in 2007.

Ottoline Leyser
The Sainsbury Laboratory
University of Cambridge

Ottoline received her PhD in genetics from the University of Cambridge, followed by postdoctoral research at the University of Indiana and the University of Cambridge. In 1994, she started her own laboratory studying auxin signaling at the University of York, where she remained until 2010. She now serves as director of The Sainsbury Laboratory at the University of Cambridge. Her laboratory continues to focus on auxin signaling, with an emphasis on understanding the molecular mechanisms that underlie shoot branching in Arabidopsis.

“It came as a complete surprise,” Ottoline said in response to her election to NAS. “It is really an extraordinary feeling to have been chosen by so
Tom Brutnell, Wolf Frommer Call for $100 Billion Investment in Plant Science Research

Tom Brutnell, director of the Enterprise Rent-A-Car Institute for Renewable Fuels at the Donald Danforth Plant Science Center, and Wolf Frommer, director of the Department of Plant Biology at the Carnegie Institution for Science, contributed an opinion piece to the June 2012 issue of The Scientist. The article, titled “Food for Thought: Plant Research Remains Grossly Underfunded, Despite the Demand for Increased Crop Production to Support a Growing Population,” calls for a large-scale national investment in plant science research to address challenges in food and energy security on the order of $100 billion over 10 years, similar to the U.S. investment to send a man to the moon in the 1960s.

Tom and Wolf emphasize the need for innovations in agriculture to feed a growing global population that is expected to reach 9 billion by 2050. An increased demand for meat as nations develop requires additional grain production, adding further strain on an already dire situation. The article also highlights the increased pressure on food prices caused by biofuel production and climate change. For access to the full article, visit http://bit.ly/KOEg5b.

Steve Kay Appointed Dean of USC’s College of Letters, Arts and Sciences

Steve Kay has been appointed dean of the Dana and David Dornsife College of Letters, Arts and Sciences at the University of Southern California (USC). Steve currently serves as dean and Richard C. Atkinson Chair in the Division of Biological Sciences at the University of California, San Diego, where he also holds the title of Distinguished Professor of Cell and Developmental Biology. His appointment as dean at USC officially begins October 1, 2012.

Steve has been honored many times for his pioneering research in the genetics of the circadian rhythms of plants: he was elected to the National Academy of Sciences in 2008, named a AAAS Fellow in 2009, and awarded the ASPB Martin Gibbs Medal in 2011.
Dan Bush Appointed Colorado State’s Vice Provost for Faculty Affairs

Daniel Bush was named vice provost for faculty affairs at Colorado State University, where he has served as professor and chair of the Department of Biology in the College of Natural Sciences. In addition to his service in the department, he also has spearheaded the development of the multidisciplinary program in physiological and molecular plant biology at Colorado State.

Dan’s laboratory focuses on resource allocation between various plant tissues using biochemical and genetic tools to tease apart the molecular details and regulation of this essential process. In fact, his lab was the first to characterize the molecular and biochemical function of several plant sugar and amino acid transport systems important for resource allocation in plants.

Earlier this year, Dan was named a AAAS Fellow, and in 2008 an ASPB Fellow. He also served as president of ASPB in 2002–2003 and is a monitoring editor of *Plant Physiology*. ■
From Around the Web

Your Guide to Plant Biology News on the Internet

Articles on the science news website, Science Daily, recently featured a long list of ASPB members, including Sheng Yang He, professor of microbiology and molecular genetics at Michigan State University, for his lab’s work on the balance between plant growth and pest and pathogen resistance (http://bit.ly/LdiFy1); Takato Imaizumi, assistant professor of biology at the University of Washington, for his lab’s work on a photoreceptor involved in flowering time, recently published in Science (http://bit.ly/Ljk30); Joseph Noel, professor and director of the Jack H. Skirball Center for Chemical Biology and Proteomics at the Salk Institute, and Eve Syrkin Wurtele, professor of genetics, development, and cell biology at Iowa State University, for their identification of three proteins involved in fatty acid metabolism that could be used to boost seed oil production of crop plants, which was recently published in Nature (http://bit.ly/KOFtc); Michael Thomashow, director of the MSU–DOE Plant Research Laboratory at Michigan State University, for his lab’s work on the connection between circadian rhythms and freezing tolerance (http://bit.ly/KDxeA); and Tom Brutnell, director of the Enterprise Rent-A-Car Institute for Renewable Fuels at the Donald Danforth Plant Science Center, and Jeff Bennetzen, professor of genetics at the University of Georgia, for their work in sequencing the Setaria genome was published in Nature (http://bit.ly/NVXnZb).

