

ASPB News



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

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Inside This Issue

Denver Hosts
Plant Biology 2002
August 3–7

The Undergrad
Research Scene
at ASPB

HighWire Creates
Portal to Biomedical
Research

ASPB and Wiley Form
New Book Program

President's Letter

Vote, Vote, Vote!

As I'm writing this letter in early May, the ballot to elect the next slate of officers and a corresponding member and to approve or disapprove several minor changes to the Constitution has been sent to all members, either by mail or by an e-mail notification. I want to use this letter to strongly encourage each and every one of you to vote. It is your Society: Have a say in who is elected!

I'm hoping to spur many of you into action by reporting on the rather poor voter turnout in most Society elections. Probably not too surprisingly, our best voter turnout was on the vote to change the name of our Society from the American Society of Plant Physiologists to the American Society of Plant Biologists. In that election the number of votes for the name change was 1,323, and the number of votes against the name change was 581. At the time of the vote, the Society had 5,945 members, thus 32% of the members voted. This is the best we've ever done! Last year the number of voters was much lower: Only 863 of the 5,580 members voted. Over the previous three years, the percentage of ballots cast were 19%, 23%, and 23% of the membership. I'm convinced we can do better this year. I challenge each of you to vote and to ask your colleagues to vote.

In my second president's letter in the *ASPB News*, I reviewed the mechanism by which the Society ob-

tains its slate of candidates for each election. At least one candidate for each of the elected positions (president-elect, secretary [every other year], and three at-large Executive Committee members [one per year]) must come from nominations by members-at-large, and the other comes from the Nominating Committee (past president, president, president-elect). Typically only a few candidates are suggested by the membership, and often many of these are people who are not eligible because they have already served in that capacity. Next year when there is a call for nominations, I urge you to look at your directory or on the web site at who the past and current officers are and think about whom you would like to see at the helm.

The Society makes it very easy to vote by clicking on the URL in the e-mail message you received if you have chosen to vote via e-mail, or by mailing in your paper ballot if that was your preference. In August, when I open the ASPB meeting in Denver, I'll be reporting on the outcome of the elections. I'm also hoping to report a dramatic increase in the number of votes cast!

Vicki Chandler

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Plant Biology 2002

Join us in Denver

Denver, Colorado • August 3–7, 2002

PRE-REGISTRATION ENDS JULY 12!



ASPB Officers & Staff

CONTENTS

- 1 President's Letter
- 3 Plant Biology 2002!
- 4 Scientist Gives Bio-Food for Thought
- 5 CUR, ASPB, and PUIs
- 7 New Name for Washington Area Section
 - ASPB International Committee Helps Plant Biology Worldwide
- 8 Midwest Section Meets at Miami U.
- 9 Bioethics
- 10 ASPB Journals Part of New HighWire Portal to Biomedical Research
- 11 In a Plant's Plentiful Genes, a Chemistry Lesson
- 12 Lilly Wins Best Paper Award: *The Plant Cell*
- 13 Maathuis Wins Best Paper Award: *Plant Physiology*
 - GM Crops Brochure Translated into Italian and Spanish
- 14 Membership Corner
- 15 *The Plant Cell and Science* Link Rice Genome Articles
- 16 The View from Here
- 17 Letter to the Editor
- 18 Public Affairs
- 26 Education Forum
- 29 Staff News
- 30 Gatherings
- 34 Jobs
- 41 ASPB and Wiley Create New Book Program

Deadline for September/October 2002
ASPB News: August 10, 2002

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Join us in Denver

Plant Biology 2002 Denver, Colorado • August 3–7, 2002

**PRE-REGISTER BY JULY 12 TO AVOID HIGHER
ONSITE REGISTRATION FEES!**

Don't miss the many special and unique events planned for the annual meeting of the American Society of Plant Biologists (formerly the American Society of Plant Physiologists). All of the scientific program, the exhibits, and most social and networking events will be held in the Adam's Mark Hotel in Denver.

Scientific and Exhibit program will include

- Five major symposia focused on leading topics, including a special President's Symposium on Dynamic Processes organized by Vicki Chandler
- Twenty-four minisymposia exploring Plant Biology's "Hot Topics"
- Six "one-overhead" poster sessions
- 1,000+ posters: Full Sunday afternoon session and Monday evening "Posters, Exhibits & Beer" session
- Education, Careers, PUI, Intellectual Property Management, Media Relations, and Public Affairs workshops
- Minority Affairs Committee-sponsored luncheon featuring Dr. Ray Rodriguez of the University of California, Davis
- Women in Plant Biology Committee-sponsored luncheon featuring Dr. Nancy Dickey of Texas A&M University
- Plant Biology Job Fair & Placement Service: View job opportunities and make contacts
- Meet exhibiting vendors and learn about the most recent publications, services, techniques, and equipment.

Network with old friends and new acquaintances at Plant Biology 2002 Special Events

- Undergrad Networking Pre-Mixer and Poster session—prior to Opening Night Mixer—Saturday, August 3
- Opening Night Mixer/Reception—at the Adam's Mark Hotel—Saturday, August 3
- "Billiards, Micro-Brews & More Party"—at Denver's Wynkoop Brewery Co.—Tuesday, August 6
- Colorado Rockies/Cincinnati Reds Baseball Game—at Coors Field—Wednesday, August 7



- Discounted hotel rooms, airfares, and rental cars have been specially negotiated for Plant Biology 2002 attendees.
- A childcare subsidy of up to \$200 per child is available to Plant Biology 2002 attendees.
- An Internet Café will be open so that attendees can keep up with their e-mail during the meeting.

Denver is one of the most exciting young cities in the United States, with attractions such as a new world-class aquarium, a massive downtown entertainment complex, and a new sports stadium. It has the sixth busiest airport in the country, with 1,300 daily flights. The city is nearly equidistant from both coasts and has 300 days of sunshine every year.

The Denver Adam's Mark Hotel will be used for all of the meeting and exhibit space, as well as the regular, postdoc, and student housing for the Plant Biology 2002 meeting. The hotel is composed of two towers that are connected via a walkway, so there will be no need for shuttle buses. Dining opportunities are plentiful in Denver. Choose from great western steaks, barbecue, or a selection of various ethnic restaurants. Small and unique restaurants, cafés, and brew pubs abound along the 16th Street Mall adjacent to the Adam's Mark Hotel. And before or after the conference, remember to allow yourself the opportunity to explore many of Colorado's natural wonders, such as Rocky Mountain National Park, Colorado Springs, Pike's Peak, and the Royal Gorge. The famed ski resorts of Vail, Aspen, Breckenridge, and Keystone are only a short distance away and also delightful at this time of year. See you in the "Mile High City"—Denver—in August!

Scientist Gives Bio-Food for Thought

"Green Revolution" Turns Food Storages to Surpluses

by Ken Lateer

Science and Technology Reporter

Although the word is dangerously close to the titles of cheesy science fiction movies from the 1950s, "Bioplants" may bring about a new tech boom in the 21st century, and a leader in the industry recently brought his knowledge to NIU [Northern Illinois University].

"We're in a new era, where genetic engineering opens the possibility to use plants as factories of novel chemicals, and this will change the economics of agriculture," said Robert B. Goldberg, a plant molecular biologist at UCLA, at the time of his election to the National Academy of Sciences.

Goldberg, an internationally known and respected expert on plant genetics and biotechnology, gave a lecture on "Super Plants for the 21st Century" on Thursday at Montgomery Hall. The audience was composed of about 50 students, faculty, community members and local farmers.

Goldberg's presentation included the premiere of a documentary [*History's Harvest*—see box], funded by the American Society of Plant Biologists, he and others have worked on for more than two years. . . .

During the lecture, Goldberg stressed the importance of using new technology to breed novel kinds of plants and the importance of plant biology to our civilization and our world.

"[It is essential] to educate the public about the history of agriculture and where food comes from," he said. "In the next 50 years, we will have to grow more food than in the entire history of mankind."

The reason for this massive surge is the projected population growth, which estimates a global population of more than 10 billion people.

Throughout the course of the documentary, which featured Goldberg as narrator and interviewer, he talked with many promi-

nent biologists who were and are active in the so-called "Green Revolution."

The Green Revolution is credited with helping countries like India, Pakistan and many African nations turn their food shortages into, in some cases, surpluses. To do so, plant biologists, agricultural experts and local farmers worked in unison to create new, more resilient plants and teach the indigenous people to maximize fertilizer and technology in order to feed their families and the community.

In some areas, chiefly in Europe, plant biologists and food manufacturers recently have drawn some flack for attempting to "play God" by manipulating nature.

However, in spite of the occasional ominous arguments spouted by anti-GMO (an acronym used for genetically altered food products) protesters, this manipulation of plant genetics is nothing new or dangerous, Goldberg said.

"Corn [for example], wasn't made by nature," Goldberg said in his documentary. "It was made by early man."

Early types of corn, such as those seen by Native Americans, were diminutive, greenish-yellow and could not hold kernels on the cob. Only after successfully breeding various strains could the corn actually be planted, harvested and eaten in a productive manner. Likewise, edible wheat "is the result of two wild grasses, selected by man for consumption."

Goldberg and other plant molecular biologists say the main difference between what they are doing and the actions of the Native Americans involves the level of control and knowledge. Because of the recent strides in genomic research and biotechnology, scientists today have a better understanding of what results their actions and research will cause.

www.northernstar.info



History's Harvest: Where Food Comes From is now available to ASPB members on VHS or DVD. This final version of the film, developed by the ASPB Education Foundation, is fast paced and informative and contains high-quality visuals. It has been edited since its debut at the ASPB 2001 annual meeting.

History's Harvest presents a sweeping view of 10,000 years of agricultural history, shown against a backdrop of spectacular footage from locations in India, Mexico, the United States and Britain. The film traces the developments in agriculture that led to major breakthroughs including the genetic engineering of crops and shows how genetic engineering is an extension of what has gone on before. The film talks about the progression of science and how new technologies are important for the developing world, allowing civilization to thrive. *History's Harvest* provides accurate information to the public on the importance of plant biology in addressing world hunger and educates the public on where food comes from.

The film is being distributed to broadcast TV networks. ASPB members can have copies now for classroom and internal use. We are asking members not to show the film in any public lectures or public settings until after the broadcast premiere has been set.

The VHS film is 62 minutes long; the DVD contains additional interviews and articles and can be projected or viewed on your computer. To order your copy, please go to the Education Foundation section of the ASPB web site at <http://www.aspb.org/education/foundation/> for details or call the Foundation at 301-251-0560, ext. 110.

Monday, March 25, 2002, Edition
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CUR, ASPB, and PUIs: The Undergraduate Research Scene at ASPB

Last summer the Education Committee surveyed the ASPB membership on their participation in student research and outreach activities. About 88 percent of the respondents indicated that they have supported undergraduate researchers in the past and 97 percent found the experience rewarding (Coker and Davies, in press). Surprisingly, however, many of the respondents were unaware of a national organization devoted to undergraduate research: the Council on Undergraduate Research, or CUR (www.cur.org). Many of those respondents indicated that they wanted to know more about CUR, so this article is an attempt to respond to that need. I will also bring you up-to-date on what is happening on the undergraduate research scene at ASPB. Lastly I want to discuss undergraduate research from the experience of someone at a Predominantly Undergraduate Institution (PUI or *pee-u-eye*). PUIs are simply institutions such as small colleges and regional, comprehensive universities that don't have many (or any) Ph.D. programs. Although undergraduate research can and does happen at any institution, at a PUI it is a major factor in scholarly activity.

The Council on Undergraduate Research

CUR is a national organization started in 1979 by a handful of chemists from small private colleges. They realized that doing research with undergraduates was good both for faculty development and for student learning, and CUR evolved to spread the word. Currently, CUR has more than 3,000 members representing over 870 institutions in eight academic divisions. Its mission is to support and promote high-quality undergraduate student-faculty collaborative research and scholarship. Among CUR's programs that it offers to members are

- a biennial conference with plenary speakers and numerous workshops

- publications including *The CUR Quarterly*
- regional institutes such as "Institutionalizing Undergraduate Research," "The Vital Faculty: Issues After Tenure," and "Proposal Writing"
- summer fellowships for undergraduates
- an electronic directory of institutional and departmental data related to undergraduate research (under development)
- a consulting and mentoring service for individuals, departments, and entire campuses.

The following was copied from the CUR web site:

The Council on Undergraduate Research (CUR) and its affiliated colleges, universities, and individuals share a focus on providing undergraduate research opportunities for faculty and students at predominantly undergraduate institutions. CUR believes that faculty members enhance their teaching and contribution to society by remaining active in research and by involving undergraduates in research. CUR's leadership works with agencies and foundations to enhance research opportunities for faculty and students. CUR provides support for faculty development. Our publications and outreach activities are designed to share successful models and strategies for establishing and institutionalizing undergraduate research programs. We assist administrators and faculty members in improving and assessing the research environment at their institutions. CUR also provides information on the importance of undergraduate research to state legislatures, private foundations, government agencies, and the U.S. Congress. CUR welcomes faculty and administrators from all academic institutions. Our primary advocacy is in support of faculty and students at predominantly undergraduate institutions. CUR achieves its vision through efforts of its membership as organized in a divisional structure that includes

biology, chemistry, geosciences, mathematics and computer science, physics and astronomy, psychology, social sciences, and an at-large division that serves administrators and other disciplines.

ASPB and Undergraduate Research

Plant biologists at PUIs make up a small (and currently unknown) proportion of the ASPB membership. A glance at the geographic listing of members in the back of the membership directory reveals many towns with only one or two members. Many of these members are at PUIs. A grassroots effort initiated by Mark Brodl in 1996 brought together many of the ASPB members who work at PUIs for a breakfast meeting at the annual meeting in San Antonio. A similar breakfast has been held at each meeting since then, with attendance climbing into the eighties. While a significant portion of these meetings is used for networking, we also spend time in smaller groups brainstorming ways to promote undergraduate research in general, to facilitate each other's efforts, and to enable ASPB to support this endeavor.

The following are some of the accomplishments of the PUI group. The ASPB web site now has a set of pages devoted to PUIs and undergraduate research (<http://www.aspb.org/PUI/>). We thank Patricia Tomlinson and her students for developing this valuable resource and ASPB webmaster Wendy Sahli for maintaining the site. To facilitate communication between meetings we have a listserv called "Plant-L" hosted at the University of Nebraska at Lincoln by John Markwell. Although this list doesn't enjoy much activity yet, members comment that they appreciate that it is there when they need it. To join, look for instructions on the ASPB PUI web page. In 2001, ASPB committed funds to initiate a Summer Undergraduate

continued on page 6

Research Fellowships Program to support students of ASPB members at any institution (http://www.aspb.org/education/summer_undergrad.cfm). This summer the second group of students will be supported, and the first group will present posters on their work at the annual meeting in Denver. Also in Denver, the PUI group will be running two small workshops for the general membership: “Resources for Research at Primarily Undergraduate Institutions” and “Job Opportunities at Primarily Undergraduate Institutions.” If you are considering a career at a PUI or are looking for ideas to help fund your research program, these workshops could be invaluable.

Up to now the PUI group at ASPB has not had formal (elected or appointed) leadership, nor has it had an official voice on the Executive Committee. Its success, in terms of the growth of the breakfast meetings and the spawning of new programs for members, clearly indicates that such formalities are dispensable! However, to gauge the opinions of the PUI group on this matter, I distributed a brief survey in fall 2001. Most (82 percent) of the 38 respondents were from PUIs. When asked about the future governance structure for the group, 61 percent preferred that it continue with volunteer leadership, 37 percent preferred that the leaders be elected, and only 8 percent preferred that they be appointed (some respondents indicated that several options were acceptable). On the issue of establishing a standing ASPB committee for the PUI group (and a seat on the Executive Committee), only 29 percent preferred this arrangement. Why fool with a good thing? Grassroots organizations work well if they are composed of energetic members. One indication of the energy in this group was the whopping 42 percent of respondents who indicated that they would *like to become more involved in the leadership of the group!* Given how overworked we all are, this response was truly amazing.

Research at Predominantly Undergraduate Institutions

For a long time the perception of some at large Graduate Institutions (GIs) was that faculty members at PUIs only teach. Moreover, to end up working at a PUI must indicate that one has failed to get a “real” job. These attitudes are still prevalent today. Granted, most PUI faculty members teach more than most GI faculty members, and teaching does have a larger impact on promotion and tenure decisions at PUIs than it does at GIs. However, research expectations at PUIs have been steadily increasing over the past decades. What has driven this increase is not so much the overhead dollars that grants bring to the institutions, but the generally accepted notion that research-active faculty make better teachers and that involving undergraduates in research is an extremely effective educational tool (Doyle, 2000). Administrators are clearly not the only ones behind the increasing research expectations at PUIs. Research-active faculty members expect their colleagues to also be active researchers. Indeed, many departments at PUIs strive to develop learning communities driven by student-mentor collaborative research (Shapiro and Levine, 1999).

Expecting PUI faculty to be active researchers is a fine idea, but developing a sustainable research program at a PUI can be challenging. Prior to getting a position, most of us were trained at large institutions in well-equipped labs where colleagues doing similar work were just down the hall. At a PUI, one is likely to be the only plant physiologist in town. Lab space can be small, equipment must be shared, and the only “hands” to do the bulk of the work are those of inexperienced undergraduates. Between teaching courses and training students, finding time to write grant proposals and manuscripts can be very difficult. It was in this context, shortly after landing a position as an assistant professor at James Madison University in 1992, that I first learned about CUR. I attended

several national CUR conferences, where I learned how to deal with these and other problems and met lots of like-minded colleagues. As a result, I became extremely happy about being at a PUI. Would I trade my position for one at a GI? No way!

Doing research at a PUI can be quite rewarding. It is exciting to turn an undergraduate on to science, especially plant biology. We help them nurture their observational and analytical skills and mentor them through their first nervous talks at scientific meetings. Research productivity is slow by GI standards, but at most institutions the expectations are reasonable, resulting in some clear quality-of-life benefits. Also, because undergraduates need more supervision than graduate students or postdocs, we spend a considerable amount of time at the bench and I find that a lot of fun.

Why Should You Care About Undergraduate Research?

