Plant Biology 2010—Getting Ready to Go!

Plant Biology 2010, a joint annual meeting with the Canadian Society of Plant Physiologists–La Société Canadienne de Physiologie Végétale, will be held in one of the most unique and interesting cities in North America: Montréal, Canada.

Montréal has something for everyone, which makes deciding on what to do while visiting quite a challenge. Neighborhoods abound, just waiting to be explored. The streets surrounding the headquarters hotel—the Hyatt Regency—are full of shops, cafés, and clubs. Just below the hotel, you’ll find access to the more than 18 miles of Montréal’s underground city and metro system.

Old Montréal/Old Port, just around the corner from the Embassy Suites Hotel, gives you the flavor of traditional Montréal with wonderful restaurants, shops, and art galleries lining cobblestone streets. Stroll by the water while enjoying the breeze and some crêpes. Horse-drawn carriages and the Cathedral of Notre Dame are just a short walk from the convention center (Palais des Congrès). The architecture and artwork within the Basilique tell the story of the founding of Montréal. If you have time, visit the incredible foliage within the Biosphere, the modern Olympic stadium, or historic Mount Royal, or grab a one-of-a-kind Montréal soft bagel and some chocolate from the many local chocolatiers.

And there’s so much more! Visit http://www.aspb.org/meetings/pb-2010/Montreal_is.pdf and get to know Montréal—a European experience in North America.

The city is great, and the scientific sessions, workshops, exhibits, and networking opportunities are even better. For more details on the program, please visit our meeting site—http://www.aspb.org/pb2010.

continued on page 9
The ASPB News is delivered online as well as in print. Members will be alerted by e-mail when a new issue is posted. The ASPB News welcomes member feedback. Contact the editor at nancyw@aspb.org.

**CONTENTS**

1. Plant Biology 2010—Getting Ready To Go!
2. President’s Letter
3. People—AAAS 2009 Elected Fellows: Current Members of ASPB
4. Call for Proposals: ASPB Education Foundation—Grant Awards Program
5. Membership Corner
6. ASPB Education Forum
7. Obituary

Deadline for July/August 2010
ASPB News: June 5, 2010

ASPB News is distributed to all ASPB members and is published six times annually, in odd-numbered months. It is edited and prepared by ASPB staff from material provided by ASPB members and other interested parties.

Copy deadline is the 5th day of the preceding even-numbered month (for example, December 5 for January/February publication). Submit copy by e-mail whenever possible; submit all other copy by mail, not by fax.

Contact: Nancy A. Winchester, Editor, ASPB News, 15501 Monona Drive, Rockville, MD 20855-2768 USA; nancyw@aspb.org; 301-296-0934.

© 2010 American Society of Plant Biologists
SAME ANTIBIOTICS • SAME QUALITY • BETTER PRICE
Goldbio.com now offers the same proven, published antibiotics you’re looking for, but at a price the other guys can’t beat. Antibiotics like Carbenicillin, Kanamycin, Phosphinothrycin, Ampicillin, Hygromycin B and many, many more.

discover more.
Voting Is Important, and It Is Easy and Simple

ASPB presidents have, at this time of year, routinely written to members urging them to vote. When I was getting ready to draft this letter for the same purpose, the ASPB staff was kind enough to share with me samples of past letters. They were all well written, and the message was loud and clear. There is nothing I can write that would improve on the literary merit or clarity of those letters. So instead, I want to make this letter something of a pep talk encouraging all ASPB members to do the easy, simple, and obvious thing: VOTE!

ASPB was formed in 1924 as an offshoot of the Botanical Society of America. It was a grass roots effort by a few dozen scientists who were actively involved in some aspect of plant physiology. Almost a century later, ASPB has become a much larger, more diverse, and highly active society with almost 5,000 members from every corner of the world. Yet the original principles of self-governance are still pretty much intact. To ensure that ASPB remains an organization ably serving its membership and actively promoting plant science, participation of our members in nominating and electing our leadership team is absolutely crucial. Not only has the Society tried to raise awareness of the importance of this democratic process, we have also devoted significant effort to make participation in this process easy and simple.

The one–two punch of this process is nomination and voting. The topic of my January/February President’s Letter was “Broadening and Enhancing Participation in the Nominating Process”; I strongly encouraged members to nominate candidates for president-elect, Executive Committee members, and various awards. At the same time, chairs of award committees have worked extra hard to actively solicit nominations from members, and the Society has also streamlined the nomination process, making it much easier for members to nominate. Consequently, I am delighted to report that we have received more than twice the number of nominations than in past years. With the increased participation, the award committees have a larger nomination pool to identify a diverse group of winners who would likely better represent the excellence in our membership.

Besides these awards, the leadership team of ASPB needs to be elected by members via voting. Two candidates each for president-elect and one position on the Executive Committee will be on the ballot this year. One of these two candidates for president received the most nominations from ASPB members at large, and the other was chosen by the Nominating Committee, consisting of the immediate past president, president, and president-elect, usually from the list of other nominees.

The ASPB office has prepared a brochure summarizing academic and service accomplishments for each of these candidates. It is available online at the Society website (www.aspb.org/voting) and is mailed to any member requesting a paper ballot. In addition, candidates for the Corresponding Membership award will be on the ballot. This honor, initially given in 1932, provides life membership and Society publications to distinguished plant biologists from outside the United States. This is an important outreach effort of our Society to network with plant scientists in other regions of the world. Endorsement of these awards by ASPB membership welcomes these distinguished scientists to be a part of our community.

Now is the time for the second act of this one–two punch democratic process, that is, the actual voting. How has our voting record been in the past? Frankly, it does not look very good. According to the record kept in the ASPB office, in the past decade and a half (since 1996), less than half of our members participated in voting, with the voter turnout ranging from 13% to 45%. These numbers did not compare well even with the U.S. major federal elections held in the same period, which ranged from 36% to 57%. In the United States, a common observation has been that as a result of low voter turnout, the president is almost always elected by less than half of the citizens. However, the ASPB record has been even worse because our presidents have always been elected by less than half, and often less than one-third, of our members eligible for voting.

