

ASPB News



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

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President's Letter

Presidential Mandates

As I begin my year as president, I hope you are comforted by the knowledge that my predecessors, the membership, and the dedicated professional staff at ASPB headquarters have placed the Society on a solid foundation, a foundation that does not run on creative deficit spending and other unsustainable and reckless mandates. I am looking forward to working with everyone in the coming year to build on the Society's mandates—publishing great plant science, running exciting plant biology meetings, and engaging the public in plant science. The year ahead not only holds great promise for building on our strong foundation, it also presents some interesting challenges.

One of the major functions of our Society is to produce two of the best scientific journals in the field of plant biology. As most of you know, 2005 marks a major change in the leadership of one of our journals, *Plant Physiology*. Natasha Raikhel is poised to turn over the reins of the editorship to Don Ort, University of Illinois, Urbana–Champaign, in the coming year. I would like to personally congratulate Natasha for her success in continuing to raise the status of the journal. I also would like to thank her on behalf of myself and the membership for the seemingly endless energy she put into *Plant Physiology* over the past five years. Through her dedication to improving the journal, Natasha has increased the visibility of the field of plant biology and has contributed to making ASPB the premier Society it is today. Thank you, Natasha!

Over the past few years, the transition to electronic publishing has presented numerous challenges to the



Society. The journal leadership and the publications staff have worked hard to stay ahead of the many issues associated with electronic publishing and have been instrumental in placing our journals in the strongest possible position. By publishing the best cutting-edge papers in plant biology through the best distribution mechanisms available, we will remain at the forefront. As a Society that is deeply involved in and committed to produc-

ing the best journals, we can look forward to many new adventures over the coming years, with our publications program playing a leadership role in guiding the evolution of scientific publishing.

As someone with a strong commitment to plant education outreach, I am also pleased to note that the ASPB Education Foundation has embarked in a new direction for fulfilling its mission through the Grants Award Program it initiated last year. The mission of the Foundation is to increase the public's knowledge about the roles of plants in all areas of life. This undertaking is an important component of the mission of the whole Society and needs broad support from the Society's foundation—its members. As you are renewing your annual membership, I join our Education Foundation chair, Jim Siedow, and our executive director, Crispin Taylor, in asking for your help by making a tax-deductible contribution to the ASPB Education Foundation. Your support is vital to the success of this important mandate.

Roger P. Hangarter
rhangart@indiana.edu



The *ASPB News* is now available 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.

ASPB Officers & Staff

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Deadline for March/April 2005
ASPB News: February 5, 2005

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	Nick Carpita	765-494-4653
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Sectional Representatives		
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Southern	Mel Oliver	806-723-5225
Mid-Atlantic	Heven Sze	301-405-1645
Western	Thea Wilkins	530-752-0614

Executive director	Crispin Taylor, ext. 115	ctaylor@aspb.org
Executive assistant	Donna Gordon, ext. 131	dgordon@aspb.org
Assoc. dir. of finance & administration	Kim Snell, ext. 140	ksnell@aspb.org
Assoc. dir. of meetings, marketing, & membership	Jean Rosenberg, ext. 110	jean@aspb.org
Network administrator	Burton Nicodemus, ext. 146	burton@aspb.org
Webmaster	Wendy Sahli, ext. 123	wendys@aspb.org
Membership and marketing manager	vacant	
Subscription and fulfillment assistant	Suzanne Cholwek, ext. 141	scholwek@aspb.org
Accounts receivable specialist	Stephanie Liu-Kuan, ext. 143	sliu@aspb.org
Staff accountant	Stefanie Shamer, ext. 144	shamer@aspb.org
Administrative assistant	Carolyn Freed, ext. 122	cfreed@aspb.org
Director of public affairs	Brian M. Hyps, ext. 114	bhyps@aspb.org
Education Foundation assistant	Paula Brooks, ext. 116	paula@aspb.org
Director of publications	Nancy A. Winchester, ext. 117	nancyw@aspb.org
Publications assistant	Diane McCauley, ext. 133	diane@aspb.org
Managing editor	John Long, ext. 119	jlong@aspb.org
Science writer, <i>Plant Physiology</i>	Peter Minorsky, 845-878-4570	peminorsky@aspb.org
Production manager, <i>Plant Physiology</i>	Jon Munn, ext. 130	jmunn@aspb.org
Manuscript manager, <i>Plant Physiology</i>	Leslie (Ash) Csikos, ext. 125	lcsikos@aspb.org
News and reviews editor, <i>The Plant Cell</i>	Nancy Eckardt, 970-495-9918	neckardt@aspb.org
Production manager, <i>The Plant Cell</i>	vacant	
Manuscript manager, <i>The Plant Cell</i>	Annette Kessler, ext. 120	akessler@aspb.org

NOTICE: The *ASPB News* no longer carries job ads or meeting announcements. Job ads appear online at www.aspb.org/jobbank. The list is updated every Friday. Meeting notices can be posted at www.aspb.org/meetings.

ASPB News

Headquarters Office
15501 Monona Drive
Rockville, MD 20855-2768 USA
Phone: 301-251-0560
Fax: 301-279-2996

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Contact: Nancy A. Winchester, Editor, *ASPB News*, 15501 Monona Drive, Rockville, MD 20855-2768 USA; nancyw@aspb.org; 301-251-0560, ext. 117.

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Don Ort Named *Plant Physiology* Editor-in-Chief

Professor Donald R. Ort has been appointed the next editor-in-chief of the Society's flagship journal, *Plant Physiology*. Don will succeed Natasha V. Raikhel, whose five-year term as editor-in-chief will end June 30, 2005.



Don is currently professor in the Department of Plant Biology, University of Illinois Urbana-Champaign, where he has worked since 1978. He is also plant physiologist and research leader in the Photosynthesis Research Unit of the USDA/Agricultural Research Service, among numerous other positions. His research interests focus on the effect that specific environmental factors and abiotic stresses have on the photosynthetic performance of crop plants. At present, he is investigating the molecular and biochemical bases of the chilling sensitivity of warm climate crops and is leading a new research theme in the University of Illinois's Institute of Genomic Biology investigating the interactions within agroecosystems instigated by the rapid changes that are occurring in the atmosphere.

Don received his B.S. from Wake Forest University and his Ph.D. from Michigan State University. He has been an associate or monitoring editor of *Plant Physiology* since 1993 and is currently an associate editor of *Photosynthesis Research*. He serves on the editorial board of *Annual Review of Plant Biology* and is a consulting editor for

Advances in Photosynthesis and Respiration.

Don served as ASPB president from 1996 to 1997 and chair of the Board of Trustees from 1999 to 2001. He is currently president of the International Society of Plant Physiology and past president of the International Society for Photosynthesis Research. He is the author or coauthor of well over 100 journal articles and book chapters and is frequently invited to speak at meetings and seminars. His awards include an NIH National Postdoctoral Service Award, the University of Illinois University Scholars Award, and a number of USDA/ARS awards.

Don's vision for *Plant Physiology* is simple: "To be the premier comprehensive plant

biology journal in the world." He looks forward to sustaining and advancing the journal both through continuing the innovation of his predecessors Maarten Chrispeels and Natasha Raikhel and through introducing new ideas, welcoming the best science done across the full breadth of modern plant biology, and helping to ensure that the journal is attentive and responsive to the rapidly changing face of academic publishing. Don credits Natasha for elevating *Plant Physiology* to the journal of choice for laboratories throughout the world to publish their best science. He plans to make *Plant Physiology* even more proactive in illustrating the importance of the science that it publishes through a new front section column that will feature a highly influential paper selected each month from the previous year and track how the research outcome influenced subsequent research by other groups. Don is strongly committed to the view that the credibility and continuing success of *Plant Physiology* are the direct results of an excellent editorial board able to make both fair and difficult decisions that ensure *Plant Physiology* publishes the best and most innovative research across the breadth of plant biology. 

American Society of Plant Biologists

Plant Genetics 2005

October 12–16, 2005

**Snowbird Resort & Conference Center
Snowbird, Utah**

Chair: Rich Jorgensen—University of Arizona

Save this date!

Visit www.aspb.org/meetings/ for more information.



ASPB Officers Assume Posts for 2004–2005

New ASPB officers and committee members assumed their responsibilities October 1.

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Elizabeth Hood (05), *chair*
Mark Brodl (06), *treasurer*
Rebecca Boston (06)
Danny J. Schnell (07)

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Pamela Ronald (06), *chair*
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Mary Williams (06)
Richard Cyr (07)
David Salt (07)
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Carol Reiss, *adjunct member*

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Tuan-Hua David Ho (05)
Norbert Sauer (05)
Youngsook Lee (06)
Maarten Chrispeels (07)
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David Christopher (06)
Rakesh Minocha (06)
Allan Showalter (07)
Heven Sze (07)
Thea Wilkins (07)

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Sarah Hake (08)
Sally MacKenzie (09)

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Thea Wilkins (07), *Western*
Allan Showalter (07), *Midwestern*
Rakesh Minocha (06), *Northeastern*

2004–2005 Awards Committees

Following is a list of the membership of the ASPB awards committees for 2004–2005, as of December 8, as announced by President Roger Hangarter. Members serve for three award cycles unless otherwise noted.

Adolph E. Gude, Jr. Award

Deborah Delmer (06), *chair*
Lloyd Evans (07), *past winner*
Andrew D. Hanson (07)
Louise E. Anderson (08)
Julian I. Schroeder (10)

Charles Albert Shull

Sarah Hake (05), *chair*
Jeffrey Dangel (05)
Jian-Kang Zhu (05), *past winner*
Steven Huber (07)
William J. Lucas (07)

Charles F. Kettering

Gayle Lamppa (06)
Gerald Edwards (08)

Charles Reid Barnes Life Membership

Thomas Buckhout (05)
Joe Cherry (05), *past winner*
Jill Deikman (05)

Corresponding Membership

(four-year terms)
Michael Jackson (05)
Raymond Zielinski (06)
Judy Callis (07)
Heven Sze (07)

Dennis R. Hoagland Award

Peggy G. Lemaux (06), *chair*,
past winner
Thomas D. Sharkey (05)
Donald R. McCarty (06)
Niels C. Nielsen (06)

Early Career Award

Sabeeha Merchant (07), *chair*

Excellence in Teaching Award

Anita S. Klein (06), *chair*
Deborah K. Canington (06)
Donna Fernandez (06)
Susan Singer (07), *past winner*
Sabine Rundle (09)

Martin Gibbs Medal

Mary Lou Guerinot (05)
June B. Nasrallah (05), *past winner*
Ilya Raskin (05)
K. G. Raghothama (07)

Stephen Hales Prize

Natasha Raikhel (05), *past winner*
Maarten J. Chrispeels (06), *chair*
George Schaller (06)

ABSTRACT TOPIC CATEGORIES

Environmental physiology
Global change
Tree biology
Integrative plant physiology
Heavy metals and phytoremediation
Oxidative stress
Salinity
Temperature responses
Water relations
Membrane transport
Mineral nutrition
Photosynthesis (light)
Photosynthesis (carbon)
Long-distance signaling
Hormone synthesis and metabolism
Plant-pest interactions
Plant-pathogen interactions
Plant-symbiont interactions
Cell walls
Organelle biogenesis
Protein targeting and vesicular trafficking
Cell division
Cytoskeleton structure and dynamics
Root biology
Seed biology
Metabolism
Secondary metabolism
Lipids
Growth
Vegetative development
Evolution of development and physiology
Reproductive development
Rhythms
Photomorphogenesis
Tropisms
Intracellular signaling
Cell-to-cell signaling
Mechanisms of gene regulation
Protein modification and turnover
Epigenetics and gene silencing
Genome evolution
Modeling and computational biology
"Omics": technologies and resources
Emerging technologies
Plant biotechnology
Metabolic engineering
Biotech risk assessment
Education and outreach
Late and moved abstracts*

*All abstracts received by April 1, 2005, will be assigned to a thematic poster session, but abstracts received later than April 1, 2005, will be presented in the late/moved category. Abstracts received after May 2, 2005, will not appear in the program book.