Supporting undergraduate research makes a lot of sense no matter what kind of institution one is at. At a PUI it is the lifeblood of our scholarly activity. Many PUIs these days tout opportunities for research to recruit strong students. At any institution, providing real research opportunities for undergraduates is good for their education. For students going on to graduate school, those with research experience are more likely to gain acceptance, and once in graduate school they are more likely to succeed. Encouraging undergraduate research in plant biology is also essential for the future of ASPB. Generally speaking, most biology majors today have career aspirations that extend very little beyond the health care profession. Giving them more opportunities to do research on plants can change those attitudes and stimulate more students to pursue careers in plant biology. There are clearly many reasons to support undergraduates in your lab. This summer in Denver seek out the under-

graduate contributions at the meetings and help engage the next generation of plant biologists. 

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New Name for Washington Area Section

At its winter 2002 meeting, the Washington Area Section of ASPB formally adopted a new name. WAS-ASPP is now MAS-ASPB, the Mid-Atlantic Section of the American Society of Plant Biologists. The membership of the section voted to use the new name in consideration of the name change of our parent society and to indicate increasing participation in the section by members from outside the immediate Washington area. MAS-ASPB invites all interested plant scientists to participate in section activities: the Fall Crab Feast, the Winter Dinner Meeting, and the Spring Research Meeting. Students are particularly encouraged to participate.

For more information, contact section officers Mark Holland (maholland@salisbury.edu), Joe Sullivan (js128@umail.umd.edu), or Jon Monroe (monroejd@jmu.edu). 

ASPB International Committee: A Contribution to Plant Biology Around the World


In 1999, I was invited to join the first meeting of the ASPB International Committee, which was formed in response to the Society's growing overseas membership (now about 40 percent of the total membership). The group is composed of members from key geographic areas of the world where ASPB is well represented. It meets once a year during the annual Plant Biology meeting and keeps in contact throughout the year under the chair of Bob Buchanan and the coordination of staff liaison Susan Rosenberry.

What started as an ad hoc committee at Plant Biology '99 in Baltimore has emerged as an active group with clear objectives. We have made effective recommendations to the Executive, Program, and Membership Committees, especially after Plant Biology 2000 and 2001. We've tackled free or discounted journal subscriptions and books for needy overseas institutions, sponsorship of international meetings and workshops, and joint meetings with foreign societies.

Looking back on our fruitful discussions, we've tried to give a representative view of the actual situation in our own countries and regions as it relates to our relationship with ASPB. For example, I was assigned to contact Mexican members and their corresponding scientific society to ask their opinion about the possibility of a "joint meeting" with ASPB and the Pacific Rim countries. The information we collected led the committee to enthusiastically recommend Hawaii as a meeting site for Plant Biology 2003.

We've also enjoyed a lively exchange of ideas as we drafted a policy for giving away journal subscriptions and books and sponsoring meetings and related activities in developing countries represented by ASPB members. Particularly in South America, distinguished members of ASPB have participated in seminars, workshops, and meetings and soon will take part in a meeting organized by the plant physiology societies of Argentina, Brazil, and Uruguay (IV Congreso Latinoamericano de Fisiología Vegetal) that will take place on October 23–25, 2002, in Punta del Este, Uruguay.

Note that in 2001, Argentina had the largest ASPB membership of all Latin American countries, even though it is geographically the farthest from the United States. I believe the reasons are that ASPB held an intensive workshop in Argentina in 1998 that increased awareness of the Society and that it is very important for us to belong to ASPB with all the benefits that its membership brings, especially the opportunity to attend the annual Plant Biology meeting—one of the most important events for plant biologists in the world. I hope that despite the current difficult economic situation in Argentina, we will be able to maintain that large membership.

Without a doubt, ASPB has contributed greatly to plant biology communities worldwide, and these communities have become even more effective through the International Committee. Our overseas members are urged to let the committee know of new ideas, suggestions, and needs. Visit us at http://www.aspb.org/committees_societies/international.cfm. 

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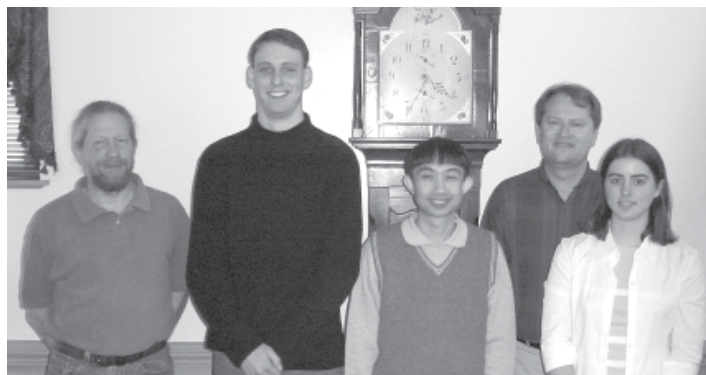
Midwest Section Holds Annual Meeting

The annual meeting of the Midwest Section of the American Society of Plant Biologists took place on March 15 and 16 at Miami University in Oxford, Ohio. John Kiss, president of the section, organized and served as local host for this successful meeting, which attracted more than 90 participants and featured 36 oral presentations. As usual, this venue provided an excellent forum for student presenters, with 25 graduate students and three undergraduates giving research talks. Two graduate students, Darron Luesse (Indiana University, Roger Hangarter lab) and Surasak Siripornadulsil (The Ohio State University, Richard Sayre lab), were given awards for the best graduate student presentations. Kelly Roth (Miami University, John Kiss lab) received the award for the best undergraduate research presentation.

The keynote address was presented by Dr. Roger Hangarter (Indiana University) on "Light Regulated Chloroplast Movements in *Arabidopsis*." During the course of the talk,

the audience was treated to a series of time-lapse movies showing the movements of chloroplasts in response to changing light intensity. Fluorescence microscopy revealed some of the cytoskeletal rearrangements that enable these movements to occur rapidly and reversibly. Finally, the audience was presented with some truly remarkable examples of the living art that can be created on leaf surfaces by using light to rearrange the chloroplasts. Movies showing other plant movements can be seen at the Hangarter lab web site (<http://sunflower.bio.indiana.edu/~rhangart/plantsinmotion.html>).

At the business meeting, members elected



Left to right: Keynote speaker Roger Hangarter, graduate student award winners Darron Luesse and Surasak Siripornadulsil, section president John Kiss, and undergraduate student award winner Kelly Roth.

Allan Showalter (Ohio University) to become the vice president of the section. Steve Rodermeil (Iowa State University) will advance to become president, and Karen Koster (University of South Dakota) will serve another year as secretary/treasurer. Iowa State University will be the site of the 2003 meeting of the Midwest Section, with dates to be announced.

New Book

ASPB member Alan McHughen has coedited a new book published by Marcell Dekker. The book is titled *Transgenic Plants and Crops*, and it is edited by George Khachatourians, Alan McHughen, Ralph Scorza, Wai-Kit Nip, and Y. H. Hui. It concentrates on individual species, with experts writing about transgenic research related to their respective plant species. It also carries several chapters dealing with basic principles and even trade and intellectual property issues as well as industry perspectives and public concerns. This technical resource is designed for use as a handbook in professional labs. 2002. ISBN 0-8247-0545-9. 55 chapters; 876 pages. \$225.

2002 Get-A-Member Campaign

Have you participated in our
2002 Get-A-Member Campaign?

We are asking every member of
ASPB to refer a few colleagues for membership.

It only takes a few minutes!

Visit

<http://www.aspb.org/getamember/>
and refer your friends and colleagues.

The Bioethics Imperative VI

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

Scenario: During a journal club, a postdoctoral fellow of a senior colleague in your department presents the deduced nucleotide sequence of a protein that was sequenced in another lab. The lab that generated the amino acid sequence has not yet published their results. Your colleague's postdoc has run a BLAST search that revealed interesting relationships to proteins he works on. When asked, the postdoc and your colleague say they did not obtain permission to share this confidential information with others. Given that this senior colleague is on your promotion committee and you are just about to come up for tenure, how do you deal with this case of scientific misconduct?

Trust is arguably the most important pillar of science. In the 1990s, self-correcting mechanisms within the scientific community were found to be inadequate. The case involving David Baltimore was subject to a long public debate, and the ability of scientists to police themselves was widely questioned. Fierce competition for funds not only undermines collegiality, but can

engender a slippage in or loss of scientific integrity.

The University of Washington defines scholarly misconduct as

- intentional misrepresentation of credentials
- falsification of data
- plagiarism
- abuse of confidentiality
- deliberate violation of regulations applicable to research.

<http://www.washington.edu/faculty/facsenate/handbook/04-09-01.html>

Both public and private funding sources recently have defined scientific misconduct:

"Fabrication, falsification, or plagiarism in proposing, performing of reviewing research, or in reporting research results. . . . Research misconduct does not include honest error or honest differences of opinion."

U.S. Government Funding

Final guidelines for the contentious statement on scientific misconduct in biomedical research by Britain's Wellcome Trust are set to go into effect in the fall of 2002 and are contentious because they extend the boundaries of scientific misconduct. Perhaps most importantly, they are likely to stimulate other funding agencies to follow suit (quote and

conclusions from R. Koenig, *Science* **293**, 1411–1413).

Running a few sessions on scientific misconduct at the University of Washington and listening to seminars on the topic by the UW administration have made me aware of two things: Scientific misconduct rules are becoming more rigid and institutionalized, and there is a prescribed series of steps that you can and should follow in the case of suspected misconduct.

In the meanwhile, consider the following proactive steps:

- Do not keep, copy, or share grants or manuscripts you review.
- Do credit the source of data or prose taken from the web.
- Become aware of your rights if you were to be accused of misconduct.
- Become aware of your rights as a "whistleblower."

Know your institutional policy so that you can immediately work with your institution, e.g., your ombudsman, if something of concern arises.

Next time: Ethical Mentoring. 

Dina Mandoli

University of Washington, Seattle
mandoli@u.washington.edu

Don't Miss These Events at Plant Biology 2002!

When registering for the ASPB annual meeting, don't forget to sign up for the Monday luncheon sponsored by the Women in Plant Biology Committee. Dr. Nancy Dickey will speak on "Will the Glass Ceiling Finally Retract in the 21st Century?" Also, don't miss the chance to work on your career goals by attending one of the career workshops being held Sunday night. Learn the various career path options at the workshop "Where Are the Jobs?" or hone your job searching skills at the workshop "How to Get the Jobs."

THESE EVENTS REQUIRE ADVANCE REGISTRATION.

ASPB Journals Part of HighWire Portal to Biomedical Research

Stanford University's HighWire Press has created a single portal for access to all the research literature in the biological sciences and medicine.

The HighWire Library of the Sciences and Medicine Portal allows free access to more than 430,000 free, full-text research articles published by the 330+ HighWire journals, including *JBC*, *Science*, *Plant Physiology*, and *The Plant Cell*, making it the world's largest collection of free full-text life science articles.

The portal searches more than 12 million articles from 4,500 Medline journals with powerful new search features. It is now possible to search all of Medline's abstracts and all of HighWire's full text with one click, and there are a number of ways to sort and format results. It's much easier to scan large results and pick out important articles by journal because you see the journal cover right there. The new site should be a single place to do your most convenient searching.

Free alerting services monitor all 4,500 journals' newly published content—or journals you select—to identify articles that

match your keywords, authors, citations, and interests.

"This past year researchers have told us what is important to the productivity of their work with the literature: barrier-free access to more full-text content; easier, more comprehensive and more precise cross-journal searching; and subject-specific, personalized e-mail alerts," said John Sack, director of HighWire.

The portal features the entire archive of *Plant Cell* articles, dating back to volume 1, January 1989. *Plant Physiology* is online

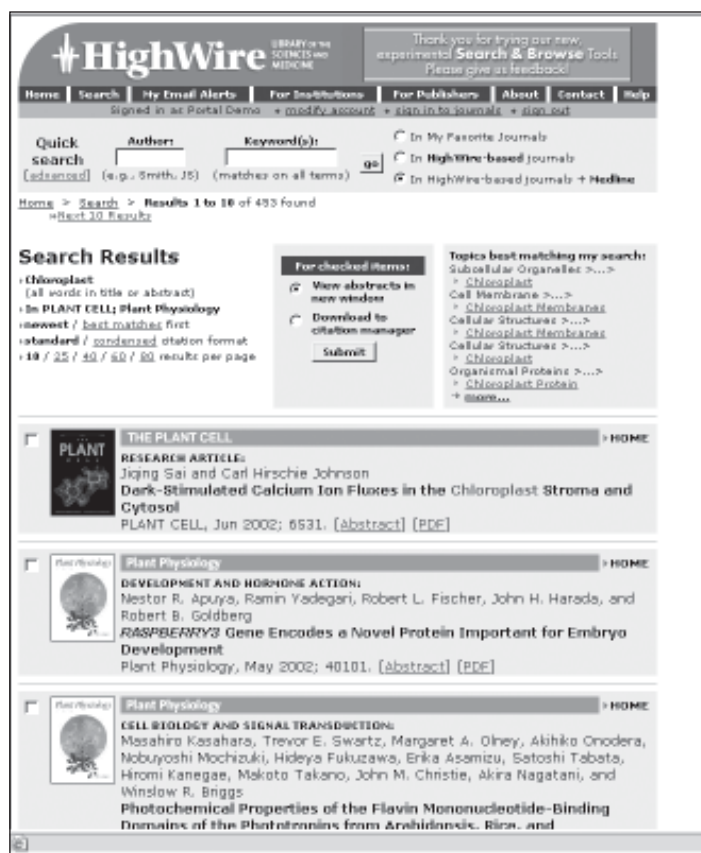
back to volume 101, January 1993. Access to all content, including our Preview Papers, which are published ahead of print every week, **is free to ASPB members** through the free online subscription that is a benefit of membership.

The next few issues of the *ASPB News* will highlight features of the portal that will be of special interest to researchers. Look for columns on the following topics in upcoming issues:

- Finding Full Text Fast
- Tailoring Search Results
- Personalizing Your Favorite Journals & Your Site Bar
- Citation Searching
- Advanced Search
- Alerting
- Visual Browsing & Searching by Subject
- Discovery Through Searching

ASPB is delighted to provide this new service to Society members, authors, and members of the plant science community.

Visit the HighWire Library of the Sciences and Medicine Portal at <http://highwire.stanford.edu>.



ASPB Members Help Public Accept Higher Gene Count in Rice

By urging readers to step back a moment to consider the harried life of a plant, the lead article in the *Washington Post* Science Page April 8, 2002, helps explain how a rice plant can have more genes than the average newspaper subscriber. ASPB member Jeffrey Bennetzen notes in the article that “plants live by chemistry,” and this may help explain why a plant can have more genes than a human. ASPB member Benjamin Burr offers an example in the article of how plants use chemistry to manipulate animals.



Jeff Bennetzen

In a Plant's Plentiful Genes, a Chemistry Lesson

by Justin Gillis

Washington Post Staff Writer

Last week's announcement that the rice plant probably contains more genes than a human being might have seemed mystifying. But step back a moment to consider the harried life of a plant.

A plant has to find its nutrients wherever it happens to be. It cannot take shelter from a storm. Some plants can deploy physical defenses, such as nettles or bark, but most cannot. If plants had a point of view, they would see the animals of the Earth, including people, as marauding plunderers determined to gobble them up; plants would feel naked before the onslaught.

Above all, plants lack a critical advantage that pretty much every animal on the planet takes for granted. “For animals, if it's too hot, if it's too cold, if something is about to eat them, their general response is to leave,” said Jeffrey L. Bennetzen, a biologist at Purdue University. Plants, of course, are stuck in place.

But nature has compensated plants richly for their deficits, and therein lies one explanation for why a rice plant might have more genes than a person.

The pressure of evolution has taught plants to make tens of thousands of chemical compounds, which they use to ward off competition from other plants, to fight infection, to respond to the environment, and to manipulate the behavior of animals. In fact, even the lowliest weed is a chemical factory that puts DuPont to shame.

“Plants live by chemistry,” as Bennetzen put it.

The complicated evolutionary knowledge of how to make those chemicals is encoded

in the plant's genes, which are its instructions for making proteins. Biologists say that's one explanation for why plants are turning out to have so many genes—they are carrying what amount to chemistry instruction manuals in their cells.

The chemical wizardry of plants is a daily fact of human life, but people don't often stop to think of it that way. The pungent flavor of basil, the intoxicating aroma from a glass of wine, the spicy smell of a gardenia, the cloying sweetness of a candy bar—all are a testament to the ability of plants to make a wide array of chemical compounds.

Plants do not learn from other plants in the way many animals learn behavior from their parents, so the expertise to make all these chemicals must be carried in the genes.

Two scientific papers published on Friday reported the first detailed analysis of the full genetic complement, or genome, of the rice plant. Genes are only a small portion of the total genetic material, and scientists are still trying to fish all of them out of the mix. But they estimate that rice has somewhere between 32,000 and 55,000 genes.

Humans are estimated to have 30,000 to 40,000 genes, so if rice finally comes out in the midrange of estimates, it will be the first organism shown to have more genes than a person.

It probably won't be the last. Plant geneticists say some species carry enormous amounts of genetic material, sometimes hundreds of times as much as a person. Even if much of that turns out to be “junk DNA,” the mysterious DNA scattered throughout a genome, it seems inevitable that many organisms will be found to have more genes than people.

What all those genes are doing in rice is something the scientists are still puzzling out.

But the largest single group of genes identified so far encode instructions for making enzymes, the proteins that perform chemical reactions in plants—strongly implying that many of the genes in a rice plant are devoted to producing compounds that help the plant cope with its environment.

Until the rice papers, mankind had escaped the indignity of being upstaged on gene count by a “lower” form of life. But there have been detailed scientific reports on only five organisms to date, and some of those came uncomfortably close.

The tiny worm *Caenorhabditis elegans*, for instance, has about 19,000 genes, at least half as many as a human being—this for a microscopic nematode that's essentially a hollowed-out tube with a rudimentary brain.

Comparing the worm to another research organism—*Drosophila melanogaster*, the fruit fly—points up another reason why counting genes is starting to seem less than revealing. The fly appears to be a far more complicated organism than the worm, with a complex body plan, a bigger brain and some fairly elaborate behavioral patterns. Yet the fly turned out to have fewer genes than the worm—only about 13,000.