Interviews with ASPB members Sharon Long (http://bit.ly/LDznrx), professor of biology at Stanford University, and Pamela Ronald (http://bit.ly/JS4n5x), professor of plant pathology at the University of California, Davis, were featured on Scientific American blogs in April. The series included graduate student interviews with leading women biologists from the Women in Science Symposium held at Cornell University in April.

Tomatoes were the “it” plant in the media recently, as the tomato genome was published in Nature in May. Both The New York Times (http://nyti.ms/KDxTC6) and The Washington Post (http://wapo.st/LdjRSi) featured Jim Giovannoni, a scientist at the Boyce Thompson Institute for Plant Research and USDA–ARS, in articles on the genomic sequences of a Heinz tomato variety and a wild relative of tomato. Avtar Handa, professor of horticulture at Purdue University, was featured in The New York Times blog, Green (http://nyti.ms/NW2kkD), for his work on finding a genetic cure for blossom end rot of tomato, a condition resulting in economic losses in tomato production.

In keeping with the tomato theme, Harry Klee, professor of horticulture at the University of Florida, Gainesville, in addition to being recently elected to the National Academy of Sciences (see page 7), was featured on the Wired Science blog (http://bit.ly/LDAPua) and National Public Radio’s food blog, The Salt (http://n.pr/K5qKt8), for his lab’s recent work published in Current Biology on the chemical basis of tomato flavor. Harry was also interviewed in an article appearing in The Scientist (http://bit.ly/K5qYay) on making a successful transition from industry to academia, something that he also wrote about in Plant Physiology in 2001 (http://bit.ly/MnTsoG).

ASPB President-elect Peggy Lemaux also appeared in an article on The Salt (http://n.pr/KoE0pl) concerning California’s upcoming referendum on modified food labeling. For more science-based information on GMO labeling and other agriculture biotech issues, visit http://www.ucbiotech.org. Work from Mark Johnson’s laboratory on the precision of fertilization of a single ovule by a single pollen tube, recently published in Current Biology, was featured in a New York Times article (http://nyti.ms/MnTY6S). Mark is an associate professor of biology at Brown University. And BBC News reported on (http://bbc.in/LD9PZH) the release of What a Plant Knows, a book by ASPB member Daniel Chamovitz, director of the Manna Center for Plant Biosciences at Tel Aviv University, on how plants perceive and respond to their environment.

Please visit the Plants in the News blog post at http://bit.ly/Nt09av for easy access to all the articles highlighted in this column.

“From Around the Web” represents a subset of the plant biology 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 the next issue of the ASPB News, please contact ASPB’s Associate Public Affairs Director Kathy Munkvold (kmunkvold@aspb.org).
Prateek Tripathi

Title: Graduate student (PhD)
Place of work or school: South Dakota State University
Research area: Molecular biology of abiotic stress
Member since: 2009

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

I would tell my friends who haven’t joined ASPB that they are really missing an opportunity to explore a whole new world of plant biology. After joining ASPB, they will have access to its prestigious publications, *The Plant Cell* and *Plant Physiology*; be able to attend the annual Plant Biology meetings at reduced rates; and open new horizons of better networking.

I would like to emphasize the notion of better networking because I believe the sooner you acquire this skill, the sooner you will find yourself getting acquainted in this competitive world. Better networking not only helps you acquire the necessary answers related to science you are involved in, but also teaches you how to develop a team and determine what role you are going to serve in a team with the ensuing responsibilities.

Annual Plant Biology meetings are not just meant for our seniors, but in fact, they are designed and geared toward the student perspective. The annual meeting will give you a chance to learn how your cohorts are utilizing various directional approaches to answer different questions or perhaps even the same question you want to answer. Also, the different workshops organized during the meeting (such as the career workshops) can help you find the “real-world” advice you need. Having a discussion with someone whose work you have long admired not only boosts your morale and enthusiasm to continue in the field, but also encourages you to make your research more remarkable. There is just so much waiting for you when you join ASPB.