PHOTO COURTESY OF SEATTLE'S
CONVENTION AND VISITORS BUREAU

CALL FOR ABSTRACTS

PlantBiology2005

The annual meeting of the American Society of Plant Biologists

Saturday, July 16 through Wednesday, July 20

Washington State Convention & Trade Center, Seattle, Washington, USA

Submit abstracts for **Plant Biology 2005** after January 1, 2005, via the web at
<http://www.aspb.org/abstract/>.

SUBMISSION DEADLINES

To be considered for inclusion in a Minisymposium, submit abstract by
February 28, 2005.

For Poster sessions only,* submit by April 1, 2005.

For inclusion in the Program Book, submit by May 2, 2005.

*The online submission form provides an author the opportunity to request that an abstract be presented only by poster.

The **Plant Biology 2005** format will include five Major Symposia and a number of Minisymposia based primarily on the abstracts submitted under the topic categories listed to the left. The Program Committee determines the titles and contents of the Minisymposia after reviewing the abstracts. Poster presentations are also expected for those abstracts selected for presentation in Minisymposia. Minisymposia presentations will require a PowerPoint presentation. Taking photographs and videos of the posters on display is prohibited. Suggestions for Minisymposia topics are welcomed and should be sent to Jean Rosenberg, jean@aspb.org, or Plant Biology 2005 Abstracts, 15501 Monona Drive, Rockville, MD 20855 USA.

The abstracts and program details will be available for viewing and searching online in April 2005. The website will make it possible to prepare and print out a personal itinerary to guide you at the meeting long before you arrive. The Plant Biology 2005 Program Book provided to all attendees will include a printed version of the abstracts.

On the reverse of this page are the instructions for submitting abstracts electronically. For this electronic submission project to work effectively, it is critical that you follow these instructions carefully when sending your abstract for Plant Biology 2005. If you have any questions, contact Wendy Sahli at wendys@aspb.org or 301-251-0560, ext. 123.

Remember the following guidelines:

- Limit the body of your abstract to 1,800 characters.
- A member may submit or sponsor ONE research abstract and ONE education abstract.
- Do not submit any abstracts before January 1, 2005.
- Be sure to submit by Monday, February 28, 2005, for selection of Minisymposia.
- Be sure to submit by April 1, 2005, to avoid being listed in the late/moved category.
- Be sure to submit by May 2, 2005, to be included in the printed on-site program book.
- Do not use fax or mail. Submit online at <http://www.aspb.org/abstract>.
- Use a forms-capable web browser. MS Internet Explorer or Netscape 5.0 or higher is strongly recommended.
- A \$50 fee will be required for each abstract (can be credited to registration fee or refunded if you cancel by May 17, 2005).

CALL FOR ABSTRACTS

PlantBiology2005

2005 ASPB Annual Meeting
Seattle, Washington, USA, Saturday, July 16 through Wednesday, July 20

FOLLOW THE INSTRUCTIONS EXACTLY.

HOW TO SUBMIT AN ABSTRACT TO PLANT BIOLOGY 2005

Submit Abstract via the Web (DO NOT SEND VIA FAX OR MAIL)

1. Select an abstract topic category from the list on the previous page. A member may submit or sponsor one research poster abstract and one education poster abstract. Submitting or sponsoring member ID will be required.
2. A U.S. \$50 fee is required for each abstract. This fee can then be credited to the presenter's registration fee when registering for the meeting or refunded if abstract cancellation occurs by May 17, 2005. The fee may be transferred with the permission of the initial abstract submitter.
3. Do **not** include any graphics or tabular material in the body of your abstract.
4. Access <http://www.aspb.org/abstract/>. You must have a forms-capable browser (for example, MS Internet Explorer or Netscape, version 5.0 or higher).
5. If you would **not** like to be selected for a Minisymposium, please indicate that on the online form. Otherwise, your abstract is automatically considered for a Minisymposium if submitted by February 28, 2005.
6. Detailed instructions will be provided on the screen. Enter the information called for in each field. When using special characters (superscripts or subscripts, italics, bold, or Greek letters), you will be asked to enter some simple text mark-up codes. The codes will be provided in the instructions on the screen. Those using Internet Explorer browsers 5.0 or higher have button functions for inserting the characters. The system will provide an immediate proofing copy to ascertain that you have entered the codes properly. The system will count the characters (minus the codes) and will not permit you to enter an abstract of more than 1,800 characters.
7. Proof your abstract, double checking any special characters or symbols.
8. After proofing, press the "Submit" button. Acknowledgment will be sent to you by e-mail.

The meeting format for Plant Biology 2005 will include Poster presentations, Major Symposia, and Minisymposia. All abstracts must be submitted as Poster presentations in one of the Poster session categories. The Program Committee will then review the poster abstract submissions and select a limited number of abstracts to compose the Minisymposia. If you wish to have your abstract considered for a Minisymposium presentation, submit your abstract by February 28, 2005. If your abstract is chosen for a Minisymposium presentation, you will be contacted by April 1, 2005.

Address any questions to Wendy Sahli, wendys@aspb.org or 301-251-0560, ext. 123.

ASPB/AAAS Mass Media Fellow Returns from the Trenches

Heidi Ledford, a doctoral student at the University of California at Berkeley, is ASPB's first ASPB/AAAS Mass Media Science and Engineering Fellow. She recently completed her 10-week fellowship at the *Oregonian* and now brings her fellow ASPB members up-to-date on her experience working for a major newspaper.

Greta Binford grabbed a sleeping recluse spider and mounted it on a pair of forceps attached to a stand. As she peered through her dissecting scope, Greta tapped her foot on a pedal and sent a jolt of electricity through the anesthetized spider. The spider's legs pedaled eerily in the air, and venom trickled from its fangs.

Greta doesn't shock spiders for fun—she and her team of undergraduate researchers at Lewis & Clark College

study the evolution of spider venoms. While Greta carefully siphoned off the venom, a photographer stood on a nearby lab bench to snap an overhead shot of the prone spider.

I met Greta this summer while working at the *Oregonian*, a daily newspaper in Portland. I was stationed at the *Oregonian* as ASPB's first American Association for the Advancement of Science (AAAS) Mass Media Fellow and was interviewing Greta before writing an article about her work.

The AAAS program plucks graduate students from the safety of their labs and drops them into newsrooms around the country. The idea is that Mass Media Fellows will improve public understanding of science by emerging at the end of their 10-week internships ready to become either journalists with an intimate knowledge of science or scientists with an in-depth understanding of journalism. In the past 30 years, the AAAS program has produced plenty of each, including such notables as Joe Palca from National Public Radio and Eric Lander of the Whitehead Institute. One alumnus even went on to write for the NBC drama *ER*.

This year's 17 Mass Media Fellows represented nearly every imaginable ilk of scientist, from biologists to mathematicians. Almost all



After a busy summer working for the *Oregonian*, Heidi Ledford took a break to admire central Oregon's Cascade mountains during the drive back to Berkeley.

of us had written for student publications, but few had ever worked in a real newsroom. Most of us were placed at large, well-known media outlets and allowed to write science and health-related articles. We were essentially skipping ahead of the internships that pave the traditional journalist's path: An entry-level intern typically has to work up to internships like ours by spending time at smaller newspapers writing

obituaries and covering school board meetings. My friends in graduate journalism programs were jealous.

To ease the dizzying transition from lab to newsroom, the program began with a three-day science-writing crash course at AAAS's Washington, DC, headquarters. A *Washington Post* science editor introduced us to the newspaper world, emphasizing tight deadlines and sparse prose. He also initiated us into the world of journalistic jargon, where a "slug" is not a gastropod but the single-word identifier assigned to each story. A "graph" was no longer just a visual representation of data but also a paragraph—and preferably a short one.

A few days later I sat at my new desk at the *Oregonian*, staring at a blank computer screen. I had just completed my first interview, stiffly rattling off a list of memorized questions about breast cancer in African-American women. I now had reams of notes, another two interviews scheduled, a new appreciation of the health care crisis facing the African-American community, and 12 inches of a newspaper column to fill. I stared at my computer, wondering how long 12 inches of text would be and how I would manage to fill it.

A few hours of tortured writing later, I realized to my horror that 12 inches is impossibly tiny—maybe a third the length of this article and certainly not enough room to discuss both the results of the study I was reporting and the context surrounding it. Nearly all the details that I had just pried from my interviewees never made it into the article. The same was true of every story that I wrote this summer. Whether it was 12 or 48 inches long, there was just never enough room.

I remembered hearing a fellow graduate student at Berkeley complain that he once spent two hours being interviewed by a journalist, only to find that nothing he discussed was included in the final article. Now I was on the other side of that complaint, struggling with space limitations.

By the end of the summer, I had grown accustomed to mercilessly trimming my articles to fit my allotted space. I still did more research and interviews than necessary but justified them by thinking that they gave me the perspective I needed to decide how to structure each article. I started to look forward to each new interview and felt a growing addiction to the rush I felt each time I filed an article.

The article about Greta's spider venom research was part of what I jokingly call my "extreme sports of science" series. The series included stories about hydrogeologists who were embarking on a two-month research voyage on the Pacific Ocean and scuba-diving chemists who collect cyanobacteria from the tropics in hopes of finding a new anti-cancer drug lurking within the slimy bacterial mats.

At the other end of the spectrum were more newsy articles about medical and environmental studies. These stories often required that I interview experts beyond the usual cadre of doctors and scientists. For an article about the impact of nutritional supplements on the progression of Alzheimer's disease, I interviewed a man who had recently been diagnosed with the disease. "When they told me the diagnosis," he said, shaking

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continued from page 7

his head, "I said, 'No, that can't be me.'" He produced a list of about 10 different herbs and vitamins that he took in hopes that any or all of them might slow the progression of the disease. He knew that there was little evidence that any nutritional supplement would help him, but he took them anyway. After speaking to him, I understood the desperation behind his daily regimen.

A photographer once told me that he enjoyed getting to know the AAAS fellows each summer and appreciated the fresh perspective they brought to the newsroom. But, he added, these visiting scientists tended to get so wrapped up in understanding the facts that they'd forget to focus on the personal angle of a story. A personal story will always make a bigger impact on the reader, he said. My interview with the Alzheimer's patient taught me that lesson firsthand.

All the reporters at the *Oregonian* were incredibly helpful, but the resident science writer, Richard Hill, went out of his way to make sure that I didn't get lost in the shuffle. Richard gave me advice on everything from shortening paragraphs to properly pronouncing Willamette (that's "wil-LAMB-it," not "will-uh-MET").

A reporter since the era of cigarettes and typewriters, Richard didn't start out as a science writer. But when a spot at the science

desk opened up in the 1980s, he volunteered for the job, became a full-time science writer and editor, and never looked back.

After 16 years of science writing, Richard has become something of an amateur scientist himself. His specialty is geology, although he's written about everything from plant biology to astronomy. The day I left the *Oregonian*, Richard was preparing a story about LIDAR—a method that uses airborne lasers to create topographic maps. He hunched over LIDAR maps of Portland in which roads and houses had been stripped away to reveal the architecture of the ground beneath. "Here," he told me, pointing to a squiggle on the map. "This could be from a landslide, maybe thousands of years ago."