Another revealing observation is that the winning margin of the ASPB president-elect in the past five years ranged from 2% to 42%, which means that fewer than 100 ballots could be the difference separating the two candidates. This is indeed a type of election where we could easily say “Every vote counts” and “Your vote can make a difference.” Suffice it to say, we do need to have a much higher level of participation from our membership in the voting process in order to make it more meaningful. Although the voter turnout has not been satisfactory, we have begun to see a potential upward trend in the past three or four years. This is most likely due to the increasing use of electronic voting at the ASPB website, which is simple and fast, taking no more than a few minutes to accomplish.

People join ASPB for various reasons. I understand that there are a good number of people who sign up with ASPB to enjoy a substantial discount for attending the annual
The 2009 Fellows of AAAS were announced on December 17, 2009, and the awards were presented on February 20, 2010, during the Fellows Forum at the AAAS Annual Meeting in San Diego, Calif. The Fellows were elected this past November in recognition of their overall contributions to science and technology. Each Fellow receives a certificate and a blue and gold rosette as a symbol of his or her distinguished accomplishments. Of the 531 Fellows elected for 2009, 24 current members of ASPB were among those selected by the AAAS Sections on Agriculture, Food, and Renewable Resources; Education; and Biological Sciences. Congratulations to all the honorees!

Section on Agriculture, Food, and Renewable Resources

Joseph Chappell  
*University of Kentucky*  
For contributions ranging from the basic understanding of terpene metabolism in plants to the broader applications of this knowledge to technological advances for the benefit of mankind

Harry J. Klee  
*University of Florida*  
For seminal contributions to understanding factors that control tomato flavor

Robert Bruce Goldberg  
*University of California, Los Angeles*  
For fundamental and seminal contributions to our understanding of seed development, a commitment to and success in undergraduate education, and numerous contributions to biotechnology

Henry T. Nguyen  
*University of Missouri*  
For contributions to plant genetics and genomics, and for national and international recognition of his research leadership in abiotic stress research, especially drought tolerance

Peter K. Hepler  
*University of Massachusetts, Amherst*  
For contributions as one of the most influential plant cell biologists, who continues to achieve breakthroughs that have guided research directions of numerous plant scientists

Peggy Ozias-Akins  
*University of Georgia*  
For distinguished contributions to the field of agricultural biotechnology, particularly in the areas of apomixis research and peanut genetic engineering and molecular breeding

continued on page 6
AAAS Fellows
Section on Agriculture, Food, and Renewable Resources
continued from page 5

Section on Biological Sciences

Anireddy Reddy
Colorado State University
For distinguished contributions to the field of plant biology, particularly for advancing understanding of plant cell biology and service to professional societies

Sarah Assmann
Pennsylvania State University
For distinguished contributions to the field of plant biology as realized through a holistic approach to understanding the response of plant cells to environmental stimuli

Donald P. Weeks
University of Nebraska, Lincoln
For a body of work that includes the development of broadleaf crops, such as soybean and cotton, that are resistant to treatment with the highly effective and environmentally friendly broadleaf herbicide, dicamba, as well as for pioneering work with the model plant cell system *Chlamydomonas reinhardtii*

W. Zacheus Cande
University of California, Berkeley
For contributions toward understanding cell division in eukaryotes

Section on Education

Susan Singer
Carleton College
For lifelong leadership in analysis and synthesis of evidence for use in improving science education at the K–12 and undergraduate levels, and for exemplary teaching

Timothy Close
University of California, Riverside
For exemplary pioneering research and international service and leadership in the field of crop genomics

Darleen A. DeMason
University of California, Riverside
For pioneering research into development of crop plants, including onion, lupin, date palm, maize, and pea, and exemplary leadership in campus administration, including department vice chair, director of the campus honors program, and associate dean in the graduate division
Natalia Doudareva  
*Purdue University*  
For contributions to the understanding of the biochemistry and molecular biology of volatile secondary metabolites and the regulation of their production and emission in plants

Erich Grotewold  
*Ohio State University*  
For distinguished contributions in the field of plant gene expression, particularly in the areas of control of plant metabolism and plant development

Sarah Carter Hake  
*U.S. Department of Agriculture*  
For distinguished contributions to the field of plant biology, particularly for elucidating the mechanisms underlying the vegetative and reproductive development of flowering plants

Joseph Kieber  
*University of North Carolina–Chapel Hill*  
For contributions to plant hormone biology, particularly to his team’s understanding of cytokinin signal transduction and ethylene biosynthesis and signaling

Robert L. Last  
*Michigan State University*  
For distinguished contributions to the field of plant biochemistry, particularly through the development of creative, novel approaches in genetics and genomics

Donald R. Ort  
*University of Illinois, Urbana-Champaign*  
For research accomplishments in the area of photosynthesis, ranging from molecular mechanisms to ecosystems scale responses, and for leadership through service in professional societies

Steve A. Kay  
*University of California, San Diego*  
For studies that impact our understanding of the molecular architecture of circadian clocks in plants, fruit flies, and mammals

Michael Scanlon  
*Cornell University*  
For contributions to the field of plant developmental genetics and genomics in the area of leaf development and shoot meristem function, and for graduate and undergraduate teaching

*continued on page 8*
Jonathan Gressel Wins Israel Prize in Agricultural Research

Professor Jonathan Gressel, of the Department of Plant Sciences of the Weizmann Institute of Science in Israel, has been named the winner of the Israel Prize in Agricultural Research. The Israel Prize is the Israeli government's highest award for scientific achievement. Minister of Education Gideon Saar made the announcement in February, noting that Prof. Gressel, an internationally renowned expert on biotechnology of plants, received the award for his breakthrough studies into the molecular mechanisms that allow the control of parasitic weeds in agriculture, especially Striga in Africa.
Special Airline Discount for 2010
Including a Discount for Your Traveling Companion

Star Alliance® Member Airlines has been appointed as the Official Airline Network for Plant Biology 2010. Visit http://aspb.org/pb-2010/airlines.cfm for exclusive airline discounts for attendees through Star Alliance.

To obtain the Star Alliance Conventions Plus discount, please call the reservation office of a participating Star Alliance Member Airline and quote the following: Convention Code AC13S10.

Registered participants, plus one accompanying person traveling to the event, are automatically granted a discount of up to 20%, depending on fare and class of travel booked.