Was someone instrumental in getting you to join ASPB?

My adviser, Dr. Paul Rushton, was the person who discussed his personal experience with ASPB and encouraged me to join. He said to me many times, “After all my years of experience in science, it’s really worth it to join ASPB,” and I finally did. Now, I know how right he was. After becoming an ASPB graduate student ambassador, I am honestly feeling happier and more confident.

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

Yes, absolutely. ASPB played a huge role in shaping my present career. After finishing my master's in biotechnology, I started looking for positions to pursue my doctorate in America and Europe. My search started with ASPB. In the end, I received the project I wanted, which had been advertised in the ASPB Job Bank. The complete description of the project as advertised by my adviser not only saved me time by helping me find a PhD position, but also gave me an opportunity to make up my mind as to what I wanted to do for my doctoral work. Being a PhD student, I would say that identifying a project you are interested in will better prepare you for the bench and help you finish in time with better results and publications.

ASPB functions such as the annual meeting have allowed me to present my work and helped me gain more confidence. Such functions also gave me an opportunity to take a lead in setting an industrial collaboration for my lab. It makes me feel so proud that I got to do something instrumental for my lab and group. That’s why I mentioned better networking as a key asset of ASPB membership. The questions asked and the suggestions offered during my presentation helped me explore the subject in more detail, gave me a new approach to answer my research question, and also enhanced my public speaking skills. ASPB networking and presentation opportunities have definitely helped me with my career—and likely will continue to do so.

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

Whenever this question is asked, I can think of only one answer: my parents. My biggest asset is having them in my life. My father is a professor, which I think helped me get accustomed to the field of science; in fact, my passion for science seems to be innate in me. My mom has been a real muse to me for being patient and perseverant. No matter what situation, happy or sad, those two are always there for me. Their admiration and desire for me to be successful inspires me a lot. ■
Policy Update
BY KATHY R. MUNKVOLD, PhD
ASPB Associate Director of Public Affairs, kmunkvold@aspb.org

The fiscal year (FY) 2013 appropriations process is in full swing in Congress, and although some research programs are facing budgetary setbacks, it is important to note that research is not the main target in deficit reduction. Due to the political and fiscal environment, however, flat research budgets should be considered a “win.”

In mid-June, funding levels for plant biology research in the FY2013 budget bills, although generally positive, were looking like a bit of a mixed bag. The NSF would fare well overall, especially its Research and Related Activities (R&RA) account, and the USDA’s Agriculture and Food Research Initiative (AFRI) would see a larger increase than most other USDA programs in both the Senate and House appropriations bills (up 13% in the Senate and 5% in the House from FY2012). Meanwhile, USDA’s Agricultural Research Service (ARS) would face a cut of 2% in the House and 1% in the Senate. The U.S. Department of Energy’s (DOE’s) Office of Science Biological and Environmental Research (BER), Advanced Research Projects Agency–Energy (ARPA-E), and Energy Efficiency and Renewable Energy (EERE) programs all would receive cuts in the House—some of which would be major. But these same DOE programs would receive small increases in the Senate. This also would be the case for USDA’s National Institute of Food and Agriculture (NIFA), in which AFRI is housed, which would see a decrease of 2% in the House and an increase of 3% in the Senate.

The chart below contains a complete breakdown of the FY2013 appropriations bills as of mid-June. Although the appropriations process proceeded into the summer, Congress is expected to delay passage of many of the funding bills, if not all of them, until after the November elections.

Senate Agriculture Committee Releases 2012 Farm Bill
On April 26, the Senate Committee on Agriculture, Nutrition, and Forestry approved legislation that, if enacted into law, would result in a far-reaching reorganization of programs supporting U.S. agriculture. The bill, S. 3240, the Agriculture Reform, Food, and Jobs Act of 2012 (also known as the Farm Bill), would dramatically restructure farm income support and crop insurance programs as well as eliminate, consolidate, and streamline existing programs for conservation, rural development, trade, nutrition, energy, research and extension, forestry, and related programs for the five-year period through FY2017. Meanwhile, the House Agriculture Committee

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FY2013 Appropriations Bills (in millions)