In fact, I was surprised to find that journalists are not so different from scientists. Labs and newsrooms are filled with inquisitive people. The difference is in how they answer their questions. In the lab, you perform experiments. In the newsroom, you talk to scientists who performed the experiments. In the lab, you could spend years answering that question. In the newsroom you may have as little as an hour. Journalists don't have to endlessly repeat their experiments in search of statistical significance, and scientists, thankfully, don't have to search for a life insurance policy that will cover them while on assignment in Iraq. But while the details of their

jobs differ, both journalists and scientists revel in their nerdy grasp of intricate details and travel around the newsroom or lab telling coworkers about their latest discovery.

Now that I'm settled back into the lab, sometimes it's hard to believe that I ever left. Two of this year's Mass Media Fellows decided not to return to their labs and are now pursuing careers in journalism. I am too close to finishing my PhD and too happy in my lab at Berkeley to make such a dramatic decision myself. But I still try to find time to write the occasional article, and when I start shopping for my next job, I'll be looking for the opportunity to write full-time again.

For now, I stay in touch with Richard and check his articles in the *Oregonian* for the latest scoop on Mount St. Helen's recent rumblings. I told him that I was writing up a few papers for lab and finding the transition from newspaper writing to academic prose a challenge. As always, he was quick to offer advice.

"Good luck on writing the science papers—remember, inverted pyramid style with short paragraphs," he wrote, and then caught himself. "Oh, wait..."

Heidi Ledford
University of California at Berkeley

Future ASPB Annual Meeting Sites

2005: Seattle, Washington

July 16–20
Washington State
Convention & Trade Center

2006: Boston, Massachusetts

August 5–9
Hynes Convention Center
For more information go to
<http://www.aspb.org/meetings/>.

Deadlines for ASPB News

We invite you to submit articles and letters to the *ASPB News*.

Deadlines for submission of copy follow:

Issue	Deadline
January/February 2005	December 5, 2004
March/April 2005	February 5, 2005
May/June 2005	April 5, 2005
July/August 2005	June 5, 2005
September/October 2005	August 5, 2005
November/December 2005	October 5, 2005

Anyone interested in acquiring a set of printed volumes of *Plant Physiology* dating from 1963 to 1988 should contact Tobias Baskin at baskin@bio.umass.edu.

Annual Crab Feast of MAS-ASPB

The Mid-Atlantic Section's (MAS) Annual Crab Feast, which was held October 1 on the grounds of the ASPB headquarters office in Rockville, Maryland, was a great success! Nearly 120 people enjoyed the memorable evening, including MAS-ASPB members and their guests from several local colleges and universities, USDA, NSF, NIST, NASA, and ASPB headquarters.

The feast was a wonderful opportunity to make new contacts as well as to meet with old friends. The crowd consumed nine bushels of hot spiced crabs kindly delivered by Joe Sullivan (former MAS-ASPB secretary-treasurer), and folks danced under the night sky to live music provided by Natural Selection, the band of Albert and Ellen Torzilli from George Mason University. In addition to the crabs, there were countless hotdogs and hamburgers cooked up by Mark Holland (MAS-ASPB secretary-treasurer). Moreover, six new MAS-ASPB memberships were gained during the event!

Thanks go to Mark Holland, Joe Sullivan, Caren Chang (MAS-ASPB chair), and Jean Rosenberg (ASPB associate director of meetings, marketing, & membership) for organizing this special social event. 🍷



Crab lover Mandy Reading, a graduate student from the University of Maryland at College Park.



Headquarters staff members Kim Snell (left) and Wendy Sahli and Wendy's husband Steve Sahli.

Update: NIH Public Access Proposal

The National Institutes of Health (NIH) funds 60,000–65,000 research studies each year. The articles resulting from NIH-funded research might constitute 50 percent or more of the content of a biomedical or clinical journal. For *Plant Physiology* and *The Plant Cell*, that figure is more in the range of 10 percent to 15 percent.

On September 3, 2004, NIH posted for comment an “Enhanced Public Access Policy” that would require authors who received NIH funds to deposit their peer-reviewed, accepted manuscripts into PubMed Central (PMC), NIH's online repository. The manuscripts would be available for free via PMC six months after the corresponding articles were published in a journal. Upon publisher request, PMC would replace the author's accepted manuscript with the final published article, with a link to the publisher's own electronic database. NIH's stated

goals are to establish a stable archive of peer-reviewed publications resulting from agency-funded research, secure for itself a searchable compendium of publications to manage its internal portfolio of funding, and give the public better access to the archive of publications derived from NIH funding.

On September 17, the NIH plan was published in the *Federal Register* for a 60-day period of public comment that ended November 16. The text of the proposal is available at <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-04-064.html>. After addressing the comments it has received and modifying the draft proposal as it sees fit, NIH is to present its final plans for a 2005 implementation by December 1 to the U.S. House Appropriations Committee.

The reaction to the NIH proposal has been mixed and the debate heated.

Proponents of the Open Access movement, which promotes immediate free access to the scientific literature, have been supportive of the plan as an important step forward. Some major academic and library entities, including the National Academy of Sciences, the Association of Research Libraries, and the Association of American Universities have endorsed the proposal, stating that journal subscription prices have risen well beyond what many higher-education institutions can afford to pay.

By contrast, many commercial and not-for-profit scholarly publishers (including ASPB), and professional publishing organizations such as the Association of American Publishers and the Association of American University Presses, have serious reservations. Primary among their concerns are the following:

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- The six-month release could jeopardize subscription revenues. For the many small scholarly societies like ASPB whose activities and operations are largely supported by subscription revenue, this loss might well have far-reaching effects. For societies that survive, the reduction in subscription revenue may lead to a necessary increase in subscription prices, thereby restricting access instead of broadening it.
- The proposal calls for authors to submit their accepted manuscript—the version that has not been subjected to the final stage of scientific editing and fact checking. Errors are often corrected during the course of copyediting and proofreading that follows peer-reviewed acceptance of the manuscript. Under the NIH plan, two versions of the same article could be available to the public, with the NIH-published version more likely to contain editorial and scientific errors. Over time, it is even possible that the peer review process could be implemented by the government, not the publisher.
- There is concern that the costs of creating and maintaining the NIH repository would take federal funds away from important biomedical research.

- Finally, there are serious questions about the proper role of the government in the publication of scientific research.

In December 2003, ASPB signed on to the Washington DC Principles for Free Access to Science (www.dcprinciples.org); see the *President's Letter* in the January/February 2004 issue of the *ASPB News*. This document defines the many ways in which scholarly not-for-profit publishers work to disseminate their journals' research content as widely and freely as possible within the bounds of fiscal prudence. ASPB, for example, releases its content after 12 months, offers pay-per-view to articles still under access control for \$8/article, and gives immediate free access to the 70 developing nations participating in AGORA (see the May/June 2004 issue of the *ASPB News*). The DC Principles coalition objects to the notion that government intervention in scientific publishing is warranted and has taken a leading role in working with NIH to more thoroughly examine the possible consequences of the NIH proposal and to find ways to cooperate with the agency to provide broad access to the results of NIH-funded research. ASPB President Roger Hangarter has submitted the Society's own comments on the *Federal Register* notice, outlining for NIH director Elias Zerhouni, M.D.,

ASPB's concerns with the proposal. In addition to the general concerns that many publishers have articulated, ASPB has made the important connection between the proposal and the potential economic impact not only on the societies themselves but also on the many other area industries—printers, hotels, restaurants, mail houses, etc.—with whom societies interact. The full ASPB letter appears at <http://www.aspb.org/publicaffairs/news/aspbfedreg.pdf>.

In the United Kingdom, the Wellcome Trust is a vocal advocate for funding agencies to support open access to the literature and is now working with the National Library of Medicine in the United States to establish a European site for PMC. But Open Access advocates abroad were dealt a blow November 8 when the UK government sided with scientific publishers, saying that “The government believes that a healthy and competitive publishing industry has already led to the development of innovative and creative business models and will continue to do so...It is not a matter for government to determine profit margins...but to focus on a competitive marketplace.”

The *ASPB News* will provide updates of developments with the NIH plan in upcoming editions. 

Addressing Ethical Standards: Plagiarism

In the September/October 2004 issue of the *ASPB News*, we introduced a series of articles that will run over the next few issues on the topic of scientific misconduct in publishing. Our inaugural article featured image manipulation and referred readers to an excellent article on the subject written by Mike Rossner and Kenneth M. Yamada and published in the *Journal of Cell Biology*.

This issue's column focuses on an age-old problem that may well be the best known form of misconduct in publishing: plagiarism. “Ethics in Publishing: ASPB Policies and Procedures for Handling Allegations of Author Misconduct” defines plagiarism as “taking material from another's work and submitting it as one's own.”

The American Medical Association Manual of Style, 9th edition (Baltimore: William & Wilkins, 1998, p. 105) describes it as “presenting another's ideas or text without attribution.” Plagiarism might be detected before publication, during the review process, or after publication. It can be virtually impossible to detect when the article is translated or when it appears in a less frequently cited journal.

Regardless of what definition is applied, using another's work without attribution undermines the “process by which credit and priority are established for experimental work and research ideas...and the system through which authors receive credit for their work” (*Responsible Conduct Regarding*

Scientific Communication, 1st edition, Society for Neuroscience, November 7, 1998).

ASPB holds authors—not the Society or its editors and reviewers—responsible for making sure that all of the ideas and findings included in a manuscript are attributed to the proper source. Specifically, “Ethics in Publishing: ASPB Policies and Procedures for Handling Allegations of Author Misconduct” (<http://www.aspb.org/publications/ethics.cfm>) states that “authors shall

- Take credit only for work that they have produced.
- Properly cite the work of others as well as their own related work. It is the responsibility of the authors, not the Society or the

editors or reviewers, to ensure that relevant prior discoveries are appropriately acknowledged with the original citations in manuscripts submitted for publication.

- Submit only original work to the journals, no part of which has been previously published in print or online as, or is under consideration as, a peer-reviewed article in another journal, as a non-peer-reviewed article (such as a review) in another journal, or as a book chapter.
- Determine whether the disclosure of content requires the prior consent of other parties and, if so, obtain that consent prior to submission.”

ASPB puts great stock in its role as steward of what constitutes ethical behavior and, conversely, ethical misconduct. Sadly, this is not simply an academic exercise.

Since the publication of our ethics policy in October 2003, the Society has encountered multiple apparent ethical violations. Some of these cases have been quite serious and have resulted in sanctions, and all have involved letters of education to coauthors. The most common type of ethical misconduct we have encountered to date is plagiarism. The Society will continue to

ASPB holds authors—not the Society or its editors and reviewers—responsible for making sure that all of the ideas and findings included in a manuscript are attributed to the proper source.

strive to educate all parties involved in the publishing process—from authors, to editors and reviewers, to staff—on proper ethical conduct in scientific publishing. To that end, we refer readers to “Avoiding Plagiarism, Self-Plagiarism, and Other Questionable Writing Practices: A Guide to Ethical Writing,” by Miguel Roig, Ph.D., published online at the Office of Research Integrity website: [http://ori.dhhs.gov/wbt/roig%20\(st%20johns\)/index.html](http://ori.dhhs.gov/wbt/roig%20(st%20johns)/index.html). The introductory material to the section on Plagiarism is reprinted here and is used with permission from Miguel Roig.

C. Robertson McClung
Chair, Publications Committee
c.robertson.mcclung@dartmouth.edu

Nancy Winchester
Director of Publications
nancyw@aspb.org

PLAGIARISM

“Taking over the ideas, methods, or written words of another, without acknowledgment and with the intention that they be taken as the work of the deceiver.”