The participating airlines for this event are Continental Airlines, Air Canada, Asiana Airlines, Air China, LOT Polish Airlines, Austrian Airlines, bmi, Scandinavian Airlines, Spanair, Turkish Airlines, SWISS International Air Lines, TAP Portugal, Lufthansa, Adria Airways, Croatia Airlines, United, THAI, ANA, EgyptAir, and Brussels Airlines. Contact information for all the airlines is available on the Star Alliance website (http://www.staralliance.com/en/business-solutions/conventions-plus/delegates/).

For booking office information, please visit the Star Alliance Delegates website. Don’t forget to enter your convention code!

Where to Stay? So Many Choices!
Plant Biology 2010 will be held at the Palais des Congrès (the convention center). Hotel rooms with special discounted rates have been booked at the Hyatt Regency and the Embassy Suites. There is also special student housing at McGill University, which is a short walk from the center. Breakfast and a nightly reception are included in the Embassy Suites room rate. For more details, please visit http://aspb.org/pb-2010/housing.cfm.

Getting Around Montréal
The average temperature in Montréal in July and August is about 70° F (21° C)—perfect walking weather. But if you want to venture out to Mount Royal or the Latin Quarter, you can consider several options. Montréal is a BIXI city. BIXIs (public bicycles) are available at 300 different locations throughout the city. You can rent a BIXI from the automated racks along street corners. The first 30 minutes of your ride is free anywhere in the city. If you keep your BIXI longer, your credit card will be charged for each subsequent 30-minute period. Once you’re at your destination, just drop your BIXI off at the nearest station.

Metro is also available throughout the city, accessible throughout the 18-mile underground full of shops and food courts. In fact, a metro stop is available within the Palais des Congrès, where Plant Biology 2010 will be held.

Plant Biology 2010 is the ideal venue for great science and great networking with your colleagues from around the world. Make your plans and register today at http://aspb.org/pb-2010/registration.cfm. If you have any questions, please contact us at info@aspb.org.

See you in Montréal!

Passport and Visa Requirements

U.S. RESIDENTS. All U.S. citizens are now required to present a passport when entering Canada by land, sea, or air. Please visit the U.S. State Department website for details (http://travel.state.gov/travel/cis_pa_tw/cis/cis_1082.html).

NON-U.S. RESIDENTS. Visit the Canadian Immigration website (http://www.immigration.ca/) for details on which countries require a tourist visitor visa.
Call for Proposals: Deadline June 4 (midnight ET)

ASPB Education Foundation—Grant Awards Program

In this call for proposals, the ASPB Education Foundation seeks projects that address the aims of the Foundation (see sidebar) and at the same time catalyze new opportunities for ASPB members to educate the public about the importance of plant biology.

Proposals must be submitted to the Foundation between March 15 and June 4. No forms are needed. Send proposals by e-mail to the Education Foundation assistant at info@aspb.org. Include your full name and ASPB membership number in the body of the submitted e-mail. Attach documents in Word (.doc extension) or as PDF files. Proposal reviews will begin after the closing date. Questions? Contact Katie Engen at katie@aspb.org.

Each grant proposal should include

1. Cover Page
   - project title
   - project manager’s name
   - ASPB membership number
   - address, phone, e-mail, and fax
   - coinvestigator name(s)

2. Project Description
   - topic, purpose, and outreach impact
   - five-page limit
   - double-spaced

3. Itemized Budget
   - up to $30,000
   - justification for each component
   - use of resources for promotion, if needed

Quality GAP Proposal Samples are available for review at http://www.aspb.org/education/foundation/gap.cfm.

Project managers from winning GAP 2004–2009 projects can be found in the Winning GAP Projects at http://www.aspb.org/education/foundation/gap.cfm.

Guidelines for the 2010 program

1. The project manager must be a current member of ASPB.
2. Proposals that leverage funds from the Foundation with support from other sources are encouraged, particularly with regard to larger grant requests.
3. No indirect costs (overhead) will be covered by the Foundation for project awards.
4. No language translations, direct publishing, or support of other foundations will be covered.
5. No projects that would more appropriately receive their money from another source, especially when that project serves a limited audience (i.e., one campus), will be covered.
6. The Foundation seeks projects with wide and/or long-term dissemination.
7. ASPB expects to have the right to the use of projects developed with grant funding.
8. Proposals are encouraged from members both within and outside the United States. Projects may serve communities from any country.
9. The total funding will not exceed $30,000, including allocations for promotion or web hosting. Projects may run beyond one year.
10. All recipients agree to advise future applicants who seek their consultation on developing winning proposals.

Awardees will be notified by e-mail and announced at Plant Biology 2010 in Montréal, Canada, July 31–August 4.

ASPB’s Education Foundation seeks proposals from ASPB members to support education and outreach activities that advance knowledge of and appreciation for basic concepts and contributions of plant biology.

In support of the mission of ASPB, the Education Foundation was established in 1995 to provide information and education to increase the public’s knowledge about the role of plants in all areas of life.

The Foundation reaches its goals through programs that

- promote a broad understanding of the importance of plant science in providing an ongoing supply of affordable, high-quality food, fiber, and renewable resources
- provide education on the importance of plants to agriculture, medicine, the environment, and more
- make available accurate information on the latest developments in genetic modification of crops and plant biotechnology
- contribute to the knowledge of plant biology among K–12 schoolchildren through developing educational materials and assisting teacher development
- encourage young scientists to pursue careers in the growing field of plant biology
- increase plant science activities in science museums and discovery centers by developing programs, exhibits, background information, and links to scientists.
Membership Corner

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.

3. What would you tell colleagues to encourage them to join?
ASPB offers access to a network of plant scientists and reputable publications such as The Plant Cell and Plant Physiology, as well as annual international scientific meetings. It also encourages budding scientists through travel grants and fellowships.

4. Have you enhanced your career using ASPB job postings or through networking at an ASPB function?
No, not yet.

5. Have you had any success at finding candidates as a result of a job posting at the meeting or via our online Job Bank?
No, but I am sure the ASPB Job Bank will prove to be a great resource in helping me find candidates for my postings in the near future.

6. Do you read print journals? If so, where do you usually read them?
For me, it seems like electronic versions have taken over. Occasionally, I might read at the library or between experiments, on breaks, or during travel.

7. What do you think is the next “big thing” in plant biology?
Genomics and computational biology.

8. What person, living or deceased, do you most admire?
I admire my dad, D. P. Singh, the most. He has been my role model. Today, I am successful because of his training, love, care, and continued motivation.