<table>
<thead>
<tr>
<th>Department/Agency</th>
<th>Program</th>
<th>FY2012 Enacted</th>
<th>FY2013 Senate Mark</th>
<th>Senate % Change from FY2012</th>
<th>FY2013 House Mark</th>
<th>House % Change from FY2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOE</td>
<td>Office of Science</td>
<td>4,874</td>
<td>4,909</td>
<td>1.8%</td>
<td>4,825</td>
<td>(1.0%)</td>
</tr>
<tr>
<td>DOE</td>
<td>BER</td>
<td>612</td>
<td>625</td>
<td>2.2%</td>
<td>542</td>
<td>(11.4%)</td>
</tr>
<tr>
<td>DOE</td>
<td>ARPA-E</td>
<td>275</td>
<td>312</td>
<td>13.5%</td>
<td>200</td>
<td>(27.3%)</td>
</tr>
<tr>
<td>DOE</td>
<td>EERE</td>
<td>1,825</td>
<td>1,986</td>
<td>8.8%</td>
<td>1,451</td>
<td>(20.5%)</td>
</tr>
<tr>
<td>NSF</td>
<td>Total</td>
<td>7,033</td>
<td>7,273</td>
<td>3.4%</td>
<td>7,333</td>
<td>4.3%</td>
</tr>
<tr>
<td>NSF</td>
<td>R&amp;RA</td>
<td>5,719</td>
<td>5,883</td>
<td>2.9%</td>
<td>5,942</td>
<td>3.9%</td>
</tr>
<tr>
<td>USDA</td>
<td>NIFA</td>
<td>1,202</td>
<td>1,239</td>
<td>3.1%</td>
<td>1,175</td>
<td>(2.3%)</td>
</tr>
<tr>
<td>USDA</td>
<td>ARS</td>
<td>1,094</td>
<td>1,101</td>
<td>0.7%</td>
<td>1,073</td>
<td>(1.9%)</td>
</tr>
<tr>
<td>USDA</td>
<td>AFRI</td>
<td>264.5</td>
<td>298</td>
<td>12.7%</td>
<td>276.5</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

All amounts expressed in U.S. dollars in millions; “approved by the full House of Representatives; parentheses indicate a decrease in budget percentage.
has concluded hearings on the Farm Bill and anticipates preparing its own bill later this summer.

For USDA research and extension, the Senate bill would largely extend current programs, including authorization for intramural research by ARS through FY2017. The Senate bill also would reauthorize NIFA through FY2017 and extend the authorization for NIFA's extramural competitive grants program, AFRI, at the same $700 million annual level as the 2008 Farm Bill (AFRI is currently funded at $264.5 million in FY2012). In addition, the bill would reauthorize funding for the Extension Service.

The Senate version of the Farm Bill has no provisions affecting the current formula grant programs for land grant institutions. Formula programs authorized under the Hatch and Smith-Lever Acts have open-ended authorizations for appropriations at “such sums as may be necessary.” Additionally, the Senate bill does not address the indirect cost rate as the 2008 Farm Bill did. Thus, under the proposed Senate bill, the indirect cost rate remains at the current level of 30% established in the FY2012 Agriculture Appropriations bill. The 2008 Farm Bill increased the indirect cost rate from 19% to 22%.

The bill would establish a significant new research initiative in the creation of a non-profit Foundation for Food and Agriculture Research, which would promote public-private partnerships to leverage additional funding for agriculture research. The Senate bill includes mandatory funding of $100 million toward this effort, which must be matched by nonfederal funding through the foundation.

The Senate Farm Bill would extend existing energy programs affecting rural areas, including the Biomass Research and Development Initiative (BRDI), which would be authorized at $30 million annually. The most significant amendment adopted during the committee consideration of the bill would provide $800 million in mandatory spending to continue existing energy programs. Of this amount, $26 million in mandatory funding is provided each year through FY2017 for BRDI.


**Personnel Changes Rock U.S. Science Agencies**

DOE, the National Institutes of Health (NIH), and the White House Office of Science and Technology Policy (OSTP) each recently experienced resignations or withdrawals of staff in top positions. Arun Majumdar, the first director of DOE’s ARPA-E, left his position in June, reportedly to spend more time with his family in California. Majumdar was nominated by President Barack Obama to fill the position of undersecretary of energy in late 2011, but he was never confirmed by the Senate. Majumdar’s resignation leaves the DOE with three vacant top positions to fill: director of ARPA-E, undersecretary of energy, and undersecretary for science. The latter position was previously filled by Steven Koonin, who stepped down in November 2011.