—American Association of University Professors (September/October, 1989)

As the above quotation states, plagiarism has been traditionally defined as the taking of words, images, ideas, etc. from an author and presenting them as one’s own. It is often associated with phrases, such as kidnapping of words, kidnapping of ideas, fraud, and literary theft. Plagiarism can manifest itself in a variety of ways and it is not just confined to student papers or published articles or books. For example, consider a scientist who makes a presentation at a conference and discusses

at length an idea or concept that had already been proposed by someone else and that is not considered common knowledge. During his presentation, he fails to fully acknowledge the specific source of the idea and, consequently, misleads the audience into thinking that he was the originator of that idea. This, too, may constitute a case of plagiarism. Consider the following real-life exam-

ples of plagiarism and the consequences of the offender’s actions:

- A historian resigns from the Pulitzer board after allegations that she had appropriated text from other sources in one of her books.
- A biochemist resigns from a prestigious clinic after accusations that a book he wrote contained appropriated portions of text from a National Academy of Sciences report.
- A famous musician is found guilty of unconscious plagiarism by including elements of another musical group’s previously recorded song in one of his new songs that then becomes a hit. The musician is forced to pay compensation for the infraction.

- A college president is forced to resign after allegations that he failed to attribute the source of material that was part of a college convocation speech.
- A member of Congress running for his party’s nomination withdraws from the presidential race after allegations of plagiarism in one of his speeches.
- A psychologist has his doctoral degree rescinded after the university finds that portions of his doctoral dissertation had been plagiarized.

In sum, plagiarism can be a very serious form of ethical misconduct. For this reason, the concept of plagiarism is universally addressed in all scholarly, artistic, and scientific disciplines. In the humanities and the sciences, for example, there are a plethora of writing guides for students and professionals whose purpose, in part, is to provide guidance to authors on discipline-specific procedures for acknowledging the contributions of others. Curiously, when it comes to the topic of plagiarism, many professional writing guides appear to assume that the user is already familiar with the concept. In fact, while instruction on attribution, a key concept in avoiding plagiarism, is almost always provided, some of the most widely used writing guides do not appear to offer specific sections on plagiarism. Moreover, those that provide coverage often fail to go beyond the most basic generalities about this type of transgression.

Although plagiarism can take many forms there are two major types in scholarly writing: plagiarism of ideas and plagiarism of text.

For the full article, please visit [http://ori.dhhs.gov/wbt/roig%20\(st%20johns\)/index.html](http://ori.dhhs.gov/wbt/roig%20(st%20johns)/index.html).

“Ethics in Publishing: ASPB Policies and Procedures for Handling Allegations of Author Misconduct” can be found at <http://www.aspb.org/publications/ethics.cfm>. 🌿

Improved Color Figures Coming Soon to ASPB Journals

It wasn't that long ago that authors submitted figures as glossy photographs with their manuscript to the ASPB journals *Plant Physiology* and *The Plant Cell*. How times have changed!

Advances in technology have given way to all-digital workflows that allow us to process manuscripts faster while achieving a higher quality final product. As authors become increasingly comfortable with online submission systems for uploading manuscripts, they have also become more adept at preparing high-quality images for publication. Beginning January 1, ASPB will take yet another step forward and request that all color art figures be submitted in RGB format.

When creating digital art figures, the two primary ways color can be represented are in the Red Green Blue (RGB) space or Cyan Magenta Yellow (CMYK) space. Using the RGB color space, all colors are produced using combinations of red, green, and blue light in an additive model (the presence of all

colors achieves white). An example of an RGB device is your computer monitor. In addition, the RGB color space has the advantage of being able to produce more vivid colors in an image versus the same image in the CMYK color space.

The CMYK color space uses combinations of cyan, magenta, yellow, and black in a subtractive model (the presence of all colors achieves black). Images printed in journals are reproduced in the CMYK color space.

Historically, our Instructions for Authors (www.plantcell.org/misc/ifora.shtml and www.plantphysiol.org/misc/ifora.shtml) have requested that all figures be submitted in the CMYK color space, in anticipation of their use in the printed journal. However, beginning January 1, all figures submitted for publication in *The Plant Cell* and *Plant Physiology* will have to be submitted as RGB files. There are two main reasons why we are making this switch:

1. The online journal is now considered our journal of record. We must tailor our workflow to ensure that this version of the journal is the very best representation of the science that it can be.
2. Technology has evolved to the point where we can take RGB-submitted files and automatically and accurately convert them for the CMYK-based printed journal workflow while achieving color reproduction that is as good as or better than what we were producing before.

In short, CMYK was good for print, but not as good for online. Now, we can improve the color quality for both print and online by using RGB files from the start.

We are excited about this opportunity to improve the presentation of our journals. Instructions for Authors have been updated to reflect the changes to our figure requirements. Please direct any questions to John Long, the managing editor (jlong@aspb.org). 

FACULTY POSITION IN PLANT BIOLOGY

Section of Plant Biology, Division of Biological Sciences, University of California, Davis

The Section of Plant Biology, Division of Biological Sciences, at the University of California, Davis, invites applications for a tenure-track position at the ASSISTANT PROFESSOR level. Candidates must have a Ph.D. (or equivalent) and an outstanding record of research achievement. The successful candidate is expected to develop a state-of-the-art research program in an area that serves to integrate and extend molecular studies of plant processes to the level of the whole plant. Preference will be given to candidates who use approaches such as molecular biochemistry, biophysics, bioinformatics, proteomics, or systems biology. The Section of Plant Biology places a high priority on teaching, and the successful candidate will also be expected to contribute to the teaching mission of the Section.

Candidates should submit the following materials online at <http://www-plb.ucdavis.edu> (a) curriculum vitae, (b) summary of research accomplishments, (c) clearly focused description of future research plans, (d) copies of major publications, (e) statement of teaching experience and/or interest.

Candidates should also arrange for three to five letters of recommendation to be submitted by e-mail to plbsearch@ucdavis.edu or sent by regular mail to:

William J. Lucas, Chair
Faculty Search Committee
Section of Plant Biology
University of California
One Shields Avenue
Davis, CA 95616

Closing date: Open until filled, although to assure full consideration, applications should be received prior to December 1, 2004.

The Section encourages women and minorities to apply.
The University of California, Davis, is an Equal Opportunity/Affirmative Action Employer.



CALL FOR 2005 APPLICATIONS

ASPB Summer Undergraduate Research Fellowship

About the SURF Program

The goal of the ASPB Summer Undergraduate Research Fellowship (SURF) program is to provide opportunities for students to pursue meaningful research in plant biology at their home institutions early in their college years. Ideally, students should be **sophomores** at the time of application and would conduct their research the following summer. Exceptionally well-prepared first-year students and juniors who provide evidence of a strong commitment to plant biology will also be considered. In addition to conducting the research, recipients will be expected to present their results at the ASPB national meeting the following summer, August 5–9, 2006, in Boston. Funding is available to attend the meeting through a special SURF Travel Grant (although this may not cover all expenses). ASPB hopes that the opportunity to pursue research during the summer and then present findings at a national meeting will encourage students to pursue advanced degrees and careers in plant biology.

Funding

Each fellowship provides the following:

- \$3,000 student stipend
- \$500 for supplies
- free student membership in ASPB (April 2005 to August 2006)
- a travel allowance to attend the ASPB national meeting. Up to a \$500 travel grant has been set aside for each recipient to offset travel expenses. The student must be a coauthor on an abstract to qualify for the travel grant. Students from overseas or who have very limited access to other resources for travel may make a case for additional travel funds. The student must pay registration and other required meeting fees.

Eligibility

Open to students from both within and outside the United States. *Students must*

- be enrolled as a full-time, degree-seeking student
- be involved in a research project in the laboratory of a faculty mentor who is a member of ASPB
- not receive other direct financial support for their research (institutional stipend, Sigma Xi Grants-in-Aid of Research, Council on Undergraduate Research Fellowship, etc.).

Mentors must

- be a member of ASPB
- have an ongoing research program.

Selection Criteria

Competitive student applicants should demonstrate

- strong motivation for research
- career objectives relevant to the aims of the fellowship program
- academic achievement
- preparation for conducting the research.

The faculty member sponsoring the project should demonstrate

- a commitment to undergraduate education and research
- a research program that is of high scientific merit—the project

- should clearly support the goals of the research program
- the appropriateness of the project for undergraduate research
- the existence of facilities to support the proposed work
- support from the administration (department chair or dean) for the project.

Preference is given to proposals that demonstrate the mentor's and the institution's financial commitment to the work and to proposals that show a significant impact on the mentor's ongoing research program.

Proposal Evaluation

ASPB is interested in supporting undergraduates at all types of institutions. To facilitate this goal, the proposals are grouped according to the applicant's institution type within the Carnegie classification scheme as follows:

Group A	Group B
Research Universities I	Master's Universities and Colleges I
Research Universities II	Master's Universities and Colleges II
Doctoral Universities I	Baccalaureate Colleges I
Doctoral Universities II	Baccalaureate Colleges II
	Associate of Arts Colleges

The number of proposals awarded funding in each group will be weighted according to the number of proposals received.

To Apply

The application must be submitted online. The form can be downloaded through the ASPB website at www.aspb.org. Look on the **ASPB home page** for the link to the **2005 SURF Application** or click on EDUCATION or AWARD for a link.

Deadline

Thursday, February 3, 2005

- Postmark date for mailed transcript(s). *Note:* Transcript may be sent electronically instead (see below).
- Midnight upload to ASPB designated website at <http://www.aspb.org/education/summerundergrad.cfm>.

Application and Attached Files of

- Letter of recommendation
- Transcripts (that can be sent electronically)
- Supporting documents.

For the past four years, ASPB has funded eight SURF students per year. We are pleased to report that funding for 10 students is now available for the 2005 SURF program. Recipients are notified by e-mail, and contracts are sent by mail. Announcements are posted on the ASPB website. The 2005 recipients are expected to be announced by the end of April 2005.

Questions

Contact Paula Brooks at paula@aspb.org or call 301-251-0560, ext. 116.



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.



Name: Gokhan Hacisalihoglu

Title: Assistant Professor of Plant Biology

Place of Work or School: Florida A&M University,

Biology Department, Tallahassee

Research Area: Plant physiology and genetics, micronutrients, identifying and characterizing mechanisms and pathways used by model plants to regulate tolerance in response to stresses such as mineral deficiency. For further information and collaboration opportunities, please visit <http://www.famu.edu/acad/colleges/gokhan/> or contact gokhan.h@famu.edu.

Member since: 1999

1. Has being a member of ASPB helped you in your career? If so, how?

An important aspect of ASPB is the continuing professional support it offers via conferences, leading plant journals, and online documents. Therefore, being an ASPB member has directly and indirectly helped me in my career. Also, ASPB has helped me stay on the cutting edge of my specialty area.

2. Why has being a member of ASPB been important?

ASPB provides a wide array of options for plant biologists. Members have the chance to present their research at annual conferences and network with their colleagues from around the world. ASPB is the voice of plant scientists.

3. Was someone instrumental in getting you to join ASPB?

Dr. Leon Kochian encouraged me to become an ASPB member and attend the Plant Biology 1999 conference in Baltimore.

4. What would you tell nonmembers to encourage them to join?

ASPB provides a wide variety of information for members. Its leading journals *Plant Physiology* and *The Plant Cell* give members cutting-edge plant research every month. The *ASPB News* keeps members updated through its bimonthly issues. ASPB organizes plant biology conferences and sponsors education and outreach programs. Members have many benefits, and they may vote, hold office, serve on committees, and publish in the journals at a reduced rate.

5. Have you found a job using ASPB job postings or through networking at the annual meeting?

No. However, I have found the ASPB Job Bank and conferences very helpful for careers in plant biology. Also, networking with colleagues and having ASPB in my résumé were pluses as well.