9. What are you reading these days?
As a reviewer, I am reading a lot of manuscripts. As a researcher, I have little time left after reading about biofuels.

10. What are your hobbies?
I enjoy traveling, photography, teaching, and research, although computers are my obsession.

11. What is your most treasured possession?
My most treasured possession would be the love of my exceptionally unique and wonderful wife, Archana, and my dear son, Harsh.

12. What do you still have left to learn?
If I count, there will be a long list. The learning process never ends. It’s an ongoing process, although I would very much like to contribute a landmark event to the field of plant biology. In addition, I wish I could learn Spanish and more dance routines.

Name: Hari Pratap Singh
Title: Research Professional
Place of Work or School: Fort Valley State University, Fort Valley, Ga.
Research Area: Biotechnology, Genomics, and Environmental Stress Physiology
Member since: 2004

1. Why has being a member of ASPB been important to you?
It has really helped me be a part of a wide network of scientists and researchers across the disciplines in plant biology. ASPB is a unique resource portal, where information is made available at the simple click of the mouse for everybody, from a high school student to an established scientist, researcher, or educator.

2. Was someone instrumental in getting you to join ASPB?
Professor Brija Bhoosan Singh, F.N.A.S.

Plant Scientists Among Victims of Huntsville Shooting

Two of the people killed in the February 12 shooting at the University of Alabama, Huntsville, were former ASPB members. Gopi K. Podila, chair of the Department of Biological Sciences, worked in the areas of bioenergy, plant–microbe interactions, plant genetics, and biotechnology. Maria Ragland Davis had a doctorate from North Carolina State University and studied molecular biology and plant genetics. ASPB extends its condolences to the victims’ families and to the faculty, students, and staff of the University of Alabama, Huntsville.
You stake your reputation on the data you publish. Clearly, the instrumentation used to collect that data must be up to speed. Time and time again, scientists throughout the world choose the LI-6400XT Portable Photosynthesis System for high quality data collection - and all that’s riding on it.

- **Unparalleled attention to detail.**
- **Superior analyzer performance - measurement precision and sampling frequency.**
- **LI-COR’s scientists and analysts offer a wealth of knowledge and experience.**
- **Internet connection to instrument enables remote diagnostics by LI-COR staff.**
- **Continual innovation of hardware, software, chambers and accessories.**

Proven performance, credible data, and LI-COR’s dedicated support staff – all reasons why the LI-6400/6400XT is the most referenced photosynthesis system in scientific publications.

To learn more about the LI-6400XT System, go to: [www.licor.com/6400XT](http://www.licor.com/6400XT)
ASPB Partners with the 2010 USA Science & Engineering Festival

The USA Science & Engineering Festival (http://www.usasciencefestival.org) is coming to Washington, D.C., this fall. An introduction from the festival's website states:

The Inaugural USA Science & Engineering Festival will be the country's first national science festival. The festival promises to be the ultimate multi-cultural, multi-generational, and multi-disciplinary celebration of science in the United States. The culmination of the festival will be a two-day expo in the nation's capital that will give over 500 science and engineering organizations from all over the United States the opportunity to present themselves with a hands-on, fun science activity to inspire the next generation of scientists and engineers. This event is free of charge—no tickets required.

ASPB has signed on as an official partner of the festival. Official partners are active and well-respected members of the scientific community interested in supporting this grassroots event by spreading the word, as well as providing venues, content, media services, and financial or in-kind contributions.

As part of the festival, ASPB will host an outreach booth during the October 23–24 expo on the National Mall. The Society's Education Committee is spearheading the endeavor, with the Executive Committee providing resources and expert consultation. The ASPB Foundation Board has several connections to the U.S. Botanic Garden, which is located on the National Mall. Plans are being made for collaboration between ASPB and the U.S. Botanic Garden during the event.

The official program blurb describing ASPB’s expo booth reads:

Sprouting Off!—Plant Science with the American Society of Plant Biologists
Be a genomics explorer or a plant detective. Learn the power of fertile questions and well-rooted thinking. Harvest some resources to share in your own backyard.

Festival: October 10–24
Expo on the National Mall: October 23–24

Dig in to a bumper crop of great ideas like biotechnology and biofuels. Or just dance with plants—Macarena-style or nice and sLow.

Expo organizers Larry Bock and Ruth Kiefer anticipate that 75,000 people will visit the National Mall over the two-day expo. They look forward to participants exploring all facets of science and engineering through the hundreds of fun, hands-on activities exhibitors are bringing to the mall. Booth exhibitors are expected to provide “Ah-ha! moment” activities appealing to a wide array of ages and interests. Exhibitors are advised to “go green” and limit paper handouts or other giveaways only to those with lasting use. To that end, the Education Committee will streamline ASPB’s audio, video, and inquiry-based learning resources to present at the expo.

ASPB members interested in volunteering at the booth for shifts covering 10:00 a.m. to 5:30 p.m. on October 23–24 can contact katie@aspb.org. For members too far away to make it to the National Mall in October, it is possible to develop sanctioned satellite events featuring plant biology. These events can occur any time during the October 10–24 festival time frame. To get satellite event planning information, visit http://usa sciencefestival.org/index.php?option=com_content&view=article&id=73&Itemid=76. Contact katie@aspb.org to explore how the Society can help you with your plans. It’s worth noting that the organization with the most referrals to the festival website, as determined by Google Analytics on October 22, 2010, will be awarded a $500 prize to be given to the STEM education organization of its choice. The prize will be presented during the expo on the National Mall.

Festival organizers and ASPB hope everyone will help spread the good news about this event. So please do! Announce it in class; send an e-mail to colleagues; and chat about it at family, community, and social events. If you use Twitter, please tweet about your participation in the festival expo or related satellite event. The hash tag is #scifest. A suggested tweet to start: I am excited to participate in the first USA Science & Engineering Festival—more at usasciencefestival.org or @usasciencefest. If you have a Facebook page, please invite your fans to join the USA Science & Engineering Festival Facebook Group (http://www.facebook.com/group.php?gid=46922645272&ref=ts) and tell them about your participation in the festival. If you would like to link this event to your own web page or department calendar, please visit http://www.usasciencefestival.org under “2010 Festival” ⇒ "Resources" for various logo formats you can post.