Just one week before Chris Kaiser was slated to begin his post as director of the National Institute for General Medical Sciences (NIGMS), NIH lost its nominee for personal reasons. NIGMS funds the majority of plant biology research supported by NIH. Until another candidate is in place, Judith Greenberg, current acting director, will remain in the position.

In June, Carl Wieman, Nobel Prize–winning physicist and STEM (science, technology, engineering, and mathematics) education advocate, announced that he is leaving his position as associate director for science at OSTP for personal reasons. Shortly after his departure, it was unclear whether the White House would fill his position before the November elections.

In contrast to DOE, NIH, and OSTP, USDA gained a new director of NIFA. Sonny Ramaswamy, former dean of the College of Agricultural Sciences at Oregon State University, was sworn in as director of NIFA on May 9, filling the position left vacant by ASPB member Roger Beachy in Spring 2011.

**ASPB Signs onto Advocacy Letters**

ASPB recently joined forces with various scientific organizations by signing onto three letters of advocacy. In May, ASPB joined 50 additional scientific professional societies as a signatory on a letter to members of the U.S. House of Representative’s Committee on Agriculture in June. The letter urged the committee to include language for the formation of a foundation supporting public-private partnerships to fund food and agriculture research in the 2012 Farm Bill, similar to authorizing language that is included in the Senate version of the bill. The letter and list of signatories is located at http://bit.ly/Kz8nJT.
OSTP Releases National Bioeconomy Blueprint

On April 26, the White House OSTP released its National Bioeconomy Blueprint. In attendance at the exclusive rollout event, featuring OSTP Director John Holdren; U.S. Department of Health and Human Services Secretary Kathleen Sebelius; and USDA Secretary Tom Vilsack, was ASPB Past President Nick Carpita. The administration first announced it would be creating a Bioeconomy Blueprint in August 2011 and called for stakeholder input on five topic areas related to advancing the bioeconomy, including research, technology transfer, regulatory barriers, workforce development, and public–private partnerships, to which ASPB submitted a response (see http://bit.ly/t4w7I3). The blueprint reflects the administration's focus on commercialization and more applied research to make impacts in grand societal challenges.

Specifically, the blueprint represents the administration's efforts to harness the nation's biological sciences, including research, technology transfer, regulatory barriers, workforce development, and public–private partnerships, to which ASPB submitted a response (see http://bit.ly/t4w7I3). The blueprint reflects the administration's focus on commercialization and more applied research to make impacts in grand societal challenges.

The blueprint lays out five strategic objectives to bolster a national bioeconomy with the ability to generate economic growth while addressing societal needs. These objectives align with the topic areas included in last fall's call for stakeholder input and include the following:

1. “Support R&D investments that will provide the foundation for the future U.S. bioeconomy.
2. Facilitate the transition of bioinventions from research lab to market, including an increased focus on translational and regulatory sciences.
3. Develop and reform regulations to reduce barriers, increase the speed and predictability of regulatory processes, and reduce costs while protecting human and environmental health.
4. Update training programs and align academic institution incentives with student training for national workforce needs.
5. Identify and support opportunities for the development of public–private partnerships and precompetitive collaborations—where competitors pool resources, knowledge, and expertise to learn from successes and failures.”

Although the blueprint highlights the progress being made in these areas, it also calls upon federal agencies to accelerate their efforts to harness the biological sciences. It outlines trends in the fields of health, agriculture, energy, and the environment as indicators of how the bioeconomy is advancing. According to the blueprint, the future of the nation's bioeconomy is dependent on the expansion of emerging technologies, including synthetic biology, proteomics, and bioinformatics. The administration cites coordinated strategic programs and targeted investments as the way to accelerate these types of discoveries and innovations.

The blueprint also underscores the importance of academic institutions in training the future bioeconomy workforce. It states that universities should focus on boosting entrepreneurial activities; align academic incentives with training for future workforce needs; continue to stress the importance of STEM education at all levels; and strengthen relationships with the federal government, nonprofits, and industry to leverage existing knowledge and resources.