6. Have you hired anyone as a result of a job posting at the meeting or on our online Job Bank?

No, but I may in the future because it's a great way to reach some of the best candidates in plant biological sciences.

7. Do you still read print journals? If so, where do you usually read them?

Yes, I do. I go to libraries to browse the most recent issues of my favorite journals. For most of my literature review, I use online journals.

8. What do you think is the next "big thing" in plant biology?

That is a difficult question to answer. I think the "smart plants" and "smart growth conditions" may be the next big thing. Engineering plants with multiple tasks and with abilities for self-watering and self-nutrition and the capacity to monitor temperature and other environmental conditions would be my favorite next "big thing."

9. What person, living or dead, do you most admire?

The person I most admire is Dr. Leon Kochian, my Ph.D. supervisor at Cornell University. He has influenced my thinking more than anyone I have met in my scientific career. He helped me step back and think about the big picture at all times to solve the complex problems. He is an extraordinary scientist and adviser who continuously encourages and supports young scientists to build their own careers.

10. What are you reading these days?

Outside of science, I am reading two books at the moment: *My Life* by Bill Clinton and *It's Not About the Bike* by Lance Armstrong. In science, I mostly read *Plant Physiology*, *Science*, and *The Scientist*. Also, I read grant proposal RFAs from different funding agencies because I am trying to start my plant research program in a predominantly undergraduate institution (Florida A&M University).

11. What are your hobbies?

I enjoy music and traveling and therefore different languages and cultures. Furthermore, I have always been interested in computers and the Internet.

12. What is your most treasured possession?

I try not to treasure possessions too much, although I would say my family and friends, but they are not my possessions. I have been fortunate enough to know many wonderful friends. Time is my next most treasured possession, because we have a limited amount of it.

13. What do you still have left to learn?

That's really hard. I would say finding something joyful every day because joy is a positive decision and can be found everywhere without depending on external circumstances. Improving the nutritional content of seeds such as zinc and iron to help poor people in the developing world and learning to grow plants on Mars are high on my to-do list as well.



The Bioethics Imperative XIX

Consequences of Unethical Conduct, Part 2

“Mokita”: The truth we all know and agree not to talk about. *Papua New Guinea*

Case #6: “A university committee determined that a PI (principal investigator) had committed an egregious act of plagiarism by submitting a proposal to NSF that contained more than a page of text and ideas taken from a confidential research proposal submitted by others. The allegation was referred to the university by the Office of the Inspector General (OIG) after verifying that it contained substance. The committee found that the copied material represented the scientific core of the NSF proposal. It concluded that the PI’s plagiarism represented very serious research misconduct, aggravated by the breach of confidentiality in the peer review process, and applied sanctions. On the basis of the evidence, we concurred with the university’s findings and accepted its report. Consistent with the university’s actions, we recommended the PI be debarred for two years from receiving any federal funds and, further, to protect the merit review process, we recommended that the PI be prohibited from reviewing any NSF proposals for three years.” –Executive Summary, Office of the Inspector General, Semiannual Report to Congress, September 2003

As this real case illustrates, the consequences of an ethical breach in a grant proposal are very serious given the high stakes and the number of stakeholders involved.

The confidentiality of peer review is a weighty responsibility in part because funding agencies rely on outside experts to report problems with grant proposals, just as publishers rely on outside experts to report problems with manuscripts. In other words, scientists are supposed to police themselves. Part of one’s duty as a reviewer is to report any possible ethical breaches one perceives. Indeed, one can argue that a reviewer behaves unethically if they do not report a possible problem they see.

The very premise of peer review is fraught with ethical tension. You are expected to review the best ideas of other scientists, yet you are not supposed to act on what you read. (Note that there are certain safeguards in place for those involved in the review process.

For example, the reviewers of proposals are anonymous, and you can opt to exclude specific people from reviewing your proposals (or manuscripts) if there is a conflict of interest [e.g., direct competition, bias toward you, same institution, has read a prior draft for you].) Here is *mokita* again: Is it humanly possible to *forget* a brilliant or even a really good idea that pertains to the work you are passionate about and on which your livelihood depends!? What do you do if someone’s grant proposal hits upon an idea that you are currently working on? Are you tempted to “trash” their proposal (or manuscript) in order to buy yourself time to publish first?

President Jimmy Carter first authorized establishment of the OIG for Cabinet-level government departments (e.g., Commerce, Energy, Defense) in 1978. In 1989, an amendment to this law added OIGs for many Designated Federal Agencies including federal funding agencies such as NSF. The OIG is charged with investigating allegations of “research misconduct, fraud, waste, abuse, or mismanagement associated with NSF programs and operations” (<http://www.oig.nsf.gov/pubs.htm>). The OIG has the “statutory authority to subpoena or otherwise obtain all records, files, reports, documents, or materials needed to conduct audits, inspections, and investigations” (<http://www.oig.nsf.gov/>).

The website of the OIG encourages complainants to contact them directly (1-703-292-7100 or oig@nsf.gov). However, if a reviewer instead reports a potential ethical breach to the program project officer (PPO) handling the proposal, the standing instruction from the OIG to the PPO is to “contact [the OIG] and forward any correspondence regarding the allegation to [OIG’s] office....we ask them to forward any additional information they may receive and explain to them that it is now a matter for the OIG to handle” (James Kroll, NSF OIG e-mail to Dina Mandoli, November 18, 2004). The OIG makes it clear that PPOs are not to have any further dealings with the matter. Indeed, during PPO training the OIG tells PPOs to be very cautious in bringing forth any allegations (Roger Hangarter, former NSF “rotator” PPO). This makes sense ethi-

cally because the PPO may well have a professional relationship with the parties in question (i.e., may have a conflict of interest) and, in any case, lacks the authority and resources to adjudicate or to engage in fact finding. If the allegations are determined to be “substantive” during careful preliminary review by the OIG, then and only then does the OIG launch a full investigation. “By substantive, we mean the evidence doesn’t have to fully prove the allegation—it just has to indicate that there appears to be merit to the allegation. The purpose of the investigation is to prove, by preponderance of the evidence, that the allegation is true” (James Kroll, NSF OIG e-mail to Dina Mandoli, November 18, 2004). The process by which OIG investigates allegations will be explored in a subsequent column.

Once an investigation begins in earnest, it must reach closure. I imagine that the process, like all serious charges, must be emotionally exhausting and time-consuming for the accused even if no unethical behavior is proven in the last analysis. This is one very good reason that the OIG follows a very careful process before following up on any accusation.

A basic tenet of science is to seek the truth while upholding lofty academic standards. How often have you heard “Oh, that is from so-and-so’s lab. He/she is good/bad”? We judge work in science not only for individual papers or proposals, but by the “track record” or reputation of the scientist(s) involved. That in itself may be a bit *mokita*.

As scientists, we spend our careers building our credibility, our reputations. As Shakespeare’s Cassio¹ discovered, reputations are a fragile commodity, hard to earn and easy to lose. That is why peer review of one’s work, livelihood, and passion are delicate issues indeed.

Next time: Overall structure of the OIG and some statistics from the NSF OIG.

Dina Mandoli
mandoli@u.washington.edu

¹ “O, I have lost my reputation! I have lost the immortal part of myself, and what remains is bestial. My reputation, Iago, my reputation!” –William Shakespeare, *Othello, the Moor of Venice* (Cassio at II, iii)



The Day I Met “Kathryn Morley”

I have recently discovered that I am one who can never be content with just a single rose plant. This is a challenge in a garden the size of a postage stamp that is already rapidly filling with a rather riotous assortment of other shrubs, trees, and perennials (I never met a plant I didn't like). My first rose was a wild wood rose that came in with the breeze. It is a rather weedy plant and might someday threaten to take over the entire aspen grove. But it is covered with pretty single pink blooms in summer, and I bought a pair of heavy-duty leather gloves to help keep it nicely trimmed. It may have been those gloves that got me thinking that I really needed a proper cultivated rose. Yet I hesitated; roses are finicky, I thought, and I don't want to spend a lot of time working in the garden. Plus they don't "fit" in my overall scheme. So my next roses were "carefree" floral carpet roses. They are wonderful; they give salmon-colored blooms continuously throughout summer and fall, they stay very small, and really do require almost no care. They make a great ground cover underneath my tiny cherry trees. I like them so much, I bought another—this one slightly larger and with deep red blooms—that has become a focal point of the front garden. Still I was content to pass by the rows of glorious cultivated hybrid teas



"Kathryn Morley"

N. Eckardt

and floribundas at the nursery with only a brief glance, preferring for my own garden (so I thought) the "wild rose" look of the single blooms on my floral carpet and wood roses. That was before I met "Kathryn Morley."

I did not see her at first as I hurried past the other roses on my way to the perennials at my favorite nursery, but suddenly I was stopped short in my tracks by the loveliest scent—what could that be?! And then I found her. She had the most exquisite, perfectly formed, perfectly pink, full-cupped blooms and a fragrance to soften the hardest heart. She was named after a girl who died young (as if everything else about her had not already stolen my heart). She was my introduction to David Austin Roses (<http://www.davidaustinroses.com/>),

an increasingly popular collection of modern English roses by the UK breeder David Austin that have been aptly described as being created "at an intersection where science meets God" (Filiberti, 2000). They combine the best characteristics of the Old Roses (cupped and rosette-shaped blooms with many petals and often lovely fragrances) with those of the Modern Roses (a wide variety of colors, repeated blooming, and good disease resistance). Kathryn did not come home with me that day; I chose instead the very similar "Heritage," who might have a better chance of doing well in my garden (and is, if possible, even lovelier than her sister). She is a little finicky; although I planted her with the greatest care, she promptly dropped all her leaves, and it took several weeks to coax them back. She also refused to put out any blooms so far this year, and it is almost time to bed down for winter. However, I have high hopes for next year, and I am thinking there is enough room for a mate (perhaps "A Shropshire Lad") to keep her company. 🌹

Nan Eckardt
neckardt@aspb.org

Reference

Filiberti, D. (2000). David Austin Roses. <http://www.rosegathering.com/DavidAustin.html>.

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ASPB Presents Senator Bond with Award Recognizing Outstanding Contributions to Science

ASPB presented its 2004 Public Service Award for Outstanding Contributions to Science to **Senator Christopher Bond** in an award ceremony October 28 at the University of Missouri, Columbia. The ASPB award presentation was part of a larger recognition program for Senator Bond in which the University of Missouri and Missouri Soybean Association recognized Senator Bond for his contributions to the university and farmers.

The ASPB award was presented to Senator Bond by ASPB members **Gary Stacey** and **Doug Randall**, professors at the University of Missouri, Columbia, and **Roger Beachy**, president of the Donald Danforth Plant Sciences Center, St. Louis. Stacey said Senator Bond's leading support of plant science in Congress has made possible advances benefiting farmers, consumers, and the environment here in Missouri and throughout the world.

Stacey said advances made in plant research sponsored by federal research programs that Senator Bond championed in Congress are resulting in increased crop yields, agricultural practices that are more benign to the environment, more cost-competitive domestically grown energy sources, food crops with enhanced nutritional qualities for better human health, and new plant-based life-saving medicines.

Beachy has made several trips to Southeast and South Asia with Senator Bond over the past several years. Their mission was to promote the science and technology of Missouri



The ASPB Public Service Award for Outstanding Contributions to Science was presented to Senator Christopher Bond (left) by (from second to left) ASPB members Roger Beachy, Doug Randall, and Gary Stacey.

to prime ministers, cabinet members, and scientists/technologists and to promote Missouri products. These visits also served to explain how modern plant research is producing superior food crops offering better nutrition. These enhanced food crops can fight diseases caused by nutritional deficiencies in the diet. For example, dietary deficiency in protein is the leading cause of death among children in poor nations. Research Senator Bond sup-

ported here has produced corn with double the protein. This same corn has half the carbohydrates, which will benefit Americans following low-carbohydrate diets.