The festival will be a great opportunity for anyone with a curious mind eager to explore hundreds of free, hands-on science and engineering activities from over 500 of the nation’s leading science and engineering organizations. Look for updates on the ASPB website, in the Member Chatter, and in the ASPB News about ongoing opportunities to become an active participant.

Katie Engen
katie@aspb.org
PlantingScience.org—Grow with Us

The success of the PlantingScience.org program, a science discovery and inquiry program for level 7–14 students (middle school through undergraduate) and their teachers, can be measured by the numbers. In the fall 2009 semester, 338 student teams with about four students per team from 18 states participated. The program matches up professional scientist mentors with student teams and their teachers, and the three cohorts interact online through a blog-like interface. Some of the mentors are graduate student "Master Plant Scientists," who are cosponsored by ASPB and the Botanical Society of America, which directs the PlantingScience.org program. These graduate student mentors work with the middle and high school students and other mentors to keep the online interaction timely and lively. They also receive membership benefits from the society that sponsors them.

The current modules for the program are the "Wonder of Seeds," which provides guidance for students and teachers into how to conduct inquiry into seed germination and growth, and "The Power of Sunlight," which focuses on photosynthesis in leaf disks. New modules being field-tested (primary science author in parentheses) are

- "Corn Competition," which encourages students to explore ways to grow the largest corn plant (Gordon Uno)
- "Pollen: Where Does It Come From? Where Is It Going?" (Beverly Brown)
- "Genetics and Evolution in Rapid Cycling Brassica rapa" (Paul Williams)
- "Genetics and the Environment in Arabidopsis thaliana" (Lawrence Griffi ng)

Modules in initial testing include

- "Celery: Cell Structure and Function in Response to the Environment" (Marshall Sundberg)
- "C-Ferns: Reproduction and Life Cycles of Ferns" (Renee Lopez-Smith)

A goal of the modules is to develop them in a way so that plant scientists from a wide spectrum of disciplines and career stages can reasonably reach out to a broad audience, providing an avenue for broadening the impact of their own research. They use their expertise in plants and scientific research to "encouragingly guide student research teams as they design and carry out plant investigations." The topics are being chosen so that students can relate their research to that of the scientists and vice versa. For many of us, this kind of mentoring did not happen until graduate school. We would like to open up that kind of mentoring about scientific discovery so that students at much earlier levels can enjoy the feeling that not all is known. Unlike teachers, who have a mandate for success in the classroom, scientists, like the students they are mentoring, have a mandate to learn from both successes and failures in the lab. Mentoring positive learning outcomes from these lab experiences virtually, via the web, places the school student at the same lab bench as the science mentor.

In-the-trenches testing of the modules ramps up with presentation of the theme at a PlantingScience.org Summer Institute for teachers, cosponsored by the National Science Foundation (Grant No. DRL-0733280), Texas A&M University, and the Botanical Society of America. Here, teachers and the module developers collaborate to see how inquiry can be combined with teaching standards and teaching outcomes. In addition to the primary science author of the module, the program’s director, Claire Hemingway, and an excellent staff of advisers to PlantingScience.org work together to generate separate sets of background and inquiry materials for teachers, students, and mentors. An important part of the program is its continuing ongoing assessment and education research conducted by Carol Stuessy-Dickson at Texas A&M University. The modules are extensively field-tested with master teachers before being released. Many field-testers (usually postdocs or grad students) are recruited to work through the modules without a classroom.

The next round of PlantingScience.org programs in the classroom began on February 15 and will continue through April 30. Student investigations based on the modules usually run about two weeks, and mentors must be able to respond to student questions and experiments in a timely manner, usually every day (averaging one-half to one hour per day). Over the past winter break, more than 100 new mentors came online. The next PlantingScience.org Summer Institute is June 21–29, and teachers can apply online by April 9. Look for the Summer Institute for Teachers application links, get further program information, or survey the plant science work being done by students across the nation at www.plantingscience.org.

L. R. Griffi ng
Texas A&M University
Framing Controversies: Strategies for Finding Common Ground in the Science Classroom

Classrooms, unlike the working environments of practicing scientists, represent the intersection of science and society. Teachers must, therefore, plan with, around, or through the controversy that will potentially surface in the classroom. (1)

Although many may argue that biological topics such as evolution, climate change, and genetically modified organisms are controversial because the public does not understand the underlying science, only small correlations between scientific knowledge and attitudes toward scientific advances have been identified (see references 2–8 for examples). In contrast, research on how people make decisions supports the premise that public attitudes toward science are influenced by the way in which scientific ideas are framed. Grounded in the Nobel Prize-winning work of cognitive psychologists Daniel Kahneman and Amos Tversky (9), “framing” acknowledges that individuals are not able to process all of the available information as they make decisions. Thus, they take “cognitive shortcuts” to sift through the available information and form attitudes about scientific issues by taking up only the information they think they need to reach a decision (10, 11). They use “interpretive schemata,” including moral, religious, cultural, and political perspectives, to decide what information is important and what information can be discarded. The process of framing involves including or excluding keywords, common phrases, images, or information sources, as well as combining, emphasizing, or repeating certain thoughts to make it easier for audiences to fit scientific ideas into their current schemas (12–15).

As an example of framing, consider the issue of genetically modified (GM) foods in the marketplace. Individuals and organizations either in favor of or opposed to GM foods use framing to evoke particular images and values that can influence audience attitudes (Table 1). Describing GM foods as “Frankenfoods” brings to mind images of science out of control, which ultimately generates an unexpected “monster.” In contrast, emphasizing the potential that GM foods hold in mitigating hunger and malnutrition resonates with the values of human health and well-being.

Several arguments have been made within the scientific community against the idea of framing (16). First, some view framing as inappropriate “spin” and suggest that the scientific profession would be undermined by scientists’ failure to remain “objective” and “neutral” in their explanations of scientific ideas to students and the general public. This view ignores the fact that scientists already use framing extensively in their scientific communications, from conference presentations to journal articles to grant proposals. For example, a hypothetical scientist plans to give a seminar about her research on carbon storage in seeds of the model plant Arabidopsis thaliana to an audience of colleagues at the International Conference on Arabidopsis Research. Most likely, she would not provide much background information or rationale for choosing Arabidopsis as a system for study. If she presents the same research at the American Association for the Advancement of Science annual meeting, she may assume that interested biologists with more diverse backgrounds would be present. As a result, she might provide a brief explanation about the choice of Arabidopsis as an organism of study and what is known in the field as it relates to her work. Finally, if she were discussing the same research with a group of university benefactors, she would likely deemphasize the organism and focus more on the importance of understanding carbon storage for producing biofuels. Thus, framing is likely to be a universal feature of communication.