It has been known for years that animals generate biological complexity that doesn't depend strictly on gene count. In at least some animals, unlike in plants, a single gene can get sliced and diced to make variations on a particular protein. Like a baker using one cookie

continued on page 12

Best Paper Award: *The Plant Cell*

Dr. Jason W. Lilly is the recipient of the second annual Young Scientist's Best Plant Biology Paper-of-the-Year Award for a paper published in *The Plant Cell*, for his paper "Cytogenomic Analyses Reveal the Structural Plasticity of the Chloroplast Genome in Higher Plants," which was coauthored by Michael J. Havey, Scott A. Jackson, and Jiming Jiang (*Plant Cell* **13**, 245–254). Dr. Lilly and his coauthors used a fiber-FISH-based cytogenomic approach to analyze the structure and organization of chloroplast DNA molecules from *Arabidopsis*, tobacco, and pea. They found chloroplast DNA in both linear and circular molecules and estimated that only 25% to 45% of the chloroplast DNA within developing leaves consists of circular molecules. The authors observed linear and circular molecules containing one to four copies of the chloroplast genome. They demonstrated the existence of large multimers consisting of six to 10 genome equivalents and further discovered rearranged chloroplast DNA molecules of incomplete genome equivalents, which led them to conclude that higher plant chloro-

plast DNA is more structurally plastic than previous sequence and electrophoretic analyses have suggested. Their work demonstrated how the fiber-FISH-based cytogenomic approach allows for powerful analysis of rare events that cannot be detected by traditional techniques. The work documented in the manuscript represents one-and-a-half years of effort, dozens of slide preparations, and more than 200 microscope hours.

Dr. Lilly received his undergraduate degree in crop and soil sciences at Michigan State University. He went on to earn his master's and doctorate degrees in plant breeding and plant genetics at the University of Wisconsin under the guidance of Dr. Havey and Dr. Jiang. Dr. Lilly is currently an NIH postdoctoral fellow in Dr. David Stern's laboratory at the Boyce Thompson Institute for Plant Research at Cornell University. His work focuses on the *Chlamydomonas reinhardtii* plastid genome, where he is integrating his molecular cytology skills with new functional genomics tools to dissect the structure and expression of this model plastid genome. His long-term research goals are to expand upon the *Chlamydomo-*

nas genome project and begin to merge ecology, physiology, and genomics to recognize how plant organelles regulate fun-

damental biochemical processes (photosynthesis and respiration), especially under adverse environmental conditions.

In addition to his research work at Cornell, Dr. Lilly has supervised three undergraduates and one high school student during the past two years. He is very excited about genomics training and together with Dr. Maureen Hanson has organized and coordinated a week-long course about microarray techniques and analysis for Cornell Plant Cell and Molecular Biology graduate students.

Dr. Lilly will be presented with a plaque and a check for \$1,000 during the Plant Biology 2002 meeting awards ceremony, Saturday, August 3, 2002, in Denver, Colorado. In addition, he will give a presentation during the minisymposium on evolutionary genomics on Monday, August 5, and will receive a subsidy of up to \$1,500 to attend the meeting. 🌱



Jason Lilly

continued from page 11

cutter but then decorating each cookie in a different way, an animal cell seems to be able to use one gene to generate many proteins.

The new research is driving home the importance of those mechanisms, suggesting that at most, biological complexity may be coupled to gene count only in plants. Scientists say the old idea of a straightforward correlation between the number of genes and an organism's complexity is on its deathbed.

"I think it's absolutely collapsed," said Donald Kennedy, editor-in-chief of *Science*, the journal that published the rice papers. "You don't tell an awful lot about an organism's complexity from the number of genes that it has."

The new research could give scientists far more insight into the chemistry of plants. Many thousands of plant compounds are known already, and some of them

have played storied roles in human history. In 1897, for instance, a German chemist named Felix Hoffmann tweaked a chemical from the bark of a willow tree and came up with the compound known as aspirin, launching the modern pharmaceutical industry.

Plants didn't originally devise their chemicals to fill medicine chests, of course. Typically, the compounds are evolution's way of giving the plant a means to manipulate animals. A lot of the chemicals are aimed at repelling animals that would otherwise eat the plant, while others are designed to attract bees or other creatures that help a plant reproduce by spreading pollen.

Plants often employ both strategies at once. Benjamin Burr, a biologist at Brookhaven National Laboratory, cites the example of apricots and peaches. These

plants make delectable fruit that inspires animals to chomp away. Evolution wants the animal to tote the fruit—and the seed inside—some distance from the parent plant, but it does not want the animal to eat the seed. So the pits of these fruits contain a compound that breaks down, in an animal's body, into a familiar poison.

"If you eat apricot or peach pits, you can poison yourself with cyanide," Burr said.

Scientists know of many examples of this kind of chemistry, but they assume far more are waiting to be discovered. They expect the gene maps now being unveiled to give them powerful new insights into the chemical wizardry of plants—perhaps turning up new drugs or industrial compounds in the process. 🌱

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Best Paper Award: *Plant Physiology*

Dr. Frans J. M. Maathuis is the winner of the second annual *Plant Physiology* Young Scientist's Best Plant Biology Paper-of-the-Year Award for the contribution that he co-authored with Dr. Dale Sanders (*Plant Physiology* **127**, 1617–1625) entitled "Sodium Uptake in Arabidopsis Roots Is Regulated by Cyclic Nucleotides." In this paper the authors, both of the University of York, present evidence, based on a diversity of techniques, to support the idea that a cyclic nucleotide-gated channel is involved in allowing Na⁺ influx into Arabidopsis roots under high salt conditions. This highly original finding will undoubtedly have broad implications for understanding the basic biology of salt stress in glycophytic plants and may conceivably lead to the genetic engineering of increased salt resistance in agricultural crops.

The general research interests of Dr. Maathuis are in plant nutrition and abi-

otic stress, with particular emphasis on ion transport across plant membranes. In particular, he has pioneered the application of electrophysiological techniques to address fundamental questions in plant physiology. During his Ph.D. studies at the University of Groningen in the 1980s, he set up the first plant patch-clamp facility in the Netherlands to compare the vacuolar membrane transport properties of salt-sensitive and salt-tolerant *Plantago* spp. He continued this work while he was a postdoctoral fellow at the University of Sussex in the United Kingdom, this time studying the role of the slow vacuolar (SV) channel in salt tolerance of the halophyte *Suaeda maritima*.

In 1992, Dr. Maathuis started work in the Biology Department of the University of York as a postdoctoral fellow with Dr. Dale Sanders. During the ensuing years he studied the mechanisms of low- and high-affinity K⁺ up-

take in plants. Since 1998, he has worked as an independent research fellow in York. His research interest has returned to the area of plant salt tolerance, where a key question concerns the identification of pathways for Na⁺ entry into plant roots.

Dr. Maathuis will be honored at the ASPB annual awards ceremony, held Saturday, August 3, the opening day of the Plant Biology 2002 meeting in Denver, Colorado. At that time, ASPB president Vicki Chandler will present him with a check for \$1,000. On Tuesday, August 6, he will present a talk during the "Membrane Transport" minisymposium. He will also receive a subsidy of up to \$1,500 to attend the meeting. 🌱



Frans Maathuis

Chrispeels Announces Italian and Spanish Versions of "Foods from GM Crops" Brochure

The Italian and Spanish translations of the brochure entitled "Foods from GM Crops" has been published by the San Diego Center for Molecular Agriculture (SDCMA). SDCMA is an alliance of scientists who work at public research institutions in San Diego. ASPB member Maarten Chrispeels is director of SDCMA.

The publication can be viewed at the web site <http://www.sdcma.org>. After visiting this homepage, click on Publications. The Spanish version of the brochure is entitled "Alimentacion de Plantas Transgenicas," and the Italian one is "Agricoltura, alimentie biotecnologie." Printed copies are not available. Inquiries on the publications can be directed to Chrispeels at mchrispeels@ucsd.edu.

Chrispeels provided English-language print copies of the brochure to the ASPB education booth at the National Science Teachers Association (NSTA) annual meeting held March 27–30 in San Diego. To read more about the ASPB education booth at the NSTA meeting, see the Education Forum story on page 26 of this issue of the *ASPB News*. 🌱

NAS Nominations

The National Academy of Sciences is accepting nominations for the Gilbert Morgan Smith Medal, a \$20,000 prize awarded to recognize excellence in published research on marine or freshwater algae. Previous recipients include Elizabeth Gantt, Isabella A. Abbott, and Shirley W. Jeffrey.

Nominations will be accepted through September 6, 2002.

For more information, contact

National Academy of Sciences
Awards Program, Room 146
2001 Wisconsin Avenue, NW
Washington, DC 20007

Phone: (202) 334-1602

Fax: (202) 334-1255

E-mail: awards@nas.edu

Web: <http://www.nas.edu/nas/awards>

ASPBS 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 ASPBS 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 Kelley Noone, ASPBS membership and marketing manager, at knoone@aspb.org.



Name: ELIZABETH E. HOOD

Title: Vice President, Industrial Proteins Business Unit

Place of work or school: ProdiGene, College Station, Texas

Research area: Plant biotechnology, foreign gene expression

Member since: 1977

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

Yes. Being an ASPBS member has kept me in touch with top-notch plant biologists as I developed my career.

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

The Society gave me a format to present data and great journals in which to publish results.

3. Was anyone instrumental in getting you to join ASPBS?

My master's thesis adviser, James Ownby, was a member and introduced me to the Society.

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

ASPBS has many benefits, including announcements, discounts on books and meetings, the *ASPBS News*, and journal subscriptions to the two premier plant journals. The annual meetings, also discounted to members, are great formats to present data and network with other plant scientists.

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

I have applied for various job postings I have seen advertised in the *ASPBS News*. However, I am not sure if any of those applications resulted specifically in my being hired. Most of those positions were also posted elsewhere, such as in *Science*.

6. Do you still read print journals? Where do you usually read them: work, home, library, in the car, on the bus?

I subscribe to both *Plant Physiology* and *The Plant Cell*. I scan the tables of contents at work but mostly read articles at home early in the morning, or over coffee during office breaks. I very seldom have any quiet time at the office for reading.

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

The next big thing in plant biology has to be focused on defining the interactions of proteins and enzymes to create a

"whole plant" and to understand its metabolism. A big part of this will be functional genomics—and not single gene actions, but multiple genes and their interactions. A big push in this direction has been with Arabidopsis, but that's just the tip of the iceberg. Defining the differences between Arabidopsis and plants in diverse families will address the real basis of how plants work. These questions will most likely drive research in the next 10 to 15 years. Knowledge for knowledge's sake is a wonderful thing. However, the application of this knowledge to solve food, agriculture, and medical problems and situations will be the real wave of the future.

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

This question does not have a single simple answer. I admire various people for their different expertise and their resulting influences on my life. I have had several friends and mentors who have helped me shape my career: Mary-Dell Chilton, Georgia Helmer, and Joe Varner, all of whom have great minds; my husband, Kendall Hood, has stood beside me and supported me throughout my life. I admire his stamina, knowledge, ability to relax, and his artistry. My current colleague and mentor, John Howard, has had the most profound influence on my career by showing me the path to my own excellence. He is the smartest person I

The Plant Cell and Science Link Rice Genome Articles

know. However, I think the scientist I most admire is Barbara McClintock. She predicted phenomena that occur at the molecular level although she had no molecular tools at her disposal. She was right about almost all those predictions. I would love to have that power of deduction from observation.

9. What are you reading these days?

For my work, I read papers in gene expression and biotechnology. Because I am developing a program in biomass conversion, I am reading papers, newsletters, and textbooks on ethanol technology, enzymes, cell wall structure, and economics. For pleasure, I mostly read books by female authors. I enjoy stories that describe life situations and their resolution. My favorite author is Barbara Kingsolver. Her words and stories have provided me with much philosophy for daily and long-term life.


10. Do you have any hobbies?

Hobbies, hmmm. Tough question. I raised two fine sons. I read prolifically (see question 9 above). I sing in my local community choir. I have several things I'm looking forward to doing in the next several years, including playing the harp and flying a small plane.

11. What is your most treasured possession?


My most treasured possession would be photos of my family, particularly of my boys as they grew up. These are my only irreplaceable things, and they are very dear.

12. What do you still have left to learn?

Whatever I can. Everything that everyone else knows. That should keep me busy for many years! 

Rice has been an important cultivated crop and a staple of the human diet for thousands of years. *Science* magazine published two articles on sequencing of the rice genome in the April 5, 2002, issue. These are Yu et al., "A Draft Sequence of the Rice Genome (*Oryza sativa* L. ssp. *indica*)" (*Science* **296**, 79–92) and Goff et al., "A Draft Sequence of the Rice Genome (*Oryza sativa* L. ssp. *japonica*)" (*Science* **296**, 92–100). The articles, including editorials and News Focus articles, data access agreement, and pdf file of a rice genomics poster can be accessed online at <http://www.sciencemag.org/feature/data/rice/index.shtml>.

Two important articles on rice genomics also appeared in the March 2002 issue of *The Plant Cell*. These articles are Wu et al., "A Comprehensive Rice Transcript Map Containing 6591 Expressed Sequence Tag Sites" (*Plant Cell* **14**, 525–535) and Chen

et al., "An Integrated Physical and Genetic Map of the Rice Genome" (*Plant Cell* **14**, 537–545). Abstracts and full text of the articles and an accompanying "In This Issue" article can be found at *The Plant Cell* web site <http://www.plantcell.org/>. The draft sequences of two important rice cultivars presented in the *Science* articles represent a major achievement in plant genomics. Annotation and mapping, such as presented in *The Plant Cell* articles, are also of fundamental importance as we seek to make use of sequence data for crop improvement and for insights into the structure and function of plant genomes. The four articles thus represent a milestone in progress toward extracting useful information from the rice genome. In recognition of the complementary nature and joint importance of these articles, *Science* and *The Plant Cell* have provided links between the articles at the URLs listed above. 

The winner of this year's Kumho Science International Award in Plant Molecular Biology and Biotechnology, funded by the Kumho Cultural Foundation/Kumho Group and administered by the Award Committee of International Society for Plant Molecular Biology, is David Baulcombe, of The Sainsbury Laboratory at the John Innes Centre. The award ceremony will be held June 21–22, 2002, at Kumho Art Hall, Kumho Group, Seoul, Korea. Baulcombe won for his work on plant gene silencing and viral disease resistance. Previous winners include Ingo Potrykus, for his development of golden rice (2000), and the Arabidopsis genome team, M. Bevan, J. Ecker, R. Martienssen, F. Quetier, C. Somerville, S. Tabata, S. Theologis, O. White (2001).



Why Should I Be a Plant Physiologist?

This is the second in a series of commentaries by plant biologists who have retired. The column is being edited by Ann Oaks and Carl Leopold.

I have a worry. I see young people all around me working hard, assiduously doing research on physiological functions in plants, and as I talk with them and listen to their seminars, I sometimes wonder whether they have a sense of genuine excitement. Are they excited by plant physiology? Are they attracted by the relevance of plant physiology to the vital dynamics of nature? Do plants appeal to them because of their beauty and diversity? In short, do they perceive plant physiology as a calling, or do they see it simply as an entry into a technical field, an apprenticeship to a technical job?

Instead of thinking of the field as job training, let me suggest some positive reasons for entering plant physiology as a calling:

- Because it is appealing to work with plants.
- Because I would hope that my profession would bring me joy for working on

such a beautiful sector of the natural world.

- Because I would choose to pursue an effort to understand plants as they constitute a fundamental underpinning for the entire biological earth system.
- Because plants offer an entry into a unifying concept of energy production for the natural world.
- Because plants are a major component of both agricultural and environmental systems.
- Because the science of plant physiology is progressing rapidly in new and exciting directions.

Each of these reasons assumes that a professional feels a sense of personal appeal in learning about how plants work. Each assumes an intellectual commitment beyond the need for a job.

For most of us physiologists, the sense of personal appeal most likely was generated by a positive experience in school, or by a

mentor who transmitted a sense of delight in working with plants. So the inspirational teaching of plant physiology can be a major force in the creation of enthusiasm in people of subsequent generations.

For some of us, an excitement about plant physiology can keep us involved in our science for years after retirement. It is a sense of excitement that causes me, during my 12 years into retirement, to continue studying and publishing on plant physiological subjects.

I wish I could find a way to assure myself that newcomers to our science are attracted by a sense of the beauty of living plants, and by a sense of the elegance of their role in environmental as well as agricultural systems. I hope that they can see a wider array of plants than *Arabidopsis*. And I wish that I could dispel the image of working on plant physiology as a job instead of a calling. 🌿

A. Carl Leopold

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Plant Cell/Plant Physiology Archive Now Online

ASPB has now digitized the entire archive of articles published in *The Plant Cell*, beginning with Volume 1, January 1989. The *Plant Physiology* archive has been digitized back to volume 101, January 1993.

The full-text archive will be made available free of charge to reflect the Society's commitment to make all its research articles free after 12 months. All articles will be indexed in PubMed.



I wish to respond to the Public Affairs article in *ASPB News*, vol. 29, no. 2, titled "Terrorists Strike University of Minnesota Plant Genomics Construction Site."

The title is both misleading and inappropriate. In the article, the incident is described as an arson attack, and the group claiming responsibility, Earth Liberation Front, calls the incident "economic sabotage." The title of the inset article also calls ELF "ecoterrorists," yet that article says ELF is responsible for six years of "vandalism in the name of protecting the environment . . ." Furthermore, it states that there has never been an individual harmed in any of ELF's attacks.

Since neither ASPB nor Reuters News Service describes these attacks as "terrorism," why the sensationalist titles? Terrorism is an act specifically designed to instill terror in its intended victims. Furthermore, terrorism is universally associated with attacks on persons as well as institutions. Branding ELF as (eco)terrorists when they do not meet this definition is pure sensationalistic journalism. Furthermore, it reveals the pervasive bias of ASPB (and the corporate news media) toward the biotechnology industry. This, although disappointing, is not surprising. As large biotech companies fund new university buildings and programs and sponsor the research of more and more university faculty, it should be expected that bias will creep into

their perspective on biotech issues. No one should condone violence or applaud vandalism, even if it is expressly carried out with the intent not to directly harm individuals or animals. However, to brand a controversial environmental group like ELF as a terrorist organization is unprofessional and telling of where one's loyalties are located.