"These trips showed how Senator Bond cares deeply about the poor around the world and wants science and technology developed in the U.S. to benefit children and families here and around the world," Beachy said.

NSF Funding Up 3 Percent, Plant Genome Up 6 Percent in Senate Recommendation

The Senate Appropriations Committee recommended funding for the National Science Foundation (NSF) at \$5,744,690,000 in fiscal year 2005, the same as NSF's budget request. This is up 3 percent from the FY2004 level. The committee action was taken September 21.

Following are some provisions from the committee report (Senate Report 108-353):

The committee recommends an appropriation of \$4,402,320,000 for research and related activities. This amount is \$49,990,000 above the FY2004 enacted level.

Within the amount for research and related activities, the following specific funding levels for each of NSF's research activities are as follows: \$605,460,000 for Biological Sciences; \$629,940,000 for Computer and

continued on next page

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Information Science; \$575,900,000 for Engineering; \$728,500,000 for Geosciences; \$1,123,090,000 for Mathematical and Physical Sciences; \$224,710,000 for Social, Behavioral, and Economic Sciences; \$281,660,000 for Polar Research Programs; \$68,070,000 for Antarctic Logistical Support; and \$164,990,000 for Integrative Activities.

The committee recommends \$95,000,000 for the Plant Genome Research Program. This amount is \$5,530,000 above the budget request and the FY2004 enacted level. The committee remains a strong supporter of this important program because of its potential impact on improving economically signifi-

cant crops. The committee also recognizes its vast potential in combating hunger in poorer countries and improving the environment throughout the world. Accordingly, the committee directs the NSF to accelerate funding for this program as authorized under Section 8(3)(c) of the National Science Foundation Authorization Act of 2002 (Public Law 107-368).

This increase of more than 6 percent for plant genome research was sought by Christopher Bond (R-MO), chair of the Appropriations Subcommittee on VA, HUD and Independent Agencies. He was joined by subcommittee ranking Democrat Barbara Mikulski of Maryland and their colleagues

on the committee. The strong leadership of Senator Bond and his colleagues has led to extraordinary advances in plant genome and related research over recent years. ASPB has consistently been the leading supporter in the science community of NSF-sponsored plant genome research. Enactment of pending appropriations bills is expected in a post-election session likely to begin in mid-November. We appreciate the help of those ASPB members who contacted their members of Congress in support of NSF, the NSF BIO (the Directorate for Biological Sciences), and the Plant Genome Research Program. ♣

NSF Awards 22 New Projects for Plant Genome Research

Projects to expand knowledge about plants of economic importance

ARLINGTON, Va.—The National Science Foundation (NSF) has made 22 new awards as part of the seventh year of its Plant Genome Research Program (PGRP). From apples to *Zea mays*, the program's goal is to expand knowledge about the biology of the plant kingdom, especially plants that people around the world rely on for food, clothing, and other needs.

The awards involve researchers from 56 institutions in 22 states, as well as collaborators from 14 countries around the globe. The two- to five-year awards, ranging from \$700,000 to \$6.6 million, will explore the inner workings of plants' genes as well as the role genetics plays in plant development, metal tolerance, susceptibility to diseases, and other economically important characteristics.

NSF's PGRP is part of the National Plant Genome Initiative established in 1998 as a coordinated national plant genome research program by the Interagency Working Group on Plant Genomes of the National Science and Technology Council. The long-term goal of this program is to understand the structure, organization, and function of genomes

of plants of economic importance and plant processes of potential economic value.

The 2004 awards focus in three main areas: detailed analysis of the genomes of key plants and families of plants; functional genomics—the study of relationships between genes and the biological roles they play; and databases and tools to capture, share, and analyze the massive amounts of genomics data being produced by the scientific community. In addition, all projects continue the commitment of the PGRP to train the next generation of scientists by exposing students to research at the cutting edge of biological sciences. As many as 150 students will participate in this year's new projects.

"The research supported will allow a deeper understanding of the basic life processes in plants, development of improved crops, as well as train a future generation of scientists," said Mary Clutter, head of NSF's Biological Sciences directorate. "The outcomes of this work will impact every facet of our lives."

For example, a research consortium led by Cornell University will participate in an international project to sequence the gene-

rich portions of the 12 chromosomes of tomato by developing the detailed map of the tomato genome. The map that will result from this work will pave the way for development of improved varieties of tomato and help scientists understand related plants, including potatoes, peppers, tobacco, and coffee.

A project led by Indiana University will study the genomes of the Compositae, a group of plants that includes important crop species such as lettuce, sunflower, and artichoke, as well as noxious weeds such as Russian thistle. This work should shed light on the processes that shaped the genomes of these plants during domestication and identify the traits that lead to weediness. And a project at Mississippi State University will work to develop genomic tools for loblolly pine, the primary source of pulpwood for the U.S. paper industry and a major crop in the southeastern states.

A number of functional genomics studies will look at how genes contribute to the internal workings of an organism. A project at Pennsylvania State University, for example,

will study the molecular genetic interactions between the rootstocks and scions of apple trees that affect the disease resistance and growth of the plant. Cotton is the world's most important fiber crop, and researchers at Texas A&M University will investigate the genetic and physiological pathways that lead to the development of cotton fibers.

Among the six projects focusing on aspects of maize (*Zea mays*), researchers at the University of Missouri, Columbia, will lead a project to understand how DNA packaging in the nucleus can control whether genes are turned on or off, a step toward providing tools for manipulating gene expression in maize and other crop plants. University of Georgia researchers will study the structure and function of maize centromeres, which play a central role in cell division and ensure that the newly divided cells each receive a set of chromosomes.

A growing challenge is how to handle the massive amounts of data coming out of ongoing genomics projects and to make the data readily accessible to the broader community of students, researchers, and breeders. This year's awards include database awards to the University of Arizona focused on proteins involved in repackaging DNA so particular genes can be expressed during plant growth and development (ChromDB), to Cold Spring Harbor Laboratory on the genomes of grains and grasses (Gramene), and to the University of Tennessee on the genomics of poplars and related trees (Populus Genome Portal).

Also among this year's projects are two new "virtual centers," flexible collaborations of investigators at various institutions, all



FROM APPLES... An apple tree shoot infected with fire blight. Fire blight causes substantial economic loss for pear and apple growers. A Plant Genome Research Program project led by Tim McNellis of Pennsylvania State University is studying, among other questions, how apple rootstocks control scion resistance to this disease. Photo credit: Tim McNellis, Pennsylvania State University.



...TO ZEA MAYS As one of six projects focusing on aspects of maize (*Zea mays*), researchers at the University of Missouri, Columbia, will lead a project to understand how DNA packaging in the nucleus can control whether genes are turned on or off, a step toward providing tools for manipulating gene expression in maize and other crop plants. Photo credit: Karen Cone, University of Missouri, Columbia.

focusing on a common goal. One center, led by New York University in collaboration with the New York Botanical Garden, the American Museum of Natural History, and Cold Spring Harbor Laboratory, will target evolutionary genomics, the genetic mechanisms by which important traits have evolved

in plants, such as the development of seeds. The second center, led by Yale University in collaboration with the University of California, Davis, will focus on using experimental approaches to define every gene—perhaps as many as 60,000—in the recently completed rice genome. 

Reminder!

In consideration of the low member subscription rates to the print versions of *Plant Physiology* and *The Plant Cell* and the free online access to both journals that all members enjoy, members agree to retain their personal copies of the journals for at least three years from the date of issue, not depositing them in any library or institution before the end of this time. Members also agree not to release their personal access code, assigned by ASPB, to any other party for the duration of their membership in ASPB. Thank you!

National Cancer Institute Supports Plant Research on Bioactive Food Components

The National Cancer Institute (NCI) has offered a Small Business Innovation Research (SBIR) Contract Opportunity concerning plant genomic and genetic models for establishing physiological relevance of bioactive components as cancer protectants.

This solicitation invited Phase I contract proposals from small business. Applications to develop and market new plant genomic

and genetic resources for evaluating food bioactive components and for evaluating the food matrix in cancer prevention were requested. It is anticipated that these resource foods will simultaneously facilitate collaborative research among plant biologists, cancer biologists, and nutrition scientists to evaluate specific foods for their health benefits.

Applications were due November 5, 2004. The NCI SBIR solicitation was sent to ASPB Campus Contacts and posted on the ASPB website. The announcement for this solicitation can be found at <http://grants.nih.gov/grants/funding/SBIRContract2005/PHS2005-1.pdf>. The announcement (#204) is on pages 33–34 of the cited document. 🌿

Senate Committee Recommends 10 Percent Increase for NRI

The Senate Appropriations Committee recommended fiscal year 2005 spending levels for the U.S. Department of Agriculture on September 14. For the National Research Initiative (NRI), the committee recommended \$183 million, which is an increase of nearly \$19 million, or 10 percent, over the FY2004 level. The committee called for a continuation of the 20 percent cap on indirect costs charged against total federal funds provided under each award.

In earlier actions, the House called for a new 25 percent cap on NRI indirect costs. The House recommended \$180 million for the NRI for FY2005. Differences will be worked out in a future House/Senate conference. The funding levels recommended for the NRI in the House and the Senate committee look promising at this stage, especially in view of actions taken in Congress to reduce the annual federal budget deficit.

For the Agricultural Research Service (ARS), the Senate Appropriations Committee recommendation is \$1,090,261,000. This is nearly \$8 million, or less than 1 percent, more than the FY2004 level. The House called for an increase of \$113 million, or 10 percent, for the ARS. As with the NRI, differences in recommendations will be resolved in conference. We appreciate the help of ASPB members who contacted their congressional offices in support of the NRI and ARS. 🌿

Voters Defeat Anti-GMO Ballot Measures in Butte, San Luis Obispo, and Humboldt Counties

ASPB opposed ballot measures

Groups opposed to genetic engineering of crops placed anti-GMO measures on the November 2 ballot of Butte, San Luis Obispo, Humboldt, and Marin Counties in California. The ballot measures would have banned growing genetically engineered crops.

Voters rejected by large margins November 2 the anti-GMO ballot measures in Butte, San Luis Obispo, and Humboldt Counties in California. The Marin County anti-GMO ban passed, with far less local organized opposi-

tion than was seen in the other counties. The major battlegrounds had been projected to be Butte and San Luis Obispo. The Humboldt County measure was plagued by a flawed, unconstitutional provision, which led to a key supporter of the measure calling for its defeat. Supporters of an anti-GMO measure in Humboldt say they plan to make a second attempt with a better-written measure.

A news story on the counties' ballot measures results in the *Sacramento Bee* said, "The

votes slow the momentum of anti-biotech activists, who plan to seek more bans on the controversial crops."

ASPB is the only science society that took a position on the anti-GMO ballot measures. ASPB President **Roger Hangarter** and Committee on Public Affairs chair **Pamela Ronald** sent letters to the four county boards of supervisors explaining why the measures should be defeated. ASPB also issued news releases and spoke to local newspaper edito-

rial staff on ASPB concerns with the measures. ASPB's position was reported by some in the news media and was cited by farmers. Considerable work was done on the ground by University of California biotechnology outreach specialists **Peggy Lemaux** and **Alan McHughen**, ASPB members, in providing science-based information. Peggy is a former chair of the Committee on Public Affairs.