This column provides just a small sample of the content from ASPB public affairs, including material provided by ASPB’s government relations consultants, Lewis-Burke Associates, LLC. Also be sure to check out our blogs: Plant Biology Policy, Funding Opportunities, and Plants in the News. Please visit http://www.aspb.org/publicaffairs for the most up-to-date news.
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Turfgrass
Juniper

Lichens & Bryophytes
Various Aquatic Plants

A variety of Algae on Rocks
Conifers

Pineapple
Arabidopsis
Agave
Discipline-based education research (DBER) has generated insights that could help improve undergraduate education in science and engineering, but these findings have not yet prompted widespread changes in teaching practice, says a new report (http://www.nap.edu/catalog.php?record_id=13362) from the National Research Council. According to the report, science and engineering faculty, institutions, disciplinary societies, and professional societies should all support high-quality DBER and the adoption of the evidence-based teaching strategies that have emerged from it.

DBER is a collection of related research fields that investigate how students learn in particular scientific disciplines and identify ways to improve instruction. This research is emerging in many scientific disciplines, including physics, chemistry, biology, the geosciences, and astronomy, as well as in engineering. A DBER scholar in physics, for example, might investigate how students learn concepts such as force or acceleration and try to identify effective ways for instructors to teach these concepts.

Scholars in all DBER fields share the goal of improving teaching and learning by using findings from empirical research. Although they have made inroads in terms of establishing their fields, the report says that these scholars still face challenges in identifying pathways for training and professional recognition. And findings from DBER have not yet led to widespread change in the teaching of undergraduate science and engineering.

Notable research findings from DBER on undergraduate teaching and learning include the following:

- **Student-centered learning strategies can enhance learning more than traditional lectures.** Examples of effective, research-based approaches are making lectures more interactive, having students work in groups, and incorporating authentic problems and activities.

- **Students have incorrect understandings about fundamental concepts**—particularly phenomena that are not directly observable, such as those that involve very large or very small scales of time and space. For example, students often have difficulty understanding processes that involve deep time, such as Earth’s history or natural selection, and many learning challenges in chemistry result from students’ difficulties in comprehending that matter is

The DBER report calls on professional societies to contribute to the advancement of robust research in DBER and support faculty in implementing research-based approaches to teaching and learning. ASPB has played and can continue to play an important role in supporting the advancement and implementation of DBER findings.

A range of well-implemented, research-based approaches to teaching that actively engage students in their own learning are more effective than traditional lecturing. But clear evidence of effectiveness has yet to prompt widespread changes in teaching practices among science and engineering faculty.

There’s no silver bullet to move from the evidence to the implementation of effective teaching practices. Departments, institutions, professional societies, funding agencies, and faculty all have a role to play in transforming undergraduate science and engineering teaching.

 Strategies are needed to translate the findings of DBER and related research into practice. There are a number of barriers to overcome, including the faculty reward system, the relative valuing of teaching and research, support for faculty interested in learning how to use research-based practices, and workload concerns.

DBER requires deep disciplinary expertise and an understanding of learning and teaching to address the challenges of changing students’ incorrect ideas and beliefs about fundamental concepts and to develop strategies that help students become more expert-like problem solvers.

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• Students are challenged by important aspects of the domain that can seem easy or obvious to experts. For instance, in problem solving, students tend to focus on the superficial aspects of a problem rather than its deep structure. Students in all disciplines also have trouble understanding representations like graphs, models, and simulations. These challenges pose serious impediments to learning in science and engineering, especially if instructors are not aware of them. Several strategies appear to improve problem-solving skills, such as providing support and prompts, known as “scaffolding,” as students work their way through problems.

Institutions, disciplinary societies, and professional societies should support faculty efforts to use evidence-based teaching strategies in their classrooms. In addition, they should work together to prepare future faculty who understand research findings on learning and teaching and who value effective teaching as part of their career aspirations. And they should support venues for DBER scholars to share their research findings at meetings and in high-quality journals.

Future directions for DBER investigations should include research that explores similarities and differences in learning among various student populations, longitudinal studies that can shed light on how students acquire and retain understanding (or misunderstanding) of concepts, studies that investigate student outcomes other than test scores, and studies of organizational and behavioral change that could aid the translation of DBER findings into practice.