One can argue that economic sabotage is a legitimate form of protest in protection of the environment, and one can argue that it is a clear violation of laws and statutes and should be punished as such. But in this era of heightened tensions and concern about real terrorist threats, to lump ELF with al Qaeda or other organizations bent on killing civilians and punishing their supposed oppressors is inexcusable. The blatant cozying of ASPB with the biotech industry in practically every page of the *ASPB News* is one thing; to use the word "terrorist" in the title of a pair of articles that describe an arson attack that for many may be philosophically (if not legally) justifiable is unconscionable. I, for one, am now making plans to request that my membership be terminated. I hope others members of ASPB will consider whether or not they want to continue to associate with such an organization.

Travis Idol

University of California, Davis



A Special Collection of Articles from *The Plant Cell*
September 1999–January 2001

Plant Genomics: Emerging Tools

As we enter the new millennium, the age of genomics is in full swing. Much more than the study of individual genes and their functions, genomics implies the study of the interacting networks of genes, proteins, and metabolites that make up a whole organism. Large-scale genome sequencing projects form the base of all genomics studies, but radiating out from this base is a host of other tools that allow us to figure out the biology that is governed by DNA sequence.

Between September 1999 and January 2001, *The Plant Cell* published a series of articles on genomics technologies and

approaches specially written for the plant science community. These articles, together with a number of research papers on plant genomics published during this period, have been bound into a volume called *Plant Genomics: Emerging Tools*. This compilation provides readers interested in the applications of genomics to plant science with a single resource covering the most recent developments in this emerging field.

Plant Genomics: Emerging Tools

ISBN 0-943088-42-9. Item 30044. Price \$25.00

For ordering information go to
www.aspb.org

Published by the
American Society
of Plant Biologists
(Formerly the
American Society
of Plant
Physiologists)



National Biotechnology Week Resolution Cites Contributions to Medicine, Agriculture, Energy, National Security, Commerce

The Senate agreed to a resolution (S.Res. 243) April 18 designating the week of April 21 through April 28, 2002, as National Biotechnology Week.

Following are the sponsors and their resolution approved by the Senate:

Mr. Hutchinson (for himself),
Mr. Dodd, Mrs. Murray, Mr. Hatch,
Mr. Specter, Mr. Bond, Mr. Bingaman,
Mr. Craig, Mr. Torricelli, Mr. Biden,
Mr. Jeffords, Mr. Corzine,
Mr. Sarbanes, Ms. Mikulski,
Mr. Kennedy, Mr. Helms, Mr. Frist,
Mr. Breaux, Mr. Edwards, Mr. Crapo,
Ms. Collins, Mr. Campbell,
Mr. Sessions, Mr. Inhofe,
Mrs. Carnahan, Mr. Durbin,
Mr. Kerry, and Mr. Thurmond
submitted the following resolution,
which was referred to the Committee
on the Judiciary:

April 18, 2002

Committee discharged; considered and agreed to

RESOLUTION

Designating the week of April 21 through April 28, 2002, as "National Biotechnology Week."

Whereas biotechnology is a strategic industry and is increasingly important to the research and development of products that improve health care, agriculture, industrial processes, environmental remediation, and biological defense;

Whereas biotechnology has been responsible for medical breakthroughs that have benefited millions of people worldwide through the development of vaccines, antibiotics, and other drugs;

Whereas biotechnology is central to research into cures and treatments for conditions such as cancer, diabetes, epilepsy, multiple sclerosis, heart and lung disease, Alzheimer's disease, Acquired Immune Deficiency Syndrome, Parkinson's disease, spinal cord injuries, and many other ailments;

Whereas biotechnology contributes to crop yields and farm productivity, reduces chemical pesticide use, and enhances the quality, value, and suitability of crops for food and other uses that are critical to the agriculture of the United States;

Whereas biotechnology offers the potential for increasing food production, particularly in developing nations facing chronic food shortages;

Whereas biotechnology, through industrial applications, is creating an abundance of efficient enzymes and other biobased products, which foster cleaner industrial processes and can help produce energy, fine chemicals, and biobased plastics from renewable resources;

Whereas biotechnology contributes to homeland defense and national security by providing the tools to develop a new generation of

vaccines, therapeutics, and diagnostics for defense against bioterrorism;

Whereas biotechnology contributes to the success of the United States as the global leader in research and development, and international commerce;

Whereas biotechnology will be an important catalyst for creating more high-skilled jobs throughout the 21st century and will help reinvigorate rural economies; and

Whereas it is important for all people of the United States to understand the beneficial role biotechnology plays in an improved quality of life:

Now, therefore, be it

Resolved, That the Senate—

- (1) designates the week of April 21 through April 28, 2002, as "National Biotechnology Week"; and
- (2) requests that the President issue a proclamation calling on the people of the United States to observe this week with appropriate programs, ceremonies, and activities.

Deadlines for *ASPB News*

**We invite you to submit articles and letters to the *ASPB News*.
Deadlines for submission of copy follow:**

Issue	Deadline
September/October 2002	August 10, 2002
November/December 2002	October 10, 2002
January/February 2003	December 10, 2002
March/April 2003	February 10, 2003

Senator Bond Honored for National, World Leadership in Biotechnology

In recognition of Senator Christopher (Kit) Bond's (R-MO) tireless and successful efforts to support biotechnology research, the Biotechnology Industry Organization (BIO) presented him with its Legislator of the Year award April 24 in Washington, DC. The luncheon awards program was attended by many biotechnology industry representatives and scientists. BIO noted, "Senator Bond has worked tirelessly to secure funding for biotech research and development for use in the United States as well as the developing world."

ASPB member Roger Beachy, president of the Donald Danforth Plant Science Center in St. Louis, said he was delighted to have the opportunity to present remarks at the awards program on the many contributions Senator Bond has made to plant science, including plant biotechnology and plant genome research.

Beachy said he has had the opportunity to accompany Bond in pursuing one of the senator's great desires, to learn how people in the world could benefit from science, particularly plant science. Bond and Beachy have journeyed to a number of developing nations in Asia to see firsthand the pressing needs of the people there for enhanced technologies for food production. "Senator Bond supports science for the benefit of humankind and it was a great pleasure to accompany him," Beachy commented. "The Senator has also been a great educator of the public on how to use this technology to benefit humankind."

Beachy introduced Hendrik Verfaillie, president and chief executive officer of Monsanto, who presented the award to Bond. Verfaillie noted that Senator Bond relishes a challenge and that he has battled effectively against opponents of needed new technologies such as biotechnology.

Bond said he has enjoyed the opportunity to interact with scientists around the world and to take the message of modern plant science to the public. He recounted that one year he even sustained a tear gas attack during violent street demonstrations in Seattle while he was walking to his press conference on plant biotechnology. He made it to the press conference and it was held as planned. (ASPB members Doug Randall, Brian Larkins, and Nina Fedoroff participated with Bond in his news conference in Seattle.)

Bond mused that events like the tear-gassing make him feel sometimes like he is the "designated javelin catcher on biotechnology, which helps enable plant scientists to do their work."

The senator's future plans reflect his continued commitment to bring higher-yielding, enhanced food crops to the world's hungry people. He plans to take more trips with Beachy to developing nations around the world. "I look to develop more cooperation with significant leaders of Africa and Asia to bring biotech crops to meet the needs of hundreds of millions of people," Bond said.

Bond generously cited the support of growers, ASPB members, and ASPB public affairs staff in supporting his initiative for plant genome research that was first enacted in fiscal year 1998. He acknowledged the attendance of several ambassadors from Asian nations at the awards luncheon and of other distinguished guests including Mary Clutter, assistant director of the National Science Foundation, who heads the Directorate for Biological Sciences.

Since fiscal year 1998, Senator Bond has championed successful efforts that have resulted in some \$300 million in National Science Foundation funds for plant genome research in addition to tens of millions of dollars to support research on the applications of biotechnology aimed at assisting developing nations.

Bond is the leading supporter of plant research in the history of Congress. Prior to coming to Congress, Bond was successful as governor of Missouri in gaining passage of a new state initiative in support of agricultural research.

Senator Bond was the first recipient of the Leadership in Science Public Service Award of ASPB, which was presented to him in 1998 for his tremendous contributions to science and humanity. Doug Randall was joined by past Committee on Public Affairs Chair Lou Sherman in presenting the award to Bond at a program held at the University of Missouri.



Roger Beachy and Senator Kit Bond

Cook Explains Benefits of Plant Biotechnology in Widely Circulated Newspaper Commentary

ASPB member James Cook of Washington State University wrote a commentary on beneficial effects of plant biotechnology that was circulated in March by Knight Ridder. Nearly 400 newspapers subscribe to the Knight Ridder news service. Knight Ridder is the second largest newspaper publisher in the United States. It owns 32 dailies and operates the Real Cities network of 58 regional web sites.

Commentaries by scientists on biotechnology and modified foods published by newspapers are an effective and cost-effective way for the science community to conduct public outreach education. In addition to being read by many in the general public, commentaries are read by the editorial and science writers who write about genetically modified foods. For advice from an editorial page editor to ASPB members on how to get your commentary published, visit the ASPB web site at <http://www.aspb.org/publicaffairs/editorial/editor.cfm>.

One of the newspapers that carried Cook's commentary March 18 was *The Spokesman-Review* in Spokane. The commentary is reprinted here with permission.

Guest Commentary

Biotechnology Has Been Great for Farmers, Environment

R. James Cook—Knight Ridder

PULLMAN—The new biotechnology applied to agriculture is a success. More than one-fourth of U.S. cropland, about 85 million acres, was planted in 2001 to crops genetically modified for resistance to insect pests, the herbicide Roundup or both.

An additional 50 million to 55 million acres of these crops were planted in 2001 in Canada, Argentina, China, South Africa and Australia, according to the International Ser-

vice for the Acquisition of Ag-Biotech Applications. Brazil is now close to approving soybeans with resistance to Roundup, as is India for cotton genetically resistant to insect pests.

Why are farmers adopting biotech crops at a rate that some compare to the rate at which tractors replaced horses during the early 20th century?

The reasons are simple: With no change in safety or quality of the harvested products, these crops are easier and cheaper to grow than their counterparts without herbicide or insect resistance.

In addition, the environmental bonuses represent, arguably, the greatest benefits to resource conservation and environmental quality of any technology introduced since the beginning of agriculture.

Hazards such as transfer of a newly introduced gene to another species' gene pool and effects on nontarget organisms have been speculated upon, but thus far, rigorous scientific investigation has left such concerns hypothetical, unconfirmed or disproved.

For example, a laboratory study suggested that pollen from corn with the Bt gene for resistance to insects harmed Monarch butterflies.

This was followed by six articles in the prestigious *Proceedings of the National Academy of Sciences* in October 2001, reporting collectively and not surprisingly that management practices such as when the corn is planted and use of insecticides affects Monarchs, but current insect-protected corn hybrids have negligible or no effect on Monarchs under field conditions.

"The environmental bonuses represent, arguably, the greatest benefits to resource conservation and environmental quality of any technology introduced since the beginning of agriculture."

The focus on what the crops themselves do to the environment has overlooked some fundamental principles. One, it is the management used to grow the crop rather than the crop itself that has impact on the environment. And two, each new kind of crop variety usually leads to changes in the management system used to grow that variety. The management changes made possible by insect and herbicide resistance have been good for the environment.

Three potential crop management hazards are:

- Soil cultivation, which is responsible for dust and sediments that pollute our air and water. *Weather* magazine, for instance, declared the "Dust Bowl" the worst weather event of the 20th century.
- Excesses in pesticide applications raise issues of environmental safety.
- Nitrogen fertilizer left unused in the soil can lead to pollution of ground water or surface water.

The adoption of biotech crops is helping to reduce all three of these hazards. The adoption of crop varieties with resistance to Roundup is facilitating if not accelerating "no-till" methods of farming—where farmers do not plow under the remaining stubble after a harvest.

In addition to protecting a precious natural resource by significantly reducing soil runoff, no-till farming requires less fuel, residue of the previous crop left on the soil surface provides habitat for birds and other wild-

Congressmen Pastor, Price Seek Support for DOE Energy Biosciences


life, and carbon dioxide from the atmosphere is sequestered in soil with the buildup of organic matter.

According to the Conservation Technology Information Center, nearly one-third of the 75 million acres of soybeans grown in the United States in 2001 were planted directly using the no-till method into the stubble and other residue of previous crops, and another half of all U.S. soybeans were grown with greatly reduced tillage. No-till farming methods are also being rapidly adopted in Canada, Argentina and Australia.

Crops kept healthy by any method are less likely to leave fertilizer unused in the soil. Seventy percent of the 2001 U.S. cotton crop had a Bt gene for insect resistance. These varieties require only 2–3 insecticide applications, compared with the standard 10–12 applications each season for cotton without this gene.

The adoption of insect-protected cotton in China has reduced pesticide use on these varieties by 80 percent, saving about \$300 per acre. Due largely to the combination of increased competition from biotech crops, and elimination of pesticide applications, the global pesticide market is declining at 2–3 percent per year.

The big revolution in modern agriculture is not just biotech crops; it is the more resource-use efficient and environmentally friendly cropping systems made possible by these crops.

R. James Cook holds the endowed chair in wheat research at Washington State University and is a member of the National Academy of Sciences. 

Congressmen Ed Pastor (D-AZ) and David Price (D-NC) sent letters of support in March to the Appropriations Subcommittee on Energy and Water Development for the Energy Biosciences program within the Department of Energy.


The Energy Biosciences program supports basic research on plants and microbes. The fiscal year 2003 budget proposed by DOE would place Energy Biosciences under a new broader budget line. Committee on Public Affairs member Rob Leonard of the University of Arizona worked with Pastor's office to explain the need to have continued direct congressional approval of the Energy Biosciences program budget with its own separate budget line. Committee on Public Affairs member James Siedow visited Price's office to express the same concerns.

Pastor is a member of the Appropriations Committee and its Subcommittee on Energy and Water Development, both of which de-

termine funding for the Department of Energy. Price is also a member of the Appropriations Committee.

As part of the hearing record for the Subcommittee on Energy and Water Development hearing on the Department of Energy FY2003 budget request for Energy Biosciences and other DOE research programs, Pastor included a question to DOE on whether its proposed change of the budget line for Energy Biosciences represents a change in the department's support for the research program.

The question and letters submitted demonstrate important interest by key members of Congress in support of Energy Biosciences during consideration of appropriations for DOE.

Many other ASPB members have been working with their members of Congress to gain additional support for Energy Biosciences in the FY2003 budget. 



Representative Ed Pastor (D-AZ)



Representative David Price (D-NC)

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Interagency Progress Report on Plant Genome Research Cites Major Advances

The December 2001 Progress Report of the National Science and Technology Council's Interagency Working Group (IWG) on Plant Genomes on the National Plant Genome Initiative (NPGI) found many extraordinary advances made possible by the NPGI.

For example, the White House-appointed IWG reported that a consortium of scientists at several universities have set out to identify all plant genes involved in plant responses to environmental stresses such as salinity, drought, flooding, freezing, and heat. They have found that there is a set of environmental stress response genes that is conserved throughout evolution from Cyanobacteria and algae, to fungi and higher plants. In addition, each plant species has developed its own unique set of genes involved in receiving and responding to various environmental cues. Preliminary results indicate that some of the common genes are involved in ion transport across cell membranes.

These National Science Foundation (NSF)-supported plant genome researchers have also found that the basic component of the environmental signal transduction pathway—how the environmental stress signal is perceived and communicated within the cell—is likely to be conserved throughout the plant kingdom. At the same time, plants have developed additional unique components.

Data resulting from this project have been shared openly on an Internet web site and have stimulated new ideas and new research projects to understand the mechanisms of plant responses to stress. An NSF-sponsored researcher predicts that knowledge being

gained in plant genome research will help lead to development of enhanced crops better able to withstand drought and other environmental stresses.

The Progress Report noted that NSF-sponsored plant genome research is helping unravel the secrets of epigenetics. *Epigenetics* refers to changes in gene function that are heritable but that do not entail a change in DNA sequence. Epigenetics is known to occur in a wide range of organisms including plants and animals. Although the phenomenon has been recognized for more than 40 years, it is only within the past few years that scientists have begun to understand its molecular basis. NSF-sponsored scientists at several universities are conducting genomic research that is contributing to a better understanding of epigenetics.

This should lead to practical solutions for future plant improvement.

NSF-sponsored research on the bacterial pathogen *Pseudomonas syringae* has enabled scientists from a consortium of several universities to de-

velop a draft genome sequence of this bacterial pathogen. Once scientists understand how these bacterial genes interact with the host plant genes in causing a disease, they will be able to develop rational strategies for the development of disease-resistant plants and for disarming disease-causing bacteria, the Progress Report said.

The NSF Plant Genome Research Initiative has also made direct contributions to significant new technology development, the Progress Report said. "A group of scientists at Cold Spring Harbor Laboratory have developed an elegant technology to isolate

the gene-rich islands of the maize genome from the repetitive DNA," the

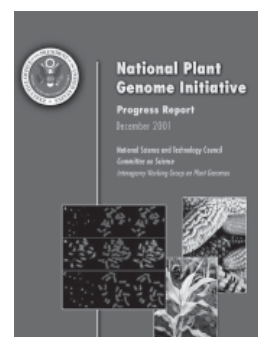
IWG notes in its Progress Report. This new technology makes it possible to more rapidly and cost-effectively conduct large-scale sequencing of large, complex plant genomes, such as corn and other valuable crops.

Use of optical mapping in plant genome research has been developed with support from NSF. This technology had been applied earlier to construct a whole chromosome map for the human malaria parasite. A University of Wisconsin scientist supported by NSF is successfully overcoming significant technical challenges in applying this technology to a larger and more complex plant genome.

A new technology that allows rapid selection of mutants from any gene in any plant has come out of a proof-of-concept project sponsored by NSF conducted at the Fred Hutchinson Cancer Research Center in collaboration with the University of Washington and the Institute for Systems Biology. The scientists initially developed and tested the technology using the model plant *Arabidopsis*, which has a simple genome. Currently, the investigators are helping scientists apply this technology to rice, barley, corn, mouse, and worm mutants.