The interests who delivered the most votes in opposition to the anti-GMO measures

were likely the local farmers in coordination with their county, state, and national farm bureaus. California state universities, ASPB, Lemaux, and McHughen contributed to voter education on the measures in presenting the science community views. Biotechnology companies also opposed the measures.

The four news releases, including ASPB's four letters to the counties' boards of supervisors, can be read on the ASPB website at <http://www.aspb.org/pressreleases/>.

The Butte County Board of Supervisors, at the urging of local farmers, scientists, and ASPB, voted against the anti-GMO measure. They were joined by a majority of the county residents who cast votes against the measure. Following is the ASPB letter sent October 7 to the Butte County Board of Supervisors:

Letter to Butte County Board of Supervisors

October 7, 2004

Supervisor RJ Beeler
 Supervisor Jane Dolan
 Supervisor Mary Anne Houx
 Supervisor Curt Josiassen
 Supervisor Kim Yamaguchi
 Butte County Board of Supervisors
 25 County Center Drive
 Oroville, CA 95965

Dear Supervisors Beeler, Dolan, Houx, Josiassen and Yamaguchi:

The American Society of Plant Biologists (ASPB) urges you and your fellow voters in Butte County to vote "no" on proposed Butte County ordinance Measure D in November. Passage of Measure D would mark a historic step backwards for science and agriculture for Butte County and for the state.

As you know, Measure D on the Butte County November ballot would declare that the propagation, cultivation, raising and growing of genetically engineered organisms in Butte County constitute a public nuisance pursuant to the existing Butte County code. Further, the proposed ordinance would provide that the growing of genetically engineered organisms does not constitute "Legitimate Agricultural Operations," which are exempted from the type of activities that can be designated as a public nuisance, pursuant to the county code.

The proposed ordinance would define "genetically engineered organism" as an organism or the offspring of an organism, the DNA of which has been altered or amended through genetic engineering.

A review of the scientific literature shows that genetically engineered foods are as safe as foods that are not genetically engineered. For example, the National Research Council and Institute of Medicine of the National Academies published a study this year which found no unique risk from genetically engineered foods compared to traditionally bred food crops. The report can be read on the National Academies web site at <http://www.nap.edu/books/0309092094/html/>.

There are instances in which genetic engineering can produce healthier and safer foods than can be accomplished using traditional plant breeding technologies. Researchers based in California (University of California, Berkeley) have genetically engineered hypo-allergenic wheat, which will be much safer for people with wheat allergies to consume. Plant science research has resulted in genetically engineered hypo-allergenic soybeans, which will lead to safer soy-based infant formula and other soy food products.

Much lower levels of aflatoxin, a known potential cancer-causing agent, have been found in lines of genetically engineered corn, compared to conventional corn. The reason for this is that the genetically engineered corn is more effective in preventing a particular pest infestation. Genetically engineered rice, known as Golden Rice, with higher levels of beta carotene will address Vitamin A deficiencies in the diets of people in much of the developing world. This enhanced Golden Rice promises to prevent millions of cases of blindness among children of poor nations and help avert many childhood deaths.

The progress of science using modern technologies, such as biotechnology, is leading to genetically engineered foods that will be safer, more nutritious, healthier, and more affordable.

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The benefits that genetic engineering of foods offer to people throughout the world are substantial. The Food and Agriculture Organization (FAO) of the United Nations in a report issued in May of this year found that biotechnology and genetic engineering of crops hold great promise for agriculture in developing countries. The report noted that more than 70 percent of the world's poor still live in rural areas and depend on agriculture for their survival. Agricultural research—including biotechnology—holds an important key to meeting their needs, the FAO said. The FAO added that biotechnology can speed up conventional breeding programs and may offer solutions where conventional methods fail.

If Measure D passes, Butte County, California will be taking a step back into the century just past, denying its farmers discretion to utilize newer technologies for enhanced crops. Passage of measure D is unwarranted based on the best science published concerning the safety of genetically engineered crops.

Founded in 1924, ASPB is a non-profit society of nearly 6,000 plant scientists, including 450 scientists in California, based primarily at universities. Please let us know if we can provide any further information.

Sincerely,

Roger Hangarter

Professor, Indiana University
President, ASPB

Pamela Ronald

Professor, University of California, Davis
Chair, ASPB Committee on Public Affairs

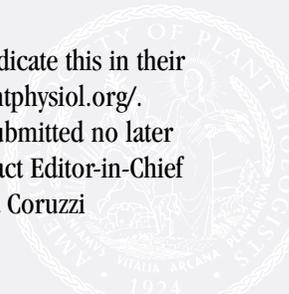


JUNE 2005

Plant Physiology Announces an Arabidopsis Special Issue

Plant Physiology is planning the sixth special issue devoted to Arabidopsis, scheduled for June 2005. All excellent papers covering Arabidopsis research will be considered; however, the special emphasis of this issue will be devoted to “Genomics and the Virtual Plant: New Approaches to Integrating Arabidopsis Genome and Function.”

Authors interested in contributing to this special issue should indicate this in their cover letter when submitting papers online at <http://submit.plantphysiol.org/>. Manuscripts to be considered for the special issue should be submitted no later than January 30, 2005. For additional information, please contact Editor-in-Chief Natasha Raikhel (nraikhel@ucr.edu) or Associate Editor Gloria Coruzzi (gloria.coruzzi@nyu.edu).



Research with Petunias May Help Sprout New Class of Life-Saving Drugs

Research by ASPB members **Rich Jorgensen** and **Carolyn Napoli**, and by **Christine Lemieux**, originally published in April 1990 in *The Plant Cell* is featured prominently in the cover page art of the September 3, 2004, issue of *Science*. The *Science* cover and article show how plant research first uncovered a sequence-specific gene silencing response that has paved the way for recent research findings on RNA interference.

The purple and white petunia flowers that make up most of the cover of *Science* repre-

sent research that is credited by some with revolutionizing genetics and is on the verge of spawning an entirely new class of drugs to treat human diseases with a genetic component. This serves as a good example of how basic plant research can lead to unexpected but profound benefits, such as a new class of life-saving drugs to treat human diseases.

The National Science Foundation (NSF) has provided further support for Jorgensen's research through the NSF Plant Genome Research Program. The U.S. Department of

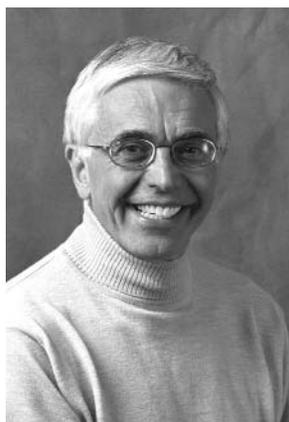
Agriculture's National Research Initiative program on plant genetic mechanisms has supported research in this area by Jorgensen. The Department of Energy Office of Basic Energy Sciences Division of Chemical Sciences, Geosciences, and Biosciences is providing current support. 

DOE, ASPB Members Quatrano, Reski and Colleagues Seek to Solve 450 Million-Year Mystery of Moss Genome

The Community Sequencing Program at the U.S. Department of Energy has awarded grant support to ASPB member **Ralph S. Quatrano** of Washington University and **Brent Mishler** of the University of California at Berkeley to conduct moss genome research. The researchers will sequence the entire genome of the moss *Physcomitrella patens* at the Joint Genome Institute (JGI) in Walnut Creek, California.

The full project will be an international collaboration involving several additional laboratories worldwide, including United Kingdom laboratories run by **David Cove** and **Andrew Cuming**; a German laboratory headed by ASPB member **Ralf Reski**; and a Japanese laboratory directed by **Mitsuyasu Hasebe**.

Although the moss *Physcomitrella patens* is a small plant, its genome (about one-half



Ralph Quatrano

billion base pairs) is actually larger than that of the first plant genome to be determined, *Arabidopsis thaliana*.

Mosses are considered to be the first land plants that evolved about 450 million years ago, predating the flowering or seed plants by some 200 million years. Although this nonvascular plant lacks structures such as flowers,

seeds, true roots, stems, and leaves, some of its traits—for instance, surviving extremes of dehydration—may be adapted for use in contemporary crops.

Unique experimental features include few and simple cell and tissue types, ease in growing, and ability to undergo sophisticated genetic manipulation including the capacity of this organism to integrate transforming

DNA by homologous recombination at frequencies higher than that of any other multicellular eukaryote. This feature provides a unique tool for sophisticated genetic manipulation.

Studying the genes that control such traits as tolerance to drought stress in the moss might provide keys to how these characteristics could be incorporated into flowering plants.

“Once we have the genome of the moss, we will be able to compare the genome of a simple plant to those of complex plants,” said Quatrano. “Knowledge of this plant's genome will allow comparisons between genes to be made that will give us insights as to gene function. Also, the basal position of *Physcomitrella patens* in the land plant phylogeny will clearly lead to further understanding of land plant evolution using comparative genomics. These approaches will open doors of understanding into plant genomes.” 



Compiled and edited by Sheila Blackman, Grand Valley State University, Biology, One Campus Drive, Allendale, MI 49401, blackmas@gvsu.edu

Making a Date with DESTINY

Bringing plant biology to students through UNC Chapel Hill's traveling science learning program

Nothing in science education has as much impact as hands-on experience. Unfortunately, public schools operate within a budget that isn't conducive to hands-on experimentation. One solution is to bring the science experience into the schools, which is what DESTINY, the University of North Carolina–Chapel Hill's Traveling Science Learning Program does. For the past four years, DESTINY has brought a fully equipped traveling science laboratory to high schools throughout North Carolina. Up to 24 students can work in the mobile lab and carry out experiments using equipment like micropipettes to conduct gel electrophoresis.

DESTINY provides a comprehensive system in which classroom teachers are

first trained in the science modules (the bus travels throughout the state to bring the training to the teachers) and are then able to implement a curriculum of which the bus visit is just one component. Before their day of wet-lab experimentation, students spend class time preparing for the experience, and they spend time analyzing their results after the bus visit.

The DESTINY curriculum follows the 5E Instructional Model, a model based on the premise that students learn best when allowed to work out explanations for themselves through a variety of learning experiences structured by the teacher (Trowbridge et al., 2000). The 5Es are

ENGAGEMENT: Students become motivated to learn and make connections between past and present learning experiences.

EXPLORATION: Students experience the concepts, explore questions.

EXPLANATION: Students demonstrate conceptual understanding, and teachers introduce relevant terminology and concepts.

ELABORATION: Students' conceptual understanding of the topic is challenged and extended.

"On the bus, I felt like a real scientist!"
—Student, Graham High School



North Carolina high school students showing off their gel.

Photo courtesy of DESTINY Program © 2004 DESTINY.

EVALUATION: Students are encouraged to assess their understanding of a concept, and teachers are provided with an opportunity to evaluate student learning.

Teachers choose from a variety of curricula including chemistry, biology, and interdisciplinary topics. Biology topics include forensics, biotechnology, and evolution. A plant biology module called "Same Genes, Different Fates" allows students to carry out GUS staining on transgenic Arabidopsis plants that express different cell-specific reporter gene constructs.

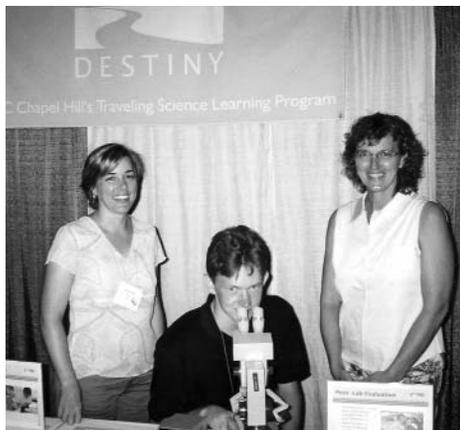
The DESTINY Program, including the Same Genes, Different Fates module, was featured at the ASPBE Education Booth during Plant Biology 2004 in Orlando, Florida, this past July. It was presented by Dana Haine and Matthew Pulley from the University of North Carolina–Chapel Hill and Michele Garrett from Bennett College. The display showed how the 5E Instructional Model is incorporated into a science learning experience that includes role-playing activities and concept mapping along with the wet lab.