The study was sponsored by the National Science Foundation. For more information, visit http://national-academies.org. Prepublication copies of Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering (http://tinyurl.com/7qjxg3q) are available from The National Academies Press at 202-334-3313 or 1-800-624-6242 or on the Internet at http://www.nap.edu.

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**ASPB Links to DBER—Past, Present, and Future**

**SRO for NSF @ PB07!**
Inaugural Planning Session for Vision & Change for Undergraduate Education
http://newsletter.aspb.org/2007/septoct07.pdf#page=54

**Fostering Change in Undergraduate Biology Education—What Can ASPB Do?**
http://newsletter.aspb.org/2008/julaug08.pdf#page=38

**Changing Practice to Meet Vision: A Call to Action**
“The Changing Nature of Biology”

**Vision & Change in Undergraduate Biology 2011 Final Report**
http://visionandchange.org/finalreport

**ASPB Catalyzes Implementation of Vision & Change in Undergraduate Biology Education**

**SABER at the Ready!**
“Society for the Advancement of Biology Education Research Prepares to Lead the Charge”
http://newsletter.aspb.org/2012/janfeb12.pdf#page=25

**The ASPB Vision & Change for Undergraduate Biology Blog**
http://my.aspb.org/members/blogs.asp?id=72494%20

June 2012: ASPB working group drafts core concepts in undergraduate plant science education.

Teach with a Story (on page 20 of this issue)
USA Science & Engineering Festival 2012
ASPB Shares Plant Biology Love at “the Woodstock of Science”

KATIE ENGEN, MEd
ASPB Education Coordinator, katie@aspb.org

It was a three-day science and engineering love fest at the Walter E. Washington Convention Center in Washington, D.C., April 27–29. The expo’s science blog (http://scienceblogs.com/usasciencefestival) captures some of the energy with various videos (from sponsor Engineering.com) that recap the first day and offer insight into science and public education from Bill Nye the Science Guy, Dr. Mayim Bialik (Big Bang Theory), the Myth Busters, and other attention-getting scientists and science educators.

The vast event hall was so packed with 150,000-plus energetic STEM explorers and more than 3,000 hands-on science and engineering activities that at times it actually was hard to find an F-16 fighter jet, a giant dinosaur museum on wheels, and an entire team of STEM cheerleaders. Yet plenty of people found the ASPB booth!

On Sneak Peek Friday, ASPB volunteers and staff kept pace with youngsters and teachers invited from local and regional schools who were eager to make garden cup necklaces, view seeds and plantlets through a microscope, and talk about careers in plant biology (http://www.usasciencefestival.org/2012festival/schoolprograms/stem-advice-corner). On Saturday and Sunday, families of all sizes and career-oriented young adults flooded the hall for a weekend full of mentally engaging mania. All told, ASPB sent close to 2,000 STEM-career seekers home with growing plants to care for and visions of plant biology’s impact on food, fuel, and fibers dancing in their heads.

A plant fan compares seeds to plantlets.
Teach with a Story: Using Case Studies to Help Students Learn Science

BY PAULA P. LEMONS
University of Georgia, Plant Biology

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ase study teaching uses real-world situations to hook students into learning science content and developing thinking skills. For example, I may tell students about Patrick, a seemingly normal teenager whose hand started twitching at dinner one evening and who ended up paralyzed five months later (Knabb, 2010). I help students discover that Patrick suffered from pyruvate dehydrogenase complex disease, an inherited disease that prevents the conversion of pyruvate to acetyl-CoA in glucose metabolism. After being introduced to Patrick, students learn about enzyme-catalyzed reactions, metabolic pathways, and glucose metabolism. By the end of the case, students can explain the biological basis for Patrick’s paralysis.

Case study teaching can be used in almost any classroom setting (Herreid, 1994, 1998, 2004, 2007) and can be implemented in multiple ways depending on the classroom context and instructor preference. The Discussion Method relies on good open-ended questions for students to discuss while the instructor serves as facilitator. The Problem-Based Learning Method involves giving students a real-world challenge in the form of an ill-defined problem. Students then work collaboratively to define the problem, identify the resources they need to address the problem, and come up with a solution to the problem. This approach works well in classes with a small instructor-to-student ratio. The Interrupted Case Method also emphasizes collaborative learning, but the instructor progressively discloses to students (e.g., over one or two class periods) the critical pieces of information they need to solve the case. Recently, case study methods have been expanded to produce “Clicker Cases,” case studies for large class settings that use personal response systems (i.e., “clickers”) to guide and pace student work (Herreid, 2006; Wolter et al., 2011).