In a statement to the House of Representatives Subcommittee on VA, HUD and Independent Agencies April 16, ASPB President Vicki Chandler cited the above findings from the Progress Report and urged increased support for NSF and NSF plant genome research.

"As the IWG Progress Report notes, 'The genomic revolution has irrevocably changed plant biology.' We are in a new world of plant




"The genomic
revolution has
irrevocably changed
plant biology."

Committee on Public Affairs Meets; Members Visit Key Congressional and White House Offices

biology that will contribute to advancements that were formerly impossible,” Chandler said. “In this new world we will see development of a wide range of enhanced plants to meet the needs of Americans and our world neighbors for nutrition, renewable energy sources, new lifesaving medicines, and a cleaner environment.”

The IWG recognized the assistance of Machi Dilworth, Jane Silverthorne, and Christopher Cullis of NSF; Sharlene Weatherwax of the Department of Energy; and Ed Kaleikau and Leland Ellis of the Department of Agriculture in preparation of the Progress Report.

The IWG is co-chaired by Mary Clutter of NSF and Joseph Jen of USDA. Members of the IWG are Gregory Dilworth of DOE, Clifford Gabriel of the White House Office of Science and Technology Policy, Sally Rockey of USDA, Noah Engelberg of the Office of Management and Budget, Elke Jordan of the National Institutes of Health, and Judy St. John of USDA.

The National Plant Genome Initiative Progress Report can be seen at <http://ostp.gov/NSTC/html/mpgi2001/index.htm>. 

The ASPB Committee on Public Affairs met March 16–18 in Rockville and in Washington, DC, to discuss a number of issues affecting plant scientists and plant science research funding. The committee members, including committee chair Peggy Lemaux, visited a number of congressional and Executive Branch offices to seek support for plant science programs.


Executive Branch officials visited included Clifford Gabriel, deputy to the associate director for science in the White House Office of Science and Technology Policy, and Mike Holland, budget analyst for energy research funding in the White House Office of Management and Budget.

The Public Affairs business meeting held on Sunday, March 17, at ASPB headquarters included a review and discussion of appropriations for plant science at the U.S. Department of Agriculture, National Science Foundation, Department of Energy, and U.S. Agency for International Development. Among the items discussed were

- a proposed USDA stakeholders’ workshop on plant and pest biology research priorities for the Department of Agriculture Cooperative State Research, Education and Extension Service
- provisions advocated by ASPB included in legislation considered by Farm Bill conferees
- bioterrorism and ecoterrorism as they relate to plant research
- legislation sponsored by Representatives Nick Smith (R-MI) and Eddie Bernice Johnson (D-TX) in support of plant biotechnology and plant genomics research
- Leadership in Science Public Service Award & Perspectives of Science Leaders Program
- ASPB poster exhibit at Coalition for National Science Funding Congressional Exhibition and Reception
- Public Affairs workshop on how scientists access the news media
- listing of experts in the Society for news media contacts
- efforts by ASPB members in the public debate on genetically modified foods
- the selection by President Bush of ASPB member Charles Arntzen to the President’s Council of Advisors on Science and Technology (PCAST).

Committee members developed strategies to strengthen support for plant research programs. The Energy Biosciences program, which would come under a different, broader budget line this year under the Department of Energy budget proposal, was addressed with a comprehensive plan for follow-up actions. (See related stories in this issue of the *ASPB News*.)

Federal support for plant research funding has increased in the past few years. It was noted that the new era of plant genome research initiated by Senator Christopher Bond (R-MO) with support from his colleagues in Congress, ASPB, and growers has contributed in recent years to some \$300 million in new funds that have led to extraordinary advancements in the study of plants.

Federal funding in all areas of science will remain a dynamic issue subject to possible changes in the future. Committee discussions noted the importance of continued efforts by ASPB Campus Contacts and their colleagues throughout ASPB to help secure continued support for plant research. 

DOE Office of Science Director Orbach Confirms Support for Plant Science

Plant scientists familiar with Dr. Raymond Orbach hailed his selection by President Bush and confirmation by the Senate in March as director of the Office of Science within the U.S. Department of Energy.

As chancellor of the University of California, Riverside, Orbach was actively involved in efforts to support plant research and education. ASPB member Natasha Raikhel, editor-in-chief of *Plant Physiology*, who was recently recruited to UC Riverside, said that Orbach—a physicist—understands well the importance of plant research.

On March 26, during his first full week as director of the Office of Science, Orbach met with ASPB member Gloria Coruzzi and ASPB Public Affairs staff. Coruzzi explained the importance of research sponsored by the DOE Energy Biosciences program.

Energy Biosciences is within the Office of Basic Energy Sciences, which is within the Office of Science. Dr. Patricia Dehmer, Orbach's associate director of basic energy sciences, also participated in the March 26 meeting, as did the past director of the Office of Science, Dr. James Decker.

Coruzzi discussed research in her lab supported by Energy Biosciences and asked for increased support for the Energy Biosciences program. She presented a proposal for a Systems Biology Initiative, which would exploit new opportunities for interdisciplinary research efforts in a post-genomic era. Raikhel and ASPB member Chris Somerville developed the proposal with

input from Coruzzi and Committee on Public Affairs chair Peggy Lemaux.

Orbach expressed his enthusiasm for plant research and called on his staff to take the proposal to the next step. Dehmer is conducting follow-up discussions on the proposal with Dr. Greg Dilworth, who heads the Energy Biosciences program.

Raikhel said the plant research community is fortunate that Orbach agreed to become the director of the Office of Science. She noted that he has made impressive accomplishments as both a scientist and administrator and that he has a strong record of support for plant research.

ASPB Public Affairs Committee members met with their congressional offices March 18 and voiced support for an effort by Senators Jeff Bingaman and John Warner to increase the DOE Office of Science fiscal year 2003 budget by 7 percent over the department's request level of \$3.285 billion. The senators' "Dear Colleague" letter cited the need to support "energy-related biosciences" and other research. ASPB is also encouraging the broad-based Energy Sciences Coalition, made up of organizations supportive of DOE, to conduct a congressional reception and exhibition displaying Office of Science research.





THE AMERICAN SOCIETY FOR CELL BIOLOGY

42nd Annual Meeting

December 14-18, 2002 • Moscone Convention Center • San Francisco

Keynote Symposium
Opportunities & Challenges in Cell Biology
 Steven M. Block, R. Alta Charo, Ron McKay, Andrew W. Murray

Symposia

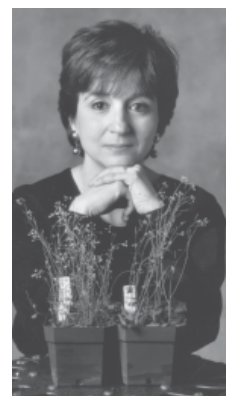
- Nuclear Trafficking and Dynamics**
 Ian G. Macara, David Spector, Joan A. Steitz
- How Cells Interact with Each Other**
 Bonnie Bassler, David A. Cheresh, Peter Devreotes
- Cell Biology of Cancer**
 Douglas Hanahan, Jeffrey Trent, Terry A. Van Dyke,
- Inheritance of Organelles**
 Susan Dutcher, N. Ronald Morris, Lois S. Weisman,
- Chromatin and Chromosomes**
 C. David Allis, Kerry S. Bloom, Marjori Matzke
- Cell Division: New Paradigms for Regulation of Timing and Size**
 Greenfield Sluder, Michael Tyers, Mitsuhiro Yanagida
- Cell Polarization and Directional Motility**
 Anthony Bretscher, Ruth Lehmann, Frederick Maxfield
- Signal Transduction Pathways in Development**
 Gail R. Martin, Randall T. Moon, Alex Schier

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Contact the ASCB, 301-347-9300, www.ascb.org, ascbinfo@ascb.org



Natasha Raikhel



Gloria Coruzzi

POSITION ANNOUNCEMENT

EXECUTIVE VICE PRESIDENT

American Society of Agronomy (ASA)
Crop Science Society of America (CSSA)
Soil Science Society of America (SSSA)

Madison, Wisconsin

- Responsibilities** The Executive Vice President provides administrative leadership for the professional activities of the three Societies, provides management of Headquarters facilities and personnel, serves as Executive Director of the Agronomic Science Foundation, and supervises the implementation of policy decisions of the Executive Committee and the Board of Directors of each Society and the Board of Trustees of the Foundation. Responsibilities include providing leadership in developing communications and effective relationships with federal and state legislative and policy setting organizations, and with national and international non-governmental organizations. The position is located in Madison, Wisconsin.
- Qualifications** Applicants should have an advanced degree; have experience in research, education, or industry agronomy, crop science, soil science, or a closely related field; and be a recognized leader in their profession. Administrative and managerial experience in a major commercial, academic, or governmental organization is essential. Applicants must have demonstrated the interpersonal skills needed to work effectively with Headquarters personnel, Executive Committees, Boards of Directors, committees, and external groups. Leadership skills and a vision for the Societies' roles in the nation and world are essential.
- Compensation** Salary will be competitive and commensurate with qualifications and experience.
- Closing Date** Applications will be accepted until July 1, 2002, or until a suitable candidate is identified.
- Position Available** The new ASA-CSSA-SSSA Executive Vice President will be expected to begin work on January 1, 2003, or by negotiation.
- Applications** Applications must include a current resume, a one-page statement of the applicant's vision for the Societies, and a one-page description of the applicant's management style. Include telephone numbers and, email and postal addresses of four references.

Send applications to: Dr. Lee Sommers, Chair
Search Committee for the EVP
Director, Agricultural Experiment Station
Colorado State University
Fort Collins, CO 80523-3001
Telephone: 970-491-5371
Fax: 970-491-7396
Email: lee.sommers@colostate.edu

Please see the following websites for more information on the programs and services of the Societies:

<http://www.agronomy.org>

<http://www.crops.org>

<http://www.soils.org>

THE AMERICAN SOCIETY OF AGRONOMY IS AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER



ASPBE Educational Exhibit Booth at NSTA Annual Meeting

ASPBE sponsored an education booth exhibit featuring C-fern and Wisconsin Fast Plants at the National Science Teachers Association's (NSTA's) annual meeting this year in San Diego March 26–30. The meeting was attended by nearly 13,000 outstanding science teachers from across the nation who came to share and discover some of the latest methods and technology in education. Plant science was well represented, as both ASPBE and the Botanical Society of America sponsored education booths. As usual, our booth was swamped with teachers who stopped by to share their experiences, find out what we were offering, or chat with the C-fern or the Fast Plant people. Les Hickok, Stephanie Duncan, and Tom Warne represented the C-fern group, and Coe and Paul Williams and Dan Lauffer were there with the Fast Plants. Sheila Blackman, Gary Kuleck, and Mark Staves staffed the ASPBE information table.

The C-fern booth emphasized the culturing of C-fern and its usefulness in understanding the life cycle of plants and reproductive behavior. The Fast Plants folks continued to promote their butterfly, Fast Plant interactions, and a new twist on Bottle Biology. Because of the exposure both C-fern and Fast Plants have had in past exhibits, a wise decision was made to focus on more involved interactions rather than reaching out to large crowds. Attendance was still very high, and we achieved our goals of spending more qual-

ity time with the booth visitors. Given that more than 2,000 teachers interacted with the C-fern and Fast Plant displays and personnel, significant outreach to the national educational community was achieved. The presentation of this booth at national science teachers conventions is an important component of our outreach program and has planted the seed for long-term K–12 teacher involvement with, and enthusiasm for, teaching plant science in the pre-college curriculum at all levels.



Mark Staves and Gary Kuleck handing out ASPBE literature on GMOs to an attendee.



Mark Staves, Gary Kuleck, and Les Hickok helped staff the ASPBE education booth at the NSTA annual meeting.

SURF Recipients for 2002

In this second year of the ASPB Summer Undergraduate Research Fellowship (SURF) program, eight students have been selected to receive \$3,000 grants to conduct independent investigations during the summer of 2002. They will then present their research at the 2003 ASPB annual meeting to be held in Hawaii. The students' mentors receive an additional \$500 toward supplies and materials.

There were 29 qualified applicants this year. The reviewers were impressed by the quality of the applicants' projects and the commitment of all the students and their mentors to their ongoing research. This program is co-chaired by Jon Monroe, James Madison University, and Mark Brodl, Trinity University.

The ASPB 2002 Summer Undergraduate Research Fellowship Award Winners



Renee Baack, University of Nebraska, Lincoln

Project: *Identification and Characterization of Formate Dehydrogenase Induced Pigment in Tobacco*

Mentor: John Markwell

I am thrilled to be selected for this excellent opportunity, and I am looking forward to the learning experience this summer will provide.



Adam Jared Booth, Kenyon College, Gambier, Ohio

Project: *Identification of Second Site Modifiers of elf3 Using Activation Tagging*

Mentor: Karen Hicks

I am extremely excited to have been selected as a recipient of the Summer Undergraduate Research Fellowship from the American Society of Plant Biologists. This award will allow me to further investigate my current research interest, identifying new genes involved in photoperiodic flowering. I am very grateful to be given such a great honor and opportunity and look forward to presenting the results of my efforts.



Melinda Hanes, Penn State Erie —The Behrend College

Project: *Investigating Branched Chain Amino Acid Metabolism by Analyzing Arabidopsis bcat Mutants*

Mentor: Michael Campbell

The opportunity to conduct research full-time over the summer is a rewarding and valuable experience that is crucial for my graduate study and research goals in biochemistry. Metabolism is an exploding area of current biochemical research that I am excited to be part of. I am delighted to have been chosen to receive a fellowship from ASPB.



Anne Knowlton, Clemson University, South Carolina

Project: *Disruption of Auxin Signaling in a Modulating Legume*

Mentor: Julia Frugoli

I am thrilled to have received this award, and I am anxiously awaiting my research this summer. Thanks to all who made this program possible.

continued on page 28

continued from page 27



Nicole Mammarella, Virginia Polytechnic Institute and State University, Blacksburg

Project: *Expression of Resistance Genes in Arabidopsis thaliana during Peronospora Parasitica Infection*

Mentor: John McDowell

I'm thrilled to have been chosen as a recipient of an ASPB Summer Undergraduate Research Fellowship. It really is an honor to receive this fellowship, and I'm grateful to receive the support and recognition that accompany this award. I'm looking forward to the opportunity to continue my present research through the summer and would like to thank ASPB for its generosity in supporting undergraduate research through this program.



Michael McCasland, University of North Carolina, Chapel Hill

Project: *Characterization of AtMYB50 Expression in Relation to Cytokinin*

Mentor: Joseph Kieber

Thank you for allowing me to take part in such an honor, leading me into a possible life-long opportunity. I am grateful for being accepted into this program and will be working diligently.



Lisa Rachel Racki, Harvard College, Cambridge, Massachusetts

Project: *Elucidating NPR1-Independent SAR Induction in Arabidopsis thaliana with Pseudomonas Syringae and Erysiphe orontii: A Novel Gene and Possibly a New Pathway*

Mentor: Frederick Ausubel

I am so thrilled to have been chosen for the ASPB Summer Undergraduate Research Fellowship! Many thanks for this great honor and tremendous opportunity.



Elizabeth Stoll, Washington University, St. Louis, Missouri

Project: *Cloning of an Activation-Tagged Suppressor of an Arabidopsis phyB Mutation*

Mentor: Michael Neff

I was so excited when I received the e-mail that I had earned the American Society of Plant Biologists Fellowship. I feel very honored to have received this award. My father is a farmer, and he is very proud that I am interested in plants and have the desire to work in agriculture. Receiving this award provides a wonderful opportunity to me for this summer. I am looking forward to learning so much from my mentor and cannot wait to see what type of mutant plants I identify. Thank you very much for this opportunity!

Honorable mentions went to five other students:

Daniel Cushing, Whitman College, Walla Walla, Washington; **Mentor:** Daniel Vernon

Brendan O'Meara, University of Minnesota, Twin Cities; **Mentor:** Sue Wick

Valeska Okragly, Lawrence University, Appleton, Wisconsin; **Mentor:** Debra Mohnen

Michelle Lynn Sarchfield, University of New Brunswick, Canada; **Mentor:** Dion Durnford

Nicholas Stephens, University of Washington, Seattle; **Mentor:** Elizabeth VanVolkenburgh





Sondra Giancoli Retires

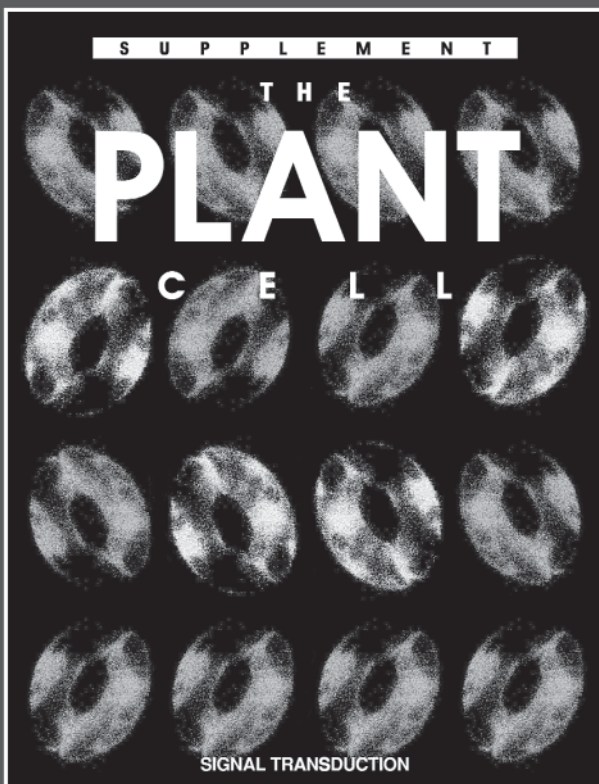
On Friday, April 19, ASPB staff bade a fun and fond farewell to Sondra Giancoli, our accountant for nearly six years. Sondra, a CPA, was hired in August 1996 and diligently kept track of the Society's revenues and expenses. During her time with ASPB, she oversaw a growing and increasingly automated department. She will continue to live in Germantown, Maryland, and looks forward to finally having the time to pursue her many hobbies and talents such as needlework, beading, and other crafts. Sondra is also an avid Anglophile, *East Enders* fan, and cat lover.