A look inside the bus—DESTINY's fully equipped traveling science lab.

Photo courtesy of DESTINY Program © 2004 DESTINY.

An important part of DESTINY's mission is to provide solutions to the growing national concerns about the shortage of science teachers, the decline in the number of Americans pursuing graduate degrees in science, and the lack of diversity within the science professions. According to its mission statement, "DESTINY promotes equity of access to quality science learning opportunities, in order to increase interest, ensure understanding, and demonstrate the relevance of science to all students' lives. Through the creation and delivery of



Left to right: A meeting with DESTINY. Dana Haine, DESTINY educator; Matthew Pulley, an undergraduate in Alan Jones's lab at the University of North Carolina; and Michele Garrett of Bennett College. DESTINY is UNC's Traveling Science Learning Program.

innovative approaches, we seek to empower teachers, schools, and communities to transform science learning environments."

Since hitting the road in fall 2000, DESTINY has served

- 250 schools
- more than 850 educators
- more than 8,400 students (lab experiences on DESTINY)
- Over 24,000 students (DESTINY's classroom curriculum).

The DESTINY Program is supported by GlaxoSmithKline, NASA, the Howard Hughes Medical Institute, and The National Institutes of Health (principal investigator: Skip Bollenbacher). The Same Genes, Different Fates module is funded by the NSF 2010 project (principal investigator: Alan Jones).

As a news report on DESTINY said, "This bus spreads a lot of knowledge, but its main product is enthusiasm." More information about DESTINY, including curricula and great pictures of the students in action, can be found at <http://destiny.unc.edu>.

Mary Williams
Mary_Williams@hmc.edu

Reference

Trowbridge, L., Bybee, R., Carson-Powell, J. (2000). *Teaching Secondary School Science: Strategies for Developing Scientific Literacy*, 7th ed. Upper Saddle River, NJ: Prentice Hall.

NSF and ASPB Collaborate in Outreach to Schools

For a third year the ASPB Education Committee has joined with the National Science Foundation (NSF) in an ongoing education outreach effort to bring plant biology education information to teachers and students in kindergarten through high school (K–12).

Since 2001, the NSF has distributed to educators the film *Breaking the Code: Sequencing the Arabidopsis Genome* (11 minutes). In a coordinated effort with ASPB, NSF includes with each film mailed a flyer supplied by ASPB promoting K–12 information available on the ASPB website, such as the ASPB Scientist K–12 Education Outreach Volunteer program; "Principles of Plant Biology" brochure and book-marks; and the two worksheets "How Many Plants Does It Take to Make a Fast Food Burger?" and "House Plants" (objects found in the home made from plants). The informational flyer refers educators to the appropriate section of the ASPB website:

www.aspb.org/education/outreach/. The ASPB Education Committee set up the K–12 outreach program to provide plant scientists with an effective way to volunteer and as a resource for K–12 science teachers and students.

Breaking the Code is distributed through Video Placement Worldwide (VPW), an international service company specializing in placing sponsored educational materials in the nation's classrooms. The following updated statistics were provided by Mr. Chris Kater, vice president of VPW.

Breaking the Code, with its accompanying teacher's guide, is sent to teachers who request it. NSF maintains a database of schools that have received the materials. Since the program began in September 2001, the film has been placed in 5,509

schools, with 6,762 educators who have reached 3,871,727 students representing every state in America. Another 2,500 copies are expected to be in the hands of educators this school year.

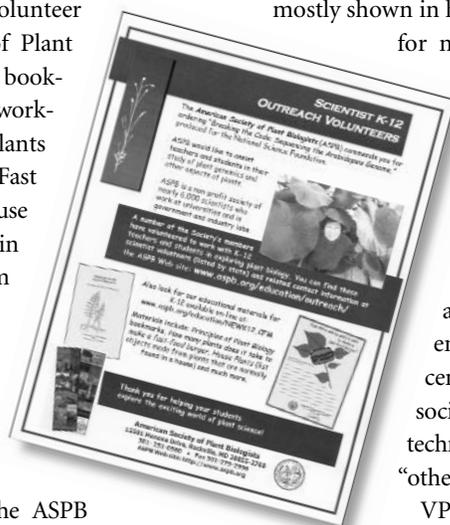
To track the reaction to the film, a survey is sent along with it. Results of the 2004 survey show that 86 percent of teachers who received the film had already used it and that another 81 percent intended to use it the following year. Another 12 percent passed it on to another educator. The sharing average for the film was four times for teachers and 16 times for media specialists. The grade-level use showed that it was

mostly shown in high school: 71 percent for ninth and 10th grades and 62 percent for 11th and 12th grades (some teachers used it in multiple grades). The subject-area use for the program was diverse: agriculture, 19 percent; environmental, 25 percent; science, 84 percent; social studies, 11 percent; technology, 10 percent; and "other," 6 percent.

VPW specializes in the promotion, request processing, duplication, packaging, and shipment of sponsored educational materials. It provides sponsors with usage reports, maintains a database of educators who have received the sponsored materials for future contact, and surveys teachers who have received their materials so that program sponsors know not only who and how many have received their materials but what they thought of them.

VPW offers educational materials free to qualified educators, librarians, media specialists, and youth leaders throughout the United States. ASPB members, as they generally fit under the educator category, may

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Samuel Goodnow Wildman

Samuel Goodnow Wildman, an emeritus professor in the Department of Molecular, Cell and Developmental Biology, University of California, Los Angeles, died August 16, 2004. Sam had been a professor at UCLA from 1950 until his retirement in 1979. He was born in Placerville, California, on May 26, 1912, the son of Clifton and



Photo courtesy of Sylvia Patton

Lucy (né Goodnow) Wildman. He received his B.A. degree from Oregon State University, his M.A. from the University of Michigan in 1940, and his Ph.D. from the same institution in 1942. Sam did postdoctoral research with James Bonner at the California Institute of Technology and was one of several people who came to UCLA in the late 1940s and early 1950s from Cal Tech to help establish the fledgling plant physiology curriculum. Sam was one of the first members of the Molecular Biology Institute and was involved in getting the UCLA greenhouse built in the early 1950s. He was a foreign member of the Royal Danish Academy of Science and Letters and received the Charles Reid Barnes Life Membership Award of the American Society of Plant Physiologists in 1979.

Sam was first to discover Fraction 1 Protein, as it was known then. Later, the protein was named "Rubisco" for Ribulose 1,5-bisphosphate carboxylase/oxygenase. Rubisco is used by plants for fixation of carbon dioxide into glucose and is the most abundant protein on the

planet. Sam's research during his academic career focused on tobacco mosaic virus, on chloroplast inheritance and movement, and chloroplast structure and function, particularly on the organization of grana in the chloroplast. In his nineties, Sam was working on several scientific publications, one that was published in 2004

and another that is in press.

In addition to his scientific pursuits, Sam was a woodworker and an avid trout fisherman. He is survived by Sophie, his wife of 70 years; his daughter Kate Wildman Nakai; grandson Daisuke Nakai; granddaughter Maki Nakai; and two great granddaughters, four nieces, and one nephew.

Donations in Sam's name can be made to the UCLA Foundation in support of the UCLA Plant Growth Center, attn. Meg Paulson, UCLA College of Letters and Science, 1309 Murphy Hall, Los Angeles, CA 90095-1413.

Sam was a friend and role model to many—young and not-so-young alike. He was a mentor to many Ph.D. students and postdoctoral researchers, and to younger colleagues at UCLA even after his retirement. He is deeply missed by all.

Ann Hirsch
ahirsch@ucla.edu

This tribute originally appeared in the fall 2004 issue of the quarterly newsletter published by the Mildred E. Mathias Botanical Garden at UCLA.

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order a free copy by going to the website at <http://www.vpw.com/educational/>. You will find *Breaking the Code* in the catalog. At the bottom of the page, you will be asked to fill out a simple survey and to register.

Machi Dilworth, director of NSF, Biological Infrastructure Division, noted that NSF made the film available at the Arabidopsis conference and the ASPB meeting a couple of years ago. ASPB members were informed then that, if any of their colleagues had a copy of the film, they were free to duplicate it.

The film is available for viewing by computer at the following website: http://www.nsf.gov/od/lpa/news/press/00/arabidopsis_t1.htm. For more information on the subject matter of the film, Dilworth recommends visiting the site <http://www.arabidopsis.org/>.

The ASPB Education Committee invites members to add their names to the K-12 Education Outreach list. You may do so online by visiting <http://www.aspb.org/education/outreach/> and clicking on "Sign Up Now." For questions concerning the K-12 Education Outreach program, contact Brian Hypes, ASPB director of public affairs, at bhypes@aspb.org.

CALL FOR APPLICATIONS

ASPB Travel Award Program for Plant Biology 2005 in Seattle

Applications for travel awards to Plant Biology 2005 are now being accepted for consideration by ASPB. The application form appears on the facing page of this issue of the *ASPB News* and will be posted on the ASPB website at <http://www.aspb.org>.

The Society has allotted \$35,000 to be given out in allotments of \$500 for the continuation of the Travel Award Program. The goals of the program are to increase attendance of young scientists at the annual meeting by providing travel funds for those in financial need and to increase diversity among the annual meeting attendees. Undergraduate students are strongly encouraged to apply, as are graduate students, postdocs, and faculty beginning their careers in plant science.

It is required that applicants submit an abstract of research to be presented at the meeting; they will also be asked to write a paragraph on the form expressing why attending Plant Biology 2005 would enhance their career. Two letters of recommendation are required as well.

Selection criteria will be based first on the science and the quality of the abstract, second on the statement about how attending will have an impact on the applicant's career, third on the strength of the recommendations, and fourth on ethnic diversity. Applications must be received at ASPB headquarters by March 8, 2005. Those applicants selected to receive an award will be notified by April 18, and the money will be sent in advance of the meeting. The early-bird registration cutoff date is April 15, and housing reservations must be made no later than June 20, 2005.

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 Signature: *Nancy Winchester*
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PS Form 3526, October 1999 (New Instructions on Reverse)

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ASPB Headquarters

Telephone Extensions and E-Mail Directory

For your convenience, keep this listing of extension numbers and e-mail addresses handy when you contact ASPB headquarters so that you can reach the person best able to assist you.

- Our office telephone number is 301-251-0560

	Crispin Taylor / ext. 115 ctaylor@aspb.org	Jean Rosenberg / ext. 110 jean@aspb.org	Kim Snell / ext. 140 ksnell@aspb.org	Stefanie Shamer / ext. 144 shamer@aspb.org	Stephanie Liu-Kuan / ext. 143 slu@aspb.org	Suzanne Cholwek / ext. 141 scholwek@aspb.org	Carolyn Freed / ext. 122 cfreed@aspb.org	Brian Hyps / ext. 114 bhyps@aspb.org	Nancy Winchester / ext. 117 nancyw@aspb.org	John Long / ext. 119 jlong@aspb.org	Annette Kessler / ext. 120 akesster@aspb.org	Leslie (Ash) Csikos / ext. 125 lcsikos@aspb.org	Wendy Sahli / ext. 123 wendys@aspb.org
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Subscriptions, institutional						●							
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Disposition of a manuscript												●	
All other questions									●				
<i>The Plant Cell</i> (except missing issues)													
Disposition of a manuscript											●		
All other questions									●				
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