Case studies start with a story, and students connect most strongly with stories about people like them, facing challenges they could face. Case studies also depend on complex questions that can only be resolved with discussion, research, additional scientific knowledge, and sometimes even debate. Cases with these characteristics compel students to learn science and provide opportunities for students to integrate multiple sources of information (Lundeberg et al., 1999). Moreover, case study teaching has been shown to improve students’ understanding of ethical issues, interpretation of scientific data, and confidence in understanding science concepts and procedures (Lundeberg et al., 1999). Case study teaching has also been shown to improve student retention (Fasko, 2003) as well as students’ problem-solving skills (Levin, 1997; Fasko, 2003) and abilities to make objective judgments (Dinan and Frydrychowski, 1995). Interestingly, some research has shown that these effects are more pronounced for women undergraduates (Lundeberg et al., 2002).

I teach with case studies for all these reasons, but also because it’s fun. It is exciting to prepare instructional materials when I have an idea for a new case. I am not alone: in a survey of instructors who participated in professional development on case study teaching, 84% report going on to use case studies in their courses (Yadav et al., 2007). If you are interested in teaching with case studies, check out the Case Study Collection at the National Center for Case Study Teaching in Science (http://sciencecases.lib.buffalo.edu/cs). Also, make plans to attend the ASPB Education Committee’s Teaching Using Case Studies workshop at Plant Biology 2012 or the Annual Conference on Case Study Teaching in Science in September (http://sciencecases.lib.buffalo.edu/cs/training/conference).

References


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Fascination of Plants Day at the Glasgow Botanic Gardens

BY MARY WILLIAMS
Features Editor, The Plant Cell, mwilliams@aspb.org

The first international Fascination of Plants Day was recently celebrated around the world by universities, botanic gardens, and other groups. In Glasgow, Scotland, in an event jointly sponsored by the University of Glasgow, nearly 500 school children celebrated the day at the Glasgow Botanic Gardens, with activities ranging from painting with plant pigments to isolating DNA from bananas. Exhibitions included displays about 21st-century plant science, children’s drawings, and photographs of plants in the gardens. The event was held in the beautiful Kibble Palace glasshouse, which dates from the 1870s and houses Scotland’s national collection of tree ferns, many of which have been growing there since the building’s opening. Videos made for the event by the university’s plant science research group can be seen at http://www.youtube.com/user/ThePSRG?feature=watch.

Curator Stephen Herrington helps students make take-away plant propagators.

Louise Bustard, director of education at the Botanic Gardens, uses a cacao pod to explain fascinating facts about seeds.

University of Glasgow students Emanuela Sani and Bobby Bayne (a 2012 ASPB SURF recipient, visiting from the University of North Carolina) demonstrate pigment extraction.
TEACH WITH A STORY  
continued from page 20


The American Society of Plant Biologists invites members to join the 2012–2013 PlantingScience Master Plant Science Team

The Master Plant Science Team is designed to provide compensation for a cohort of 12 graduate students who make a substantial contribution as an online scientist mentor. To support your efforts, there are benefits and support systems.

Members of the Master Plant Science Team receive
- free membership to ASPB for the year commitment
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- PlantingScience T-shirt

Joining the Team involves
- participating in online mentorship training
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- posting to student web pages about three times per week
- providing extra support and facilitating communication for one classroom teacher and his/her teams

“One participating as a mentor with PlantingScience has been A tremendously valuable experience! I feel like I have an opportunity to communicate my life’s passion as a scientist and researcher to students in a medium that makes such communication possible like no other resource I have seen...

How could any scientist not want to do this? Learning from the students and understanding how they approach scientific topics and the scientific method helps me communicate my research to a more general audience. Simply put, PlantingScience makes me a better researcher and teacher.”

—2009–2010 PlantingScience Mentor

One year as a member of the Master Plant Science Team has the potential to positively affect the rest of your professional life and inspire lifelong appreciation for plant science in young learners.

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Please apply by August 31, 2012. For questions, contact the PlantingScience team at psteam@plantingscience.org. ASPB membership is not required. Please pass this information on to others who might be interested.
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