ASPB Welcomes Kim Snell

Kim Snell joined ASPB in late February as the new accounting manager. She will be overseeing all aspects of accounting including general ledger, accounts receivable, accounts payable, and payroll. Originally from Virginia Beach, Kim has lived in Maryland for the past 20 years and is working on completing her bachelor's degree in accounting at the University of Maryland.

Kim worked as an accounting manager for a real estate investment company, Oxford Realty Financial Group, for 15 years, until the company was sold in 2001. Her experience in all aspects of accounting will stand her in good stead as she assumes the responsibilities of accounting manager at ASPB.

Kim replaces Sondra Giancoli, who retired in April after six years with ASPB. 🌱



SIGNAL TRANSDUCTION

A Supplement to *The Plant Cell*
Published May 2002!

- Features • 24 invited papers
• Introduction by Anthony Trewavas
• Multiple-issue discounts available

The study of signal transduction in plants is the study of genes and proteins that are involved in how plants perceive their environment and how they translate this information into biochemical and physiological responses that optimize growth and reproduction under constantly changing and often stressful conditions. This volume includes a series of review articles that provide an in-depth analysis of the state of the art in many areas of plant signal transduction. Leading researchers from around the world cover topics such as plant hormone signaling in development and stress responses; nutrient and polypeptide signaling; light signaling; the control of flowering; the importance of 14-3-3 proteins, GTPases, and calcium in plant signaling; cell-cell signaling in organ development; signaling between the nucleus and chloroplast; signaling involved in self-incompatibility and in nitrogen-fixing nodule formation; RNA silencing; and the function of plasmodesmata in signal transduction.

For ordering information, visit www.aspb.org

ASPB News publishes dates, titles, locations, and contact names and addresses for meetings, courses, seminars, and the like that are of interest to ASPB members. Submit announcements via e-mail to sbraxton@aspb.org or mail to Sylvia Braxton Lee, *ASPB News*, 15501 Monona Drive, Rockville, MD 20855-2768 USA. **Faxed transmissions are not accepted.**

2002

JUNE

June 17–28

Short Course: Postharvest Technology of Horticultural Crops
University of California, Davis

Contact Ms. Sharon Munowich, University Extension, University of California, Davis, CA 95616; telephone 530-757-8899, fax 530-757-8634, e-mail smunowit@unexmail.ucdavis.edu.

June 23–28

11th International Symposium on Iron Nutrition and Interactions in Plants
Udine, Italy

Contact Roberto Pinton, Department Produzione Vegetale e Tecnologie Agrarie, University of Udine, Via Delle Scienze 208 I-33100 Udine, Italy; telephone +390432558641, fax +390432558603, e-mail iron.symp@dpvta.uniud.it
<http://www.ironsymp2002.unimi.it>

June 28–July 2

13th International Conference on Arabidopsis Research
Sevilla, Spain

Registration deadline: April 15. Deadline for abstract submission: April 30. from June 28th to July 2nd 2002. See <http://www.arabidopsis.org/> news for more information on previous years' conferences, <http://www.arabidopsis2002.com>

JULY

July 2–July 7

14th European Physarum Conference
Freiburg, Germany

For more information, see the PhysarumPlus Website or contact Mark Adelman at adelman@bicwater.usuf1.usuhs.mil
<http://bic.usuf1.usuhs.mil/Mark/PhysarumPlus.html>

July 7–12

XXIst International Carbohydrate Symposium
Cairns, Queensland, Australia

For information, contact The Secretariat, Congress West, 12 Thelma Street, PO Box 1248, West Perth, Western Australia 6872; fax +61-8-9322-1734, e-mail conwes@congresswest.com.au
<http://www.ics2002.uwa.edu.au/>

July 10–14

The 6th International Congress on Plant Mitochondria
Perth, Western Australia

For information contact icpm@uwa.edu.au
<http://www.ICPM.uwa.edu.au>

July 14–19

Gordon Research Conference on Cellular Basis of Adaptation to Salt and Water Stress in Plants
Queen's College, Oxford, United Kingdom

For information contact Mike Hasegawa, Center for Plant Environmental Stress Physiology, 1165 Horticulture Building, Purdue University, West Lafayette, IN 47907-1165; e-mail paul.m.hasegawa.1@purdue.edu
<http://www.grc.uri.edu/programs/2002/salt.htm>

July 17–18

Pharming the Field: A Look at the Benefits and Risks of Bioengineering Plants to Produce Pharmaceuticals

The Ronald Reagan Building, International Trade Center, Washington, DC

Sponsored by The Pew Initiative on Food and Biotechnology <http://pewagbiotech.org/>, U.S. Food and Drug Administration, Cooperative State Research, Education and Extension Service of the U.S. Department of Agriculture. For more information contact Ray Wolcott at rwolcott@bunesscommunications.com.

July 21–26

International Symposium on Nitrate Assimilation: Genetic and Molecular Aspects
Cordoba, Spain

Organizers: Emilio Fernandez, Conrado Moreno, Aurora Galvan. For information, contact these individuals at the Department of Bioquímica y Biología Molecular, University of Cordoba, Campus Rabanales, Edif. Severo Ochoa, 14071, Cordoba, Spain; e-mail nitrate2002@uco.es or bb1ferree@uco.es
<http://www.uco.es/vida/congresos/namga2002>

July 27–31

The Annual Meeting of the American Phytopathological Society (APS)
Milwaukee, Wisconsin

For information, contact Kathy Aro; telephone 651-454-7250, e-mail karo@scisoc.org
<http://www.apsnet.org>

Future ASPB Annual Meeting Sites

2002: Denver, Colorado

Saturday, August 3, through
Wednesday, August 7

2003: Honolulu, Hawaii

Saturday, July 26, through
Wednesday, July 30

2004: Orlando, Florida

Saturday, July 24, through
Wednesday, July 28

July 28–August 1

Plant Growth Regulation Society of America
Westin Nova Scotian, Halifax, Nova Scotia

Contact Dr. Wayne A. Mackay, Program Chair, Texas A&M University, 17360 Coit Road, Dallas, TX 75252-6599; telephone 972-231-5362, fax 972-962 9216, e-mail w-mackay@tamu.edu, <http://www.griffin.peachnet.edu/pgrsa>

AUGUST

August 1–4

Tissue Remodeling
Scheman Continuing Education Building
Iowa State University, Ames

Deadline for abstracts is May 31, 2002. Registration deadline is July 1, 2002. Travel grant application due May 31, 2002. Contact Growth Factor and Signal Transduction Conferences, Symposium Office, 3208 Molecular Biology Building, Iowa State University, Ames, IA 50011-3260; telephone 515-294-7968, fax 515 294-2244, e-mail gfst@iastate.edu
<http://molebio.iastate.edu/~gfst/homepg.html>

August 3–7

ASPB Plant Biology 2002

Adams Mark Hotel, Denver, Colorado

Contact Susan Rosenberry at chambers@aspb.org
<http://www.aspb.org/meetings/pb-2002/>

August 10–14

FASEB Meeting on Plant Developmental Mechanisms

Vermont Academy, Saxton's River, Vermont

<http://www.faseb.org/meetings/src>

August 11–16**Gordon Research Conference on CO² Fixation & Metabolism in Green Plants
Mount Holyoke College, South Hadley,
Massachusetts**

For detailed information see the Website, the February 15th, 2002 issue of *Science*, and/or contact one of the co-chairs, Ray Chollet (RCHOLLET1@unl.edu) or Christine Foyer (christine.foyer@bbsrc.ac.uk).
<http://www.grc.uri.edu/programs/2002/co2.htm>

August 11–17**XXVI International Horticulture Congress
and Exhibition—Horticulture:
Art and Science for Life
Toronto, Canada**

The Toronto Knowledge & Scholarship Forum is planned August 13, 2002. Offers of oral or poster presentations specifically intended for this forum must be received by e-mail (crom@uark.edu) by November 30, 2001. To see the third announcement and call for abstracts, visit the Website. <http://www.ihc2002.org/>

August 11–14**The 9th Biennial Conference of the Cellular and
Molecular Biology of the Soybean
Urbana, Illinois**

For details e-mail soy2002@aces.uiuc.edu or see the Website <http://www.soy2002.uiuc.edu>

August 22–26**2nd Silicon in Agriculture Conference
Tsuruoka, Yamagata, Japan**

For information, please contact ian Feng Ma, Faculty of Agriculture, Kagawa University; telephone +81-87-891-3137, e-mail maj@ag.kagawa-u.ac.jp, Website <http://cpln.kais.kyoto-u.ac.jp/silicon>

SEPTEMBER**September 1–6****13th International Congress of the Federation of
European Societies of Plant Physiology (FESPP)
Heraklion, Crete, Greece**

For information please contact Professor Kalliopi A. Roubelakis-Angelakis; telephone +30-81-394073; 304459; fax +30-81-394459; e-mail poproube@biology.uoc.gr; fespp@biology.uoc.gr <http://www.biology.uoc.gr/meetings/fespp>

September 9–12**International Conference on Polyphenols
Marrakech, Morocco**

See the Website <http://www.worlcalendar.com> (keyword: polyphenols). For additional information contact Professor Ismail EL HADRAMI, Laboratoire de Physiologie Végétale, Département de Biologie, Faculté des Sciences

Semlalia, BP. 2390, 40 001 Marrakech-Maroc; telephone +212-44-439997/434649 poste 521, fax +212-44-439997/330251/436769, e-mail hadrami@ucam.ac.ma or hadramii@hotmail.com <http://www.ucam.ac.ma/fssm/jiepp2002>

September 15–19**6th International Conference on Pseudomonas
Syringae Pathovars and Related Pathogens
Maratea (PZ), Italy**

For information contact Nicola Sante Iacobellis, Dipartimento di Biologia, Difesa e Biotecnologie Agro-Forestali, Università degli Studi della Basilicata, Campus Macchia Romana, 85100 Potenza, Italy; telephone +39 0971 205498, fax +39 0971 205503, e-mail pseudomonassyringae@unibas.it <http://www.unibas.it/utenti/pseudomonassyringae>

September 16–27**Genomic Approaches to Forest Tree
Stress Tolerance
EU-funded short course/advanced research
workshop Crete, Greece**

For information contact Dr. Andreas Doulis, National Agricultural Research Foundation of Greece, PO Box 2229, GR-71003, Iraklion, Crete, Greece; fax +30 810 245873, e-mail andreas.doulis@nagref-her.gr <http://www.maich.gr/environment/news/genomics.html>

September 18–21**Genetic Engineering Workshop
Genetic Engineering and the Intrinsic Value and
Integrity of Animals and Plants
Royal Botanic Garden, Edinburgh, UK**

Coordinator: Ifgene UK
<http://www.anth.org/ifgene/2002.htm>

September 19–22**Molecular Targets for Dietary
Intervention in Disease
Scheman Continuing Education Building
Iowa State University, Ames**

Abstracts due July 19, 2002; registration deadline: August 19, 2002. Travel grant application due July 19, 2002. Contact Growth Factor and Signal Transduction Conferences, Symposium Office, 3208 Molecular Biology Building, Iowa State University, Ames, IA 50011-3260; telephone 515-294-7968, fax 515-294-2244, e-mail gfst@iastate.edu <http://molebio.iastate.edu/~gfst/homepg.html>

September 23–25**1st Spanish Congress on Physiology, Biochemis-
try and Molecular Biology of Carbohydrates
Public University of Navarra, Navarra, Spain**

For detailed information see the Website or contact Javier Pozueta-Romero (javier.pozueta@

unavarra.es), Eudurne Baroja-Fernandez (ebaroja@unavarra.es), or Francisco Jose Munoz (francisco.munoz@unavarra.es). <http://www.unavarra.es/carbohidratos/indexE.html>

September 29–October 1**Heavy Metals and Plants:
From Ecosystems to Biomolecules—
the 9th New Phytologist Symposium
University of Pennsylvania, Philadelphia**

For information, contact Philip A. Rea, Plant Science Institute, Department of Biology, University of Pennsylvania, Philadelphia, PA 19104-6018; e-mail parea@sas.upenn.edu.

OCTOBER**October 7–9****Biotechnologie Vegetales: VIII JS-AUF
Marrakech, Morocco**

See the Website. For additional information contact Professor Ismail EL HADRAMI, Laboratoire de Physiologie Végétale, Département de Biologie, Faculté des Sciences Semlalia, BP. 2390, 40 001 Marrakech-Maroc; telephone +212-44-439997/434649 poste 521, fax +212-44-439997/330251/436769, e-mail hadrami@ucam.ac.ma or hadramii@hotmail.com. <http://www.bioveg.refer.org>

October 10–19**Optical Microscopy & Imaging in the
Biomedical Sciences
Marine Biological Laboratory, Woods Hole,
Massachusetts**

Application deadline is July 25, 2002. Contact: Carol Hamel, Admissions Coordinator, Marine Biological Laboratory, 7MBL Street, Woods Hole, MA 02543-1015; telephone 508-289-7401, e-mail admissions@mbi.edu

October 23–25**XI Reunion Latinoamericana de
Fisiologia Vegetal
XXIV Reunion Argentina de Fisiologia
Vegetal I Congreso Uruguayo de Fisiologia
Vegetal Conrad Resort & Casino
Punta del Este, Uruguay**

For information on the meeting see the Website. For information on the location see www.conrad.com.uy, <http://www.fvegetal.edu.uy>

NOVEMBER**November 10–14****ASA-CSSA-SSSA Annual Meetings, Uniting
Sciences Solutions for the Global Community
Indianapolis, Indiana**

For more information, view our Website or contact Keith Schlesinger, e-mail headquarters@agronomy.org, <http://www.asa-cssa-sssa.org/anmeet/>

November 13–15

**Plant Species-Level Systematics: Patterns, Processes and New Applications
Gorlaeus Laboratory, Leiden, The Netherlands**

For information contact symposium2002@nhn.leidenuniv.nl or see Website <http://www.nationaalherbarium.nl/symposium2002/>

November 24–29

**Biotechnology Havana 2002:
“Agro-Biotech in the New Millennium”
Center for Genetic Engineering and Biotechnology, Havana City, Cuba**

For information contact call +53-7-2718008, +53-7-2718466, fax +53-7-331779, e-mail bioagro@cigb.edu.cu or see the Website <http://bioagro.cigb.edu.cu>

2003

JANUARY

January 8–12

**2nd International Congress of Plant Physiology
on Sustainable Plant Productivity under
Changing Environment
New Delhi, India**

Contact Dr. G. C. Srivastava, Secretary General (ICPP 2003), Division of Plant Physiology, Indian Agricultural Research Institute, New Delhi 110012, India; telephone +91-011 5782815/5788773/5740616, fax +91-011-5766420/5751719, e-mail girish_chand_srivastava@rediffmail.com, <http://www.ispponline.org>

January 15–19

**Frontiers of Plant Cell Biology: Signals and Pathways, the 22nd Symposium in Plant Biology
Riverside Convention Center Riverside, California**

For more information contact Kathy Barton; telephone 909-787-4588, e-mail kathryn.barton@ucr.edu, <http://www.cepceb.ucr.edu/news/news.htm#1>

January 26–31

**Gordon Research Conference on Temperature Stress in Plants
Ventura, California**

For information contact Kay Walker Simmons, USDA/ARS National Program Staff, Beltsville, Maryland; telephone 301-504-5560, e-mail kws@ars.usda.gov, <http://www.grc.org>

JUNE

June 7–12

Tree Biotechnology 2003, Umeå Plant Science Center, SLU, Umeå, Sweden

For more information contact Ulrika Hjelm; e-mail ulrika.hjelm@genfys.slu.se, or visit our Website <http://www.treebiotech2003.norrnod.se>

ASPB now accepts checks over the web.

It is simple and secure.

We will accept your university, company, or personal check. Just go online, fill out the web form, and put the check information in the system.

We will receive your order of renewal as soon as you hit the submit button.

This is for checks drawn on U.S. banks in U.S. funds only.

If you have questions about this new service, please e-mail

Kelley Noone at knoone@aspb.org.



ASPB Placement Service Form

This form may be used only by members of the American Society of Plant Biologists. Please print or type your placement information on this form (curriculum vitae will not be accepted) and send to **Donna Gordon, ASPB Headquarters, 15501 Monona Drive, Rockville, MD 20855-2768 USA; e-mail dgordon@aspb.org.**

LAST NAME	TITLE	FIRST NAME	INITIAL
STREET ADDRESS			
CITY	STATE	ZIP	COUNTRY
TELEPHONE	FAX	E-MAIL	

I am seeking the following position (check all that apply):

- | | | | |
|------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> Permanent | <input type="checkbox"/> Temporary | <input type="checkbox"/> Postdoctoral | <input type="checkbox"/> Industrial |
| <input type="checkbox"/> Academic | <input type="checkbox"/> Government | <input type="checkbox"/> USA only | <input type="checkbox"/> Outside USA |

US citizen? ☐ Yes ☐ No **Date available:** _____

Fields of interest, specialties, and publications titles: _____

Thesis, dissertation topics, professor: _____

Professional societies and honors: _____

Degree/year	Major	Minor	College/university and location

Postdoctoral study (specialty and with whom, where, and when): _____

Employer and location	From	To	Position, title, and duties

References (names, addresses, and telephone numbers): _____



I. Registering with the ASPБ Placement Service and Obtaining Placement Files

ASPБ operates a placement service in which are kept active two files of résumés of individuals who are seeking employment. Employers are urged to survey the résumé files for those seeking permanent positions and those seeking postdoctoral or similar positions. The files cost \$25 each and may be ordered from Donna Gordon, ASPБ Placement Service, 15501 Monona Drive, Rockville, MD 20855-2768 USA. Those seeking employment should complete the Placement Service Form on the previous page to be included in the service.

II. Placing a Position Ad in the ASPБ News and on the ASPБ Homepage

Submit all ads by e-mail to Sylvia Braxton Lee at sbraxton@aspb.org (or by mail to Sylvia Braxton Lee, 15501 Monona Drive, Rockville, MD 20855-2768 USA). If you are submitting a chargeable ad, please include billing information when you send the ad.

- **Academic/Government/Industry Permanent Positions (Ph.D. level):**
Fee: \$150. Includes listing in one issue of the *ASPБ News* and 12 weeks on the ASPБ online Job Bank.
Word Limit: 200 for print ad; no limit for online ad.
- **Postdoctoral Positions**
Fee: No charge for universities, nonprofit organizations, and government installations; \$150 for commercial companies. Includes listing in one issue of the *ASPБ News* and 12 weeks on the ASPБ online Job Bank.
Word Limit: 200 for print ad; no limit for online ad.
- **Research/Technical Positions (non-Ph.D.)**
Fee: No charge for universities, nonprofit organizations, and government installations; \$150 for commercial companies. Includes listing in one issue of the *ASPБ News* and 12 weeks on the ASPБ online Job Bank.
Word Limit: 200 for print ad; no limit for online ad.
- **Assistantships, Fellowships, Internships**
Fee: No charge; ad will appear in two issues of the *ASPБ News*—the first time at full length and the second time in an abbreviated form—and 12 weeks on the ASPБ online Job Bank.
Word Limit: None.

ACADEMIC/GOVERNMENT/INDUSTRY PERMANENT POSITIONS (Ph.D.)

EXECUTIVE VICE PRESIDENT American Society of Agronomy (ASA) Crop Science Society of America (CSSA) Soil Science Society of America (SSSA) Madison, Wisconsin (Received 04/11)

The executive vice president provides administrative leadership for the professional activities of the three societies, provides management of headquarters facilities and personnel, serves as executive director of the Agronomic Science Foundation, and supervises the implementation of policy decisions of the Executive Committee and the Board of Directors of each society and the Board of Trustees of the foundation. Responsibilities include providing leadership in developing communications and effective relationships with federal and state legislative and policy-setting organizations, and with national and international nongovernmental organizations. The position is located in Madison, Wisconsin. Applicants should have an advanced degree, experience in research, education, or industry in agronomy, crop science, soil science, or a closely related field, and be a

recognized leader in his or her profession. Administrative and managerial experience in a major commercial, academic, or governmental organization is essential. Applicants must have demonstrated the interpersonal skills needed to work effectively with headquarters personnel, executive committees, boards of directors, committees, and external groups. Leadership skills and a vision for the Societies™ roles in the nation and world are essential. Salary will be competitive and commensurate with qualifications and experience. Applications will be accepted until July 1, 2002, or until a suitable candidate is identified. The new ASA-CSSA-SSSA executive vice president will be expected to begin work on January 1, 2003, or by negotiation. Applications must include a current resume, a one-page statement of the applicant's vision for the Societies, and a one-page description of the applicant's management style. Include telephone numbers and e-mail and postal addresses of four references. Send applications to Dr. Lee Sommers, Chair Search Committee for the EVP Director, Agricultural Experiment Station, Colorado State University, Fort Collins, CO 80523-3001; telephone 970-491-5371, fax: 970-491-7396, e-mail lee.sommers@colostate.edu. Please see

the following web sites for more information on the programs and services of the Societies: <http://www.agronomy.org>, <http://www.crops.org>, and <http://www.soils.org>. The American Society of Agronomy is an equal employment opportunity employer.

Plant Biologist, Assistant Professor East Tennessee State University, Johnson City (Received 04/09)

East Tennessee State University Biological Sciences Department, <http://www.etsu.edu/biology>, invites applications for a tenure-track assistant professor position, beginning January 1, 2003. Ph.D. required by start date, post-doctoral experience preferred. Research specialization in any area of plant biology using modern research approaches; plant development especially encouraged. Demonstrable commitment to teaching and research required. Teaching duties include an advanced course in plant development, plant biology, and participation in general biology majors sequence. Will be responsible for developing active research program, to include B.S. and M.S. students. Applicants with broad botanical training are especially encouraged.

THE DEADLINE FOR ADS FOR THE JULY/AUGUST ISSUE OF *ASPБ News* IS JUNE 30, 2002.

Check ASPБ's web site (<http://www.aspb.org/jobbank/>) every Friday for new job listings. Jobs with early application deadlines are listed on the web site but might not appear in the *ASPБ News*.

Send curriculum vitae, transcripts, statements of teaching and research interests, and three letters of recommendation by August 30, 2002, to Dr. Cecilia McIntosh, Search Committee, Biological Sciences Dept., ETSU Box 70703, Johnson City, TN 37614; telephone 423 439-5838, facsimile 423 439-5958, e-mail: mcintosh@etsu.edu. (AA/EOE)

Principal Investigator
Virginia Tech, Blacksburg, Virginia
(Received 04/10)

Develop plant-based mucosal vaccines for human application, expression of recombinant proteins in plants, protein purification, natural products; supervise vaccine trials in laboratory animals. Requires a Ph.D. in plant physiology or equivalent with experience in production of plant-based vaccines, natural products, and plant tissue culture. For consideration send resume to Dr. Craig Nessler (cnessler@vt.edu), Department of Plant Pathology, Physiology and Weed Science, Virginia Tech, 413 Price Hall, Blacksburg, VA 24061.

**Research Molecular Geneticist/
 Molecular Biologist**
**U.S. Department of Agriculture,
 Agricultural Research Service**
Madison, Wisconsin
(Received 04/23)

The Cereal Crops Research Unit is accepting applications for a permanent, full-time scientist to conduct research leading to improved malting quality of barley and nutritional quality of oats and barley and to develop new technologies for evaluating the quality of oats and barley. The objectives of the project involve using a functional genomics approach to identify expressed structural and regulatory genes that affect grain quality of barley for malting and brewing and nutritional content of oats and barley, and to determine regulatory processes that control gene expression for barley and oat grain quality. Salary range: \$54,275–\$83,902 per year, commensurate with experience. A Ph.D. in a relevant field or equivalent experience is required. Candidates must be U.S. citizens. For information on the research program, contact David Peterson; telephone 608-262-4482, e-mail dmpeter4@facstaff.wisc.edu. For a copy of the vacancy announcement and application forms, contact Jean Weinbrenner; telephone 608-264-5357, e-mail jweinbr@facstaff.wisc.edu, or visit web site <http://www.ars.usda.gov/opportun.htm>. Applications must be marked with the announcement number, ARS-X2W-2238, and must be postmarked by July 1, 2002. USDA is an equal

opportunity provider and employer. Women and minorities are encouraged to apply.

Assistant Professor of Molecular Plant Pathology
New Mexico State University, Las Cruces
(Received 04/25)

The Entomology, Plant Pathology and Weed Science Department is seeking candidates for a 12-month tenure-track position with an approximate 80% research/20% teaching responsibility. The appointee will be expected to work cooperatively with other departmental faculty and faculty in other units on campus. Teaching responsibilities include recruitment and supervision of students, teaching undergraduate- and graduate- level courses such as techniques in genetic engineering, molecular plant-microbe interactions, applied genetic engineering, or other courses of relevance to the department and as assigned by the department head. The EPPWS Department consists of 19 faculty members and has a broad-based research/teaching program. There are approximately 50 undergraduate and 15 graduate students. The department has three areas of emphasis: (1) discipline-related efforts exemplified in the departmental name, (2) integrated pest management, (3) and interdisciplinary research. Applicants must hold a Ph.D. in plant pathology, plant molecular biology, or a closely related field by the date of hire. Experience working with molecular aspects of plant responses to pathogens or related biotic stresses in agricultural crops is preferred. Applicants must have good communication skills, enjoy teaching, and have a strong commitment to individual and collaborative research. The successful candidate will be expected to pursue competitive grant funds and must meet minimum qualifications for NMSU graduate faculty appointment. Candidates should submit a letter of application stating interest and background, current resume, official transcripts, and three letters of reference to Dr. Stephen H. Thomas, Department of Entomology, Plant Pathology and Weed Science, PO Box 30003, MSC 3BE, New Mexico State University, Las Cruces, NM 88003; telephone 505-646-2321, fax 505-646-8087. Questions regarding the position may be directed to Dr. Stephen Thomas; telephone 505-646-2321, e-mail stthomas@nmsu.edu; or Dr. Rebecca Creamer; telephone 505-646-3068, e-mail creamer@nmsu.edu. The deadline for applications is July 1, 2002, or until position is filled. Position available when a suitable candidate is identified. NMSU is an equal employment opportunity/affirmative action employer. Offer of employment contingent upon verification of eligibility for employment in the USA.

Assistant/Associate Professor
University of Minnesota, St. Paul
(Received 04/19)

The Department of Horticultural Science at the University of Minnesota is accepting applications for a nine- or 12-month, tenure-track faculty position beginning July 1, 2003. The individual will hold a 60% teaching/40% research appointment in the department. Primary teaching responsibility will be to lead the turfgrass undergraduate education program by developing curriculum and teaching turf-related courses. The successful candidate will develop a research program focusing on genetic improvement or environmental stress physiology of turfgrass. Requirements include a Ph.D., or equivalent, at the time of appointment in horticulture, agronomy, plant sciences, plant breeding, or related field. Required minimum experience includes excellent oral and written communication skills. For a complete position description, call (612) 624-3039 or e-mail lkalisch@umn.edu. Applicants must send a curriculum vitae, graduate transcripts, a detailed statement of teaching and research interests as related specifically to this position, and three letters of reference to Chair, Turfgrass Science Search Committee, University of Minnesota, Department of Horticultural Science, 305 Alderman Hall, 1970 Folwell Avenue, St. Paul, MN 55108. Review of applications will begin December 1, 2002, and continue until the position is filled. Additional information about the Department of Horticultural Science may be found at www.hort.agri.umn.edu. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities.

POSTDOCTORAL POSITIONS

Postdoctoral Fellow
The Samuel Roberts Noble Foundation, Inc.
Ardmore, Oklahoma
(Received 03/04)

A postdoctoral position is immediately available in the Forage Biotechnology Group of the Noble Foundation. The successful candidate will develop a genomics approach to identifying genes for aluminum tolerance in the model legume *Medicago truncatula* utilizing DNA microarrays and analysis of EST databases. Applicants should have a Ph.D. with a strong background in plant developmental biology/molecular biology. The project is supported by the Noble Foundation. The position is initially available for two years with the possibility of renewal for an additional year. Annual salary is

in the range of \$31,090–\$46,630 depending upon qualifications and experience. Health, retirement benefits provided. Application and job description available online (www.noble.org). Please send a letter of application, detailed curriculum vitae, and arrange for three letters of reference to be sent to Human Resources Department, Attn: Position # FBG1PD-MS98, The Samuel Roberts Noble Foundation, PO Box 2180, Ardmore, OK 73402.

**Postdoctoral Research Associate
Monsanto Company, St. Louis, Missouri
(Received 04/11)**

A two-year postdoctoral fellow position is available immediately for developing, implementing, and applying advanced microscopy techniques to elucidating the ultrastructure of plants, seeds, weeds, and other biological systems. Additionally, the selected individual is responsible for developing new methods to improve the sample preparation protocols of biological systems. The selected candidate will interact with multifunctional groups of scientists working on biotechnology projects. The position requires a Ph.D. in plant biology or a related field with experience in advanced electron and light microscopy techniques. A strong background and extensive experience in TEM, high-resolution cryo-SEM, and confocal laser scanning microscopy techniques are essential. Experience with gene transformation in plants is a strong plus. The following key competencies are desired: highly motivated and interested in developing new imaging technologies; good interpersonal, oral, and written communication skills; innovative and seeking opportunity to improve existing techniques and processes. Please visit us at: www.monsanto.com and fill out our online response form for this position. Monsanto values diversity and is an equal opportunity affirmative action employer.

**Postdoctoral Position
University of Burgundy, Dijon, France
(Received 04/03)**

A postdoctoral position is available from September 2002 to conduct research in the area of signal transduction mechanisms of plant defence responses to pathogen infection. The research will focus on nitric oxide (NO) signalling and the characterization/identification of nitrosated proteins (*Plant Cell* **9**, 2077–2091, 1997; *Proc. National Academy of Science, USA* **95**, 10328–10333, 1998; *Plant J.* **23**, 817–824, 2000; *Trends Plant Science* **6**, 177–183, 2001). Applicants should have a strong background in

protein biochemistry and be familiar with protein immunodetection and purification. Salary will be approximately 1800 Euros/month. Send curriculum vitae and three letters of reference to: Dr. David Wendehenne, UMR 1088 INRA/ Université de Bourgogne, BBCE-IPM, INRA, 17 rue Sully, BP 86510, Dijon 21065 Cedex, France; e-mail wendehen@diijon.inra.fr.

**Postdoctoral Position
University of Chicago
Chicago, Illinois
(Received 04/11)**

A postdoctoral position is available to study the molecular regulation of root system development in response to environmental cues. The research will focus on the molecular mechanisms that allow plants to adapt to drought stress, using *Arabidopsis* and other model systems. Please visit our home page <http://home.uchicago.edu/~jmalamy/> for more information and our recent publications. Send a curriculum vitae with names of three references to Jocelyn Malamy, R312 J. F. Knapp Center, The University of Chicago, 924 East 57th Street, Chicago, IL 60637; e-mail jmalamy@bio.uchicago.edu.

**Postdoctoral/Research Associate
University of Manitoba, Winnipeg, Canada
(Received 04/08)**

A postdoctoral/research associate position is available for a one-year term (possibility to renew for a second year dependent on funding) in the area of plant–microbe interactions. The position is available immediately. The position will investigate the relationship between the endophytic diazotroph, *Gluconacetobacter diazotrophicus*, and its host, sugarcane, and determine the potential for adapting the bacterium to function in wheat. Applicants must hold a Ph.D. in plant physiology or microbiology and have experience in working with beneficial plant–microbe interactions. Basic skills in microbiological techniques and analysis of metabolite pools of plants are required, and skills in plant tissue culture would be an asset. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. However, all qualified applicants are encouraged to apply. The University of Manitoba is committed to equity in employment. Please send a curriculum vitae and the name of three referees to Dr. J. Kevin Vessey, Department of Plant Science, University of Manitoba, Winnipeg, MB R3T 2N2, Canada; fax 204-474-7528, e-mail k_vessey@umanitoba.ca.

**Postdoctoral Fellow Position, Plant
Molecular Biology
Agriculture and Agri-Food Canada, London
(Received 04/08)**

A postdoctoral position is available immediately for a period of two years with the possibility of extension for a third year to perform a study in the area of plant molecular biology. The incumbent will have an opportunity to use a combination of genetic and molecular approaches to carry out research on the identification and characterization of genes involved in the regulation of soybean storage protein genes, using *Arabidopsis* and the legume *Lotus japonicus* as model systems. The position is funded by the Agriculture & Agri-Food Canada (AAFC) Genomics Initiative under the Natural Science and Engineering Research Council of Canada (NSERC) Visiting Fellowship Program with an annual stipend of \$39,805 CAN. The candidate must have a Ph.D. or equivalent in a relevant subject and have a track record indicating outstanding abilities and potential in research. Interested candidates should send a curriculum vitae and two or three letters of recommendations to Yuhai Cui, Ph.D., Research Scientist, Agriculture and Agri-Food Canada, SCPFRC, 1391 Sandford Street, London, ON N5V 4T3, Canada; fax 519-457-3997, e-mail cuiy@em.agr.ca, Website http://res2.agr.ca/london/pmr/english/study/gen_bios.html.

**Postdoctoral Position
Vanderbilt University, Nashville, Tennessee
(Received 03/28)**

Subject to final approval of funding, a postdoctoral position is available July 1, 2002, to study the interface between circadian rhythms, photoperiodism, and calcium fluxes. We have previously shown that basal free calcium levels are controlled by the circadian clock in plants (*Science* **269**: 1863–1865) and have further studied its role in controlling gene expression (*PNAS* **96**: 11659–11663). We have another paper in press (with *Plant Cell*) that examines dark-stimulated calcium fluxes in chloroplasts. This position is to assess the role of circadian calcium fluxes in photoperiodism and phototransduction. A secondary project is to adapt our new method for measuring protein interactions (*PNAS* **96**: 151–156) to plants. Experience with plant molecular genetics is necessary; experience with calcium-related research in plants is desirable. For more information about my laboratory, see our Website: <http://johnsonlab.biology.vanderbilt.edu/>. Salary will be consistent with the NIH scale. Interested applicants should send a current curriculum vitae including the names of three references to: Dr. Carl Johnson, Department of

Biology, Box 1812 B, Vanderbilt University, Nashville, TN 37235 USA; e-mail: carl.h.johnson@vanderbilt.edu.

Postdoctoral Fellowship
West Virginia University, Morgantown
(Received 04/12)

A postdoctoral position is available immediately to study functional genomics and regulation of gene expression in plants. Focus will be on biochemical and genetic characterization of plant transcription factors and chromatin remodeling proteins. Applicants must have a Ph.D. in molecular biology, genetics, or biochemistry and demonstrated expertise in molecular biology. Previous experience in *Arabidopsis* is an advantage. Appointment is for one year, renewable contingent on satisfactory performance and availability of funding. For immediate consideration, please send a curriculum vitae to Dr. Keqiang Wu, Department of Biology, West Virginia University, Brooks Hall 201, Morgantown, WV 26506-6057; e-mail kewu@mail.wvu.edu.

PhD Student Position
Institute of Plant Sciences, Zurich, Switzerland
(Received 03/19)

A Ph.D. student position is available at the Institute of Plant Sciences, ETH Zurich. The project includes molecular biological methods and plant transformation to investigate the regulation of a key gene in the symbiosis between terrestrial plants and arbuscular-mycorrhizal fungi. Applicants are expected to be familiar with molecular biological methods and should have an interest in molecular plant nutrition. In our international team the preferred language is English. The salary will be according to ETH standards. Please submit a curriculum vitae and names of references to Dr. Marcel Bucher, Institute of Plant Sciences, ETH Zurich, Experimental Station Eschikon, 8315 Lindau, Switzerland; telephone +41/52 354 92 18, e-mail marcel.bucher@ipw.biol.ethz.ch, Website <http://www.ipw.agrl.ethz.ch/~mbucher/>. See also Rausch C., et al. A phosphate transporter expressed in arbuscule-containing cells in potato. *Nature* **414**, 462–470; 2001.