Making science personally meaningful and accessible, as framing does, is the main thrust of a number of research-based pedagogical approaches, including case study, problem-based learning, and place-based learning (for more information, see references 17–19). Instruction that uses framing effectively acknowledges the different worldviews of learners by

1. Recognizing that controversy exists.

Science occurs within and is influenced by its cultural context. In fact, education

<table>
<thead>
<tr>
<th>Frame</th>
<th>Example / Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Make food production more cost-effective by reducing farmers’ use of pesticides, fertilizers, etc.</td>
</tr>
<tr>
<td>Emotional / Fear</td>
<td>“Frankenfoods,” risks of “unknown effects” from consuming “foreign” proteins</td>
</tr>
<tr>
<td>Morality / Ethics</td>
<td>“Playing God”</td>
</tr>
<tr>
<td>Public Accountability / Governance</td>
<td>Labeling would allow consumers to make the decision for themselves; control by big corporations of a few seed stocks; rights of farmers to save seed stocks</td>
</tr>
<tr>
<td>Public Health</td>
<td>Insufficient food for global population; more nutritious (e.g., Golden Rice)</td>
</tr>
</tbody>
</table>
Framing Controversies
continued from page 15

on socioscientific issues is a small but significant subdiscipline within science education that includes the study of learning in the context of social issues, including controversies (see references 20, 21 for examples).

2. Considering the audience. Just as one size does not fit all in communicating about science, different audiences have different values. Culture, economic factors, social and political values, trust, risk perception, and worldviews shape how a scientific message is received by an audience.

3. Building on the research base. It is important not only to respect the roles of religion, culture, politics, and other non-science factors in people’s lives, but also to avoid making assumptions about what an audience values and understands. Recent research is revealing framing strategies that resonate with particular audiences (see references 1, 22, 23 for examples), which can then be used to inform future scientific communication efforts.

4. Characterizing alternative explanations. Framing can be used not only to emphasize particular points, but also to respond to counterarguments. For example, the Frequently Asked Questions section of the National Academy of Sciences publication *Science, Evolution, and Creationism* includes respectful responses to concerns that it is only “fair” to teach evolution and creationism side by side and that evolution is “just a theory” (24, 25).

5. Engaging key stakeholders. One of the most effective frames for addressing evolution as a controversy in the science classroom is discussion of various ways of knowing, with emphasis on what makes scientific epistemologies unique (26, 27). Teachers from disciplines such as history and philosophy or representatives of other worldviews, such as clergy, can be strong allies in helping students distinguish different epistemologies with the aim of making decisions about appropriateness for science classrooms (28).

6. Framing is not just about using examples from daily life, although using such examples can be an element of framing. Rather, framing in the classroom involves identifying the values, beliefs, and worldviews of learners and tailoring instruction to connect with them. Although framing is not likely to convince staunch supporters of particular positions to change their minds, it may reach some of the “wobbly middle” who would otherwise disengage (14).

---

**Acknowledgments**

Thanks to Matthew Nisbet, whose work inspired the Plant Biology 2009 Education Workshop and this article. Thanks also to Sarah (Sally) Assmann, Jeffrey Coker, John Cushman, Jane Ellis, Katie Engen, Larry Griffing, Chad Jordan, and Crispin Taylor for the thought-provoking discussion that spawned this essay, and Jane, Katie, and Jeremy Pritchard for offering ongoing feedback and pointing out additional resources.

**References**


16. Letters to the editor in the 13 August 2007 issue of Science; http://www.sciencemag.org/cgi/content/full/317/5842/1168b, accessed on 2 February 2010.


Plan ahead for these PB2010 program options organized by the ASPB Education Committee:

Education Workshop
(Sunday, August 1, 7:30–9:30 p.m.)
Try hands-on activities and learn strategies to broaden the impact of your research into undergraduate teaching, lab lessons, and public outreach.

Education Minisymposium
A panel of outreach experts will share their successes with teaching plant biology in the context of biodiversity as it relates to sustainability.

Education Booth
Learn about interactive activities for enhancing Criterion 2 and undergraduate education priorities. Multimedia and peer-reviewed resources will be available. Informal sessions on hot topics in outreach will be hosted at the booth throughout exhibit hours.

Education Posters
Check out the collection of clever plant biology teaching ideas presented in the education and outreach posters.

Opti-Sciences, a manufacturer of high precision portable fluorometers, is pleased to announce that it is the Exclusive Distributor and Warrantee Center for ADC products in the US.

PB2010 Education Preview: Great Education and Outreach Ideas in the Great White North, Eh

Option-Sciences
8 Winn Avenue, Hudson, NH 03051 USA
Phone 603-883-4400
Fax: 603-883-4410
Website: www.optisci.com

OS5p Portable Research Fluorometer
Advanced PAR Clip Design
LCpro+ Truly Portable Photosynthesis system
ACE - automatic, long-term CO2 Soil Flux system

Advanced modulated chlorophyll fluorometer
Fast Measurements - Fv/Fm, Yield, ETR, OJIP
Analysis protocols - light curves, quenching relaxation, rapid light curves

The next generation
Light weight - 0.6 lb
The unit will not open at inappropriate times
Can be used with ambient light or internal light sources

High precision
Built in micro-climate control
Total system weight is 11.5 lbs with built-in 16 hour battery
Easily created A/Ci curves and light curves

The next generation
Open and Closed Systems
IRGA analyzer next to sample chamber
Up to 30 systems can be multiplexed
CALL FOR NOMINATIONS

Plant Physiology 25,000th Article Classics Collection

Deadline for Nominations: June 1, 2010
To submit an article, please go to http://submit.plantphysiol.org.

In the fall of 2010, Plant Physiology will publish its 25,000th research article. We are commemorating this event with a special online-only “Classics Collection” highlighting our most influential papers. We are asking you, the plant physiology community, to help by nominating papers for inclusion.

Submit a commentary of up to 500 words to tell the story of the Plant Physiology paper you believe to be highly influential in your discipline. What was discovered? Who were the actors? How and why was the paper influential? Each selected paper will be paired with the commentary written by its nominator and included in the Classics Collection.

To make a nomination, go to http://submit.plantphysiol.org and submit your commentary. Select “Plant Phys Classics (October 2010)” from the Focus Issue dropdown list and be sure to include the full citation (title, year of publication, authors, volume, and page numbers) of the nominated paper at the top of your document. If you are unable to access our online submission system, commentaries can also be emailed to Jon Munn at jmunn@aspb.org.

We know there have been many important articles published in Plant Physiology over its history. To help refresh your memory, we have compiled a list of the 100 most cited articles (http://www.plantphysiol.org/reports/mfc1.dtl) from 1949 to the present, the period for which citation data are available. Note that this list is being provided merely as a starting point for your recollections of past research published in the journal. There is no expectation that all or even most of the selected articles will be on this list.

While we are reflecting on our past, we are also looking forward to the future by making the October issue a special 25,000th Article Celebration Issue. It will include invited articles focusing on the current work and emerging ideas in plant physiology research.

Both special publications will be edited by Don Ort (Editor in Chief), Rick Amasino, and Bonnie Bartel.
New free subscriber feature in *The Plant Cell*

- Customizable “off-the-shelf” modules
- Unrestricted use of materials
- Peer reviewed by leaders in the field
- Updated as new developments arise
- The first six tools are free to all

“Teaching Tools in Plant Biology” is a new online-only feature from *The Plant Cell*. Each month a new set of teaching materials on a different theme—such as Leaf Development or Epigenetics—is added to the journal website. Each Teaching Tool includes a short essay introducing the topic, a PowerPoint lecture with notes, and suggested further readings. Tools are “off-the-shelf” modules but easily customizable by the instructor. They are designed with an audience of upper-level undergraduates in mind, but subsets of slides can be incorporated into lectures designed for introductory biology courses, public lectures, or even graduate-level courses. We are creating most of the artwork ourselves to allow subscribers unrestricted use of the materials.

The materials are peer reviewed by leaders in the field to ensure accuracy, like all the material in *The Plant Cell*. Unlike a conventional teaching textbook, these electronic lectures will be regularly updated as new developments arise. We will also solicit contributions from researchers and teachers that we will format and edit for continuity.

We hope that these resources help plant biologists teach and communicate about plant biology. Look for Teaching Tools at [www.plantcell.org/teachingtools/](http://www.plantcell.org/teachingtools/). The first six tools are free to everyone. Beginning in April 2010, new tools are available only to subscribers to *The Plant Cell*.

This resource is being developed by Mary Williams, PhD, who taught plant biology to undergraduates at Harvey Mudd College. Feedback is always appreciated at mwilliams@aspb.org.

Check Out Teaching Tools at [www.plantcell.org](http://www.plantcell.org)
Sam Aronoff

Samuel Aronoff, a highly respected plant physiologist and celebrated plant biochemist, died February 2, 2010, at his home in Corvallis, Oreg. His wife, Edith Moyer, who was a chemist, died in 1997. Sam was born in New York City on February 27, 1915. His father, Isadore Aronoff, was a tailor, and his mother, Sonia Berchofsky, a housewife. Sam's parents, who were Jewish, had emigrated from Russia. The family moved from New York to California, where Sam graduated from Venice High School at the age of 15. He then enrolled at the University of California at Berkeley (1937–1942) and studied under Gordon McKinney (known for his work on carotenoids, and one of the best chromatographers in the world) and under Melvin Calvin, who later (1937) won a Nobel Prize in chemistry for his work on the pathway of carbon in photosynthesis.

Sam completed his doctoral thesis, The Chemistry of Porphyrins in Relation to Chlorophyll, in physicochemical biology in 1942. His work on photosynthesis and carbon fixation soon followed. During 1942–1943, and then again during 1946–1947, Sam served as a postdoctoral visitor in Melvin’s laboratory. During his work at Berkeley, Sam wrote one of the early detailed papers on “Photochemical Reduction of Chloroplast Grana” (1); it was preceded by a paper in Science (2). Shortly thereafter, Sam wrote a paper with Melvin on “Phosphorus Turnover and Photosynthesis” (3). Here, Sam could not find any correlation between light exposure (in grana from spinach leaf, in tobacco leaves, and in green alga Chlorella vulgaris) and the formation of organic phosphate from radioactive inorganic phosphate, as was then expected from the ideas of F. Lipmann, S. Ruben, R. L. Emerson, and others. However, Sam was careful to point out that their conclusion would be subject to change if only 1%–10% of total organic phosphate was involved, or if light converted one form of organic phosphate to another organic phosphate.

James Al Bassham, then working with Melvin and Andy Benson, remembers Sam for his contributions in growing algae. Al writes: “Sam was there only in about the first year of my joining the lab. Certainly Sam was important in establishing the algae cultures, which were very important to a large part of our subsequent research.” Actually, Sam’s official job was to grow algae! In a recent phone conversation, Andy remembered Sam as a great plant biologist as well as someone with a very good math background. He recalled Sam’s important paper with him on the “Distribution of C14 in Photosynthesizing Barley Seedlings” (4). Sam’s excellent mathematical skills were best demonstrated in a paper called “Catalase: Kinetics of Photooxidation” (5).

Sam taught chemistry at Boston University (1943–1944) to 200–300 students, whom he called an “auditorium of soldiers.” He then did research with Hans Gafton and James Franck at the University of Chicago (1945–1946) before his first tenured faculty position starting in 1948 in the Botany Department of the Iowa State University in Ames. At Ames, he later founded the Department of Biochemistry and made it his home for the next 20 years. His research during the late 1940s and early 1950s included studies on the “Degradation of Glucose-1-C14 and a Possible New Step in the Mechanism of Fermentation” (6), the “Separation of the Ionic Species of Lysine by Means of Partition Chromatography” (7), “A Homogeneous Cell Preparation from Soybean Leaves” (8), and “Carbon Dioxide Fixation by Roots” (9).