Postdoctoral Position
University of North Carolina at Chapel Hill
(Received 04/30)

Positions are available to study proteins that regulate gene expression responses to auxin and light in *Arabidopsis*. Auxin regulates turnover of Aux/IAA proteins, which in turn regulate gene expression by interacting with transcription factors of the ARF (Auxin Response Factor)

family. Pressing open questions that we will address include i) determining developmental functions of particular Aux/IAA and ARF proteins, ii) determining how auxin regulates Aux/IAA protein turnover, iii) analyzing how light and auxin signaling pathways interact to regulate development, and iv) identifying new components of auxin and light signaling pathways. Depending on expertise and interests, individuals may take biochemical, genetic, or molecular biological approaches to studying these questions, and individuals with experience in one or more of these areas are especially encouraged to apply. Please send a letter describing research interests, curriculum vitae, and names of references to Jason W. Reed, University of North Carolina at Chapel Hill, Department of Biology, CB #3280, Coker Hall, Chapel Hill, NC 27599-3280, or send e-mail to jreed@email.unc.edu.

Postdoctoral Position
North Carolina State University, Raleigh
(Received 04/26)

Postdoctoral position available June 1, 2002, to study brassinosteroid signal transduction in *Arabidopsis*. The primary experimental objectives will be to identify the *in vivo* autophosphorylation sites of the *Arabidopsis* BRI1 receptor kinase and determine if autophosphorylation events are brassinosteroid-dependent. Techniques employed will include immunoprecipitation of BRI1 from purified membrane preparations and advanced analysis by mass spectrometry in collaboration with experts in that field (Oh et al., *Plant Physiol.* **124**, 751, 2001). Must have Ph.D. in relevant field and experience in molecular biology and protein biochemistry. Previous experience with immunoprecipitation and kinase biochemistry would be particularly useful. Apply to position 0105 by sending curriculum vitae and e-mail addresses of three references to Dr. Steve Clouse, Box 7609, North Carolina State University, Raleigh, NC 27695-7609; e-mail steve_clouse@ncsu.edu. The university is an equal opportunity employer.

Postdoctoral Research Associates
U.S. Naval Research Laboratory
(Received 04/12)

The Center for Bio/Molecular Science and Engineering at the Naval Research Laboratory has openings for postdoctoral research associates in molecular biology, biochemistry, and biophysics. Positions are available in the areas of (1) self-assembled films of biological molecules, (2) surface characterization using optical, atomic force, or electron microscopy, (3) protein engineering, and (4) energy transfer in photosynthetic proteins. CBMSE is one of the nation's

leading interdisciplinary research organizations applying modern techniques from the areas of chemistry, physics, molecular biology, materials science, and chemical engineering to a variety of studies. Starting salaries are \$53,000 per year, and opportunities are excellent for transition to permanent status after a successful postdoctoral tenure. Candidates must have received a Ph.D. in a relevant field within the past five to seven years. Postdoctoral positions are tenable through either the NRC Research Associateship Program or the ASEE/ONR Postdoctoral Fellowship Program. U.S. citizenship or permanent residency is required. Interested persons should send a resume, including a list of publications and references, to Ms. Ena Barts, Code 6910, Naval Research Laboratory, Washington DC 20375; e-mail enb@cbmse.nrl.navy.mil. NRL is an equal opportunity employer.

Postdoctoral Fellow, Plant Molecular Biology
Rockefeller University, New York
(Received 03/12)

Required for research in plant hormone signal transduction. Requirement: Strong background in plant biochemistry and the development of assays for signal transduction enzymes. In addition, a strong background in molecular biology and construction of transgenic plants is required. Preference will be given to those with expertise in the role of calcium in signaling mechanisms. Previous experience in *Arabidopsis* and tobacco is an advantage. For immediate consideration, please send curriculum vitae to Nam-Hai Chua Lab, Andrew W. Mellon Professor, Head, Lab of Plant Molecular Biology, Rockefeller University, 1230 York Avenue, New York, NY 10021.

Postdoctoral Position
Institute of Biochemical Plant Pathology
GSF-National Research Institute for
Environment and Health
Munich, Germany
(Received 03/11)

A postdoctoral position is available to study plant defense responses against pathogens with an emphasis on components of innate immunity (e.g. Durner, *PNAS* **96**, 14206; Wendehenne et al., *Trends Plant Sci.* **6**, 177). Focus will be on biochemical and genetic characterization of plant proteins of the defensin class, which are highly similar to human and animal defensins. A Ph.D. in molecular biology or biochemistry and demonstrated expertise in these fields are required. Knowledge in plant physiology would be beneficial. Laboratory languages are German and English. The position is for three years, and salary is according to the German BAT IIa. The GSF is a member of the Association of German Research

Centers and is associated with the major universities in Munich. The research and development program of the GSF is dedicated to the social tasks of environmental and health protection. The GSF is committed to increasing the representation of female staff in research and teaching. Applications from suitably qualified women are actively encouraged. To apply or to obtain further information, please contact Dr. Jörg Durner, Institute of Biochemical Plant Pathology, GSF-National Research Center for Environment and Health, D-85764 Oberschleissheim, Germany; telephone +49 89 3187 3434, fax +49 89 3187 3383, e-mail durner@gsf.de, Website <http://www.gsf.de/Forschung/Institute/biop.html/indexenglisch.html>.

Postdoctoral Positions

University of Missouri, Columbia (Received 04/17)

Postdoctoral positions are available immediately to study the response of plants to microbial infection. The work will involve the use of DNA microarray and proteomic technology. Follow-up experiments will involve biochemistry, molecular biology, genetics, and transgene expression. A strong background in molecular biology is required. Send, e-mail, or fax your curriculum vitae and three letters of reference to Dr. Gary Stacey, Department of Plant Microbiology and Pathology, 108 Waters Hall, University of Missouri, Columbia, MO 65211; fax 573-882-0588; e-mail staceyg@missouri.edu. The University of Missouri is an equal opportunity/affirmative action employer.

POSTDOCTORAL RESEARCH ASSOCIATE University of Minnesota, St. Paul (Received 03/25)

Position available immediately to characterize the long-sought lignin depolymerase gene from *Trametes cingulata*, produce recombinant enzyme and optimize its activity. Ph.D. required in molecular biology, biochemistry, or appropriately related field. Practical experience desirable in protein purification, gene cloning, and production of recombinant enzymes through eukaryotic expression systems. Familiarity with (open-column) SEC, kinetic analysis, and Fortran programming would be advantageous. Excellent writing skills with ability to work both independently and as part of a team are very important. Full-time appointment with \$28,634 to \$31,724 annual salary for one to three years contingent upon satisfactory progress and continued funding. Please send resume describing experience with specific experimental techniques; graduate transcripts or academic record; copies of relevant publications; and names, addresses,

telephone numbers, and e-mail addresses of three professional references to: Professor Simo Sarkanen, Lignin Biochemistry Group, College of Natural Resources, Department of Wood and Paper Science, University of Minnesota, 2004 Folwell Ave., St. Paul, MN 55108-6128; telephone 612 624-6277, e-mail sarka001@tc.umn.edu. Applications will be reviewed beginning April 15 and continue until the position is filled. The University of Minnesota is an equal opportunity educator and employer.

Postdoctoral Position INRA, Montpellier, France (Received 04/06)

A post-doctoral fellowship is available September 2002 for a maximum of 18 months at the Laboratoire d'Ecophysiologie des Plantes sous Stress Environnementaux (LEPSE, Montpellier, France), group of Professor F. Tardieu. The successful candidate will participate in a project funded by Génoplante (french genomic program) that addresses the physiological, genetic, and molecular basis of tolerance to water deficit in maize. The work will be focused on an ecophysiological analysis of leaf expansion response to water deficit in various maize lines, using a framework already established (*JXB* 52, 1259; *JXB* 51, 1505; *Plant Physiol* 109, 861; *Plant Physiol* 114, 893) in combination with quantitative analysis of gene expression in leaves and roots. Work will include short stays in partner labs in Lyon and/or Paris. Candidates should have experience in molecular biology and some interest in quantitative analysis of growth and development. A Ph.D. in plant physiology is recommended. Good practice with computers will be appreciated. English language is sufficient. There is no constraint either on the nationality, or on the age of the applicant. Send a full curriculum vitae and a cover letter, including the names and addresses of two academic referees to Bertrand Muller, INRA-LEPSE, 2 Place Viala, 34060 Montpellier, France; e-mail Bertrand.Muller@ensam.inra.fr.

Postdoctoral Fellow Plant Cell Biotechnology Technische Universitaet Dresden, Germany (Received 03/13)

A postdoctoral position is available from August 2002 limited for 24 months to join the interdisciplinary group of Bioengineering of the Institute of Food Technology and Bioengineering at the Dresden University of Technology. The group enlarges its experience in bioprocess engineering on the field of plant cell biotechnology. Current fields of research are the optimization of microbial processes using bacteria and yeasts for

product syntheses, degradation and leaching, the modeling of processes, and the biomonitoring of cell populations. The project includes generation and optimization of plant cell lines for selected metabolite production and transfer of submerged cultures to bioreactors. Cooperation with the Institute of Plant Physiology is intended.

Experience in plant cell genetics, molecular biology, and physiology is required. The Dresden University of Technology is a Saxonian institution with best tradition in engineering and natural sciences. In addition to being a center of science and technology, the Dresden region is well known for its lovely landscape and the exciting cultural sites and events. The position is funded by the EC grant "Marie Curie Development Host Fellowship." Applicants are asked to look up the criteria of eligibility for fellows at <http://www.cordis.lu/improving>. Equal opportunities, particularly between women and men, are given. Send curriculum vitae and two references to Prof. Dr. T. Bley, Bergstraße 120, D-01062 Dresden, Germany.

Postdoctoral Position University of British Columbia, Vancouver, Canada (Received 04/29)

A postdoctoral position is available immediately for up to two years in the area of functional genomics. My laboratory has a number of projects ongoing involving nitrogen (nitrate and ammonium) transport in higher plants and in fungi. The project is funded by NSERC (Natural Sciences and Engineering Research Council of Canada). The applicant should have a Ph.D. in plant or fungal molecular biology and have a broad range of technical skills in this area, particularly in gene expression techniques, and the generation of transgenic plants or fungi. Applicants should send a curriculum vitae and the names of three referees to Tony Glass, Department of Botany, University of British Columbia, Vancouver, B.C. V6T1Z4, Canada or to aglass@interchange.ubc.ca.

RESEARCH/TECHNICAL POSITIONS

Research/Technical Positions ExSeed Genetics, Ames, Iowa (Received 04/11)

ExSeed Genetics, a wholly owned division of BASF Plant Science L.L.C., is focused on developing high yielding, nutritionally enhanced crops. Research positions are available at the Ames, Iowa, facility. Research associates will conduct research in plant metabolic engineering to improve yield and nutrition in cereal crops. Candidates must have a B.S. or an M.S. in

molecular biology or plant biology. The candidates must have working knowledge in a wide range of molecular and biochemical techniques. A research associate–cell biologist position is available for a B.S.- or an M.S.-level scientist to carry out corn transformation. Demonstration of working experience and success in monocot tissue culture and plant transformation are essential. We also have a research associate–agronomist/plant breeder position available. We are looking for a motivated individual with a B.S. or an M.S. in agronomy or plant breeding to conduct field research for transgenic corn nursery. The individual is responsible for planning and managing corn nursery including planting, pollination, harvesting, and seed storage. For consideration, forward your curriculum vitae by U.S. mail to Carol Thompson, ExSeed Genetics, ISU Research Park, 2901 South Loop Drive, Bldg. 3, Suite 3800, Ames, IA 50010. Evaluation of candidates will begin immediately. ExSeed Genetics is an equal opportunity employer.

ASSISTANTSHIPS, FELLOWSHIPS, INTERNSHIPS

Graduate Fellowship Program Louisiana State University, Baton Rouge (Received 04/12)

The Gordon Cain Biotechnology Education for Students and Teachers (BEST) Program and Louisiana State University are offering graduate fellowships specializing in the study of agricultural biotechnology. Preferred starting dates are fall 2002 or spring 2003. Research will focus on the following areas: development of transgenic plants to enhance human health, disease or herbicide resistance, and production of useful pharmaceutical or medicinal compounds. Stipends for these fellowships are \$20,000 per year, and each fellowship includes a \$5,000 per year research support grant. Requirements: A bachelor's degree from a regionally accredited U.S. 4-year institution (or the international equivalent); score of 1000 or better on the GRE; GPA of at least a 3.00 on undergraduate and graduate coursework already completed; score of 550 (paper based) or 213 (computer-based) on the TOEFL (required for certain international applicants); official transcripts from each college or university you have previously attended; a completed Application for Admission to Graduate Degree Program form. An application fee must accompany the application or it will not be processed. Graduate School Application Forms can be found at: <http://gradlsu.gs.lsu.edu/application.htm>. Send all application material to: Dr. Fred Enright, Veterinary Science Dept., Louisiana State University, Baton Rouge, LA 70803.

Graduate Fellowships Louisiana State University, Baton Rouge (Received 03/19)

Research fellowships to support graduate study leading to a Ph.D. in agricultural biotechnology will be available starting the fall and spring semester of 2002/2003 in the Department of Plant Pathology and Crop Physiology at Louisiana State University and LSU Agricultural Center. These fellowships are a part of The Gordon A. Cain Biotechnology Education for Students and Teachers (BEST) program at LSU. The areas of research interest are development of transgenic plants of Louisiana's major crops (cotton, rice, soybean, sugarcane, and wheat) to (1) improve agronomic traits (disease/ herbicide/ insect/nematode resistance), (2) enhance nutritional quality for humans and cattle, or (3) produce pharmaceutical or medicinal products of economic importance. Stipends for these fellowships are \$20,000 annually. Research facilities include state-of-the-art equipment for molecular and cellular biology, biochemistry, biophysics, and computation. Candidates should have a strong background in molecular biology, genetics, plant physiology, biochemistry, or related fields. Please complete an application form for Admission to Graduate Degree Program at <http://gradlsu.gs.lsu.edu/application.htm> and submit the form along with a letter of interest, undergraduate and graduate transcripts, and GRE /TOEFL scores. Arrange to have three letters of reference sent to Dr. Norimoto Murai, Department of Plant Pathology and Crop Physiology, Louisiana State University and LSU Agricultural Center, Baton Rouge, LA 70803-1720; tel 225 578-1380, fax 225-578-1415, e-mail nmurai@lsu.edu.

Graduate Assistantship University of Manitoba, Winnipeg, Canada (Received 04/15)

Funds will be available in fall 2002 to support an MSc. student interested in plant stress physiology. The research program focuses on woody plant response to salinity stress. The aim of the research is to provide information for selecting salt-tolerant species for use on saline sites including reclamation of degraded sites and to develop strategies for improving salinity tolerance in woody plants. The successful candidate will undertake research on salt tolerance of red-osier dogwood (*Cornus stolonifera*) using physiological and biochemical techniques. Applicants should send a curriculum vitae, a letter of interest, and three references to Dr. Sylvie Renault, Department of Botany, University of Manitoba, Winnipeg R3T 2N2, Manitoba, Canada; telephone 204-474-6914, fax 204-474-7604, e-mail renaults@cc.umanitoba.ca. For information on the Department of Botany, please

consult our Website at <http://www.umanitoba.ca/faculties/science/botany/>.

Graduate Research Assistantship University of Arkansas, Fayetteville (Received 03/26)

Research evaluating the physiological associations of novel yield and quality related traits of cotton germplasm under environmental stresses. The funding will be used in our biotechnology and plant breeding programs to enhance yield and quality traits in commercial cultivars. The research will involve physiological, biochemical, and anatomical evaluation of novel germplasm for tolerance to high temperature and drought stress. Research will include field and controlled environment studies. Opportunities exist for working with geneticists, molecular biologists, and agro-industry. Experience with cotton is desirable but not necessary. B.S. or M.S. in plant or crop physiology or related degree. Stipend \$12,000 with a B.S., and \$14,000 with a M.S., plus fringe benefits, and tuition fees waived. Available immediately. Send letter of application, resume, official transcripts, and names and addresses of three references to: Dr. Derrick M. Oosterhuis, Alzheimer Laboratory, 1366 Alzheimer Drive, University of Arkansas, Fayetteville, AR 72704; telephone 479-575-3979, fax 479-575-3975, e-mail oosterhu@uark.edu.

Research Assistantships University of Missouri, Rolla (Received 04/24)

Funding for M.S. students is available in the newly formed Environmental and Applied Biology graduate program within the Department of Biological Sciences at the University of Missouri–Rolla (UMR). Positions are available to study various aspects of plant biology including cellular signaling, plant responses to stress, and root ion transport physiology. These studies will be based on a combination of molecular/ biochemical and biophysical approaches. These studies will take advantage of novel sensor technologies that are being developed in the Biological Sensor Laboratory at UMR. Students might also choose to work on the development of biosensors in this program. Because of the technology development activities within the lab, students will join a team of interdisciplinary researchers and students that work and interact across disciplines ranging from biology and chemistry to electrical and environmental engineering. Good communication skills in English, coursework or experience in molecular biology or biophysics, and good GPA and GRE scores are highly desirable. Please contact D. Marshall Porterfield for more information at mporterf@umr.edu.

Graduate Fellowship

Purdue University, West Lafayette, Indiana (Repeat)

One or two graduate assistantships (M.S. or Ph.D.) are expected beginning fall 2002. Research will focus on the regeneration of fine hardwoods (e.g., black walnut, black cherry, and northern red oak). Candidates will have the opportunity to work on a wide variety of topics related to seedling morphological and physiological quality. Possible topics include plant mineral nutrition, photosynthesis, drought resistance, cold hardiness, dormancy cycle, etc., under conditions in the nursery and field. Candidates will also collaborate with USDA-Forest Service scientists specializing in forest regeneration and genetics. Candidates should have an undergraduate degree and/or M.S. in forestry or related field (i.e., horticulture, botany, agriculture). A minimum GPA of 3.2 and GRE score of at least 1900 (V+Q+A) is preferred. Extracurricular work experience is desirable. Please e-mail or mail a short (one-page) letter of interest, including cumulative GPA, GRE