Among many other scientists, Leo P. Vernon started his research career in photosynthesis with Sam. In 1948, Leo used carbon-14 to follow the plant sugars formed in the leaf and tracked sucrose as the major sugar being translocated to the roots (10). Sam was a true plant physiologist; one of his early papers dealt with the metabolism of soybean leaves, in which he demonstrated the presence of organic acids produced in short-time photosynthesis (11). Sam’s interest in the role of boron in plants is obvious from a novel paper called “Boron in Plants: A Biochemical Role” (12). Sam was involved in many aspects of Plant Physiology; the journal even included his work “Relative Kinetics of Chlorogenic and Caffeic Acids During the Onset of Boron Deficiency in Sunflower,” published with John Dear (13).

Sam’s 1956 book Techniques of Radio-biochemistry (14) served well in teaching hundreds of graduate students and young researchers during the time I was a graduate student and many years beyond my time. Sam left Ames to become the graduate dean and dean of the faculty of science at Boston College, a Jesuit college, and in 1971 he moved to Simon Fraser University in Vancouver.

continued on page 22
Obituary

Samuel Aronoff continued from page 21

British Columbia, Canada, as professor and the dean of science. He retired there at age 67. He was an outstanding administrator. He organized several conferences and in 1974 coorganized, with Paul Gorham and Jack Dainty, a series of well-known international meetings on *Phloem Translocation* held in Banff, Alberta, Canada.

Sam served several professional organizations, especially the American Society of Plant Physiologists (now ASPB) as secretary (1961–1963), vice president (1963–1964), and finally president (1964–1965). He had hobbies, too: he played games such as soccer, handball, and touch football. I am told that he swam until he was in his 90s.

Sam is survived by his children, Zena Seldon of Kamloops, British Columbia; Elizabeth Aronoff of Corvallis; and Margaret Aronoff of Mission, British Columbia, and five grandchildren.

Govindjee
University of Illinois at Urbana–Champaign

References


ASPB Members Now Eligible for Deep Discount for Faculty of 1000

ASPB members can now benefit from a significantly reduced personal subscription to Faculty of 1000. Faculty of 1000 (http://f1000.com) is a unique online service that helps you stay informed of high-impact articles and access the opinions of global leaders in biology and medicine.

Its distinguished faculty of more than 5,000 of the world’s top researchers and clinicians select, rate, and evaluate the most important and influential articles, presenting a continuously updated, authoritative guide to the biomedical literature that matters.

In 2010 the reduced annual personal subscription is $105 (full annual personal subscription is $350). Please contact F1000 at info@f1000.com directly if you wish to purchase a personal subscription. Please quote the special ASPB member marketing code: F1000ASPB.

This special benefit is available to ASPB members through special arrangement with the F1000 Affiliate Society Program.

22 • ASPB News, Vol. 37, No. 2
The American Society of Plant Biologists has published *The Arabidopsis Book* (TAB) as a free online compendium since 2002. ASPB is providing funds for the production of TAB as a public service.

Founded by Chris Somerville and Elliot Meyerowitz, TAB now has more than 60 chapters online and receives nearly 100,000 full-text downloads every year.

The current editorial board is working hard to continue TAB's ongoing expansion:

- **Rob Last (chair)**
  Michigan State University

- **Caren Chang**
  University of Maryland

- **Georg Jander**
  Boyce Thompson Institute

- **Dan Kliebenstein**
  University of California, Davis

- **Rob McClung**
  Dartmouth College

- **Harvey Millar**
  University of Western Australia

The board is overseeing all new content development as well as updates to existing chapters to keep TAB the most comprehensive and current work on Arabidopsis.

---

**New Chapters!**

- **Flower Development**
  March 23, 2010

- **Photorespiration**
  Christoph Peterhansel, Ina Horst, Markus Niessen, Christian Blume, Rashad Kebeish, Sophia Kürkcuoglu, and Fritz Kreuzaler
  March 23, 2010

- **Jasmonates** (update)
  Iván F. Acosta and Edward E. Farmer
  January 22, 2010

- **Embryogenesis: Pattern Formation from a Single Cell**
  Arnaud Capron, Steven Chatfield, Nicholas Provart, and Thomas Berleth
  November 12, 2009

- **Peroxisome Biogenesis and Function**
  Navneet Kaur, Sigrun Reumann, and Jianping Hu
  September 11, 2009

- **Trehalose Metabolites in Arabidopsis—Elusive, Active and Central**
  Henriëtte Schluetermann and Matthew Paul
  July 14, 2009

---

All chapters are hosted in partnership with BioOne (www.bioone.org) in HTML and PDF formats.

*Photos courtesy of The Arabidopsis Information Resource and the RIKEN Plant Science Center.*
Joint IAPB/SIVB Meeting
June 6-11, 2010
St. Louis, Missouri, U.S.A.

Learn the latest advances in plant and animal biotechnology with informative sessions on fundamental and applied aspects of plant and animal sciences. Topics include:

- climate change and its effects on agriculture
- advances in plant science: tolerance to heat, drought, insects, and diseases
- advances in biofuels and other biorenewables from plants
- state-of-the-art sessions on epigenetics, 3D models, stem cells in in vitro toxicology, and innate immunity
- biosensors, animal-plant interactions, and impact of bioactive molecules on animals
- metabolic engineering of plants/cells for pharmaceuticals and nutriceuticals
- agriculture and biotechnology in developing countries
- biosafety, regulatory structures, and commercialization

Plenary Speakers

Dr. Peter Beyer, University of Freiburg, Germany
Dr. Pascal Braun, Dana Farber Cancer Institute
Dr. Robert Corell, The H. John Heinz III Center for Science, Economics and the Environment
Dr. Richard Flavell, Ceres, Inc.
Dr. Robb Fraley, Monsanto Company
Dr. Jeffrey Gordon, Washington University, St. Louis
Dr. Mark Howden, CSIRO, Australia
Dr. Calestous Juma, Harvard University
Dr. Jay Keasling, UC-Berkeley
Dr. Mary Ann Lila, North Carolina State University
Dr. Steven Pueppke, Michigan State University
Dr. Inder Verma, The Salk Institute
Dr. Roger N. Beachy, Congress Host

REGISTER NOW!
www.IAPB2010.org

“Sustainability through agricultural biotechnology: Food, biomaterials, energy, and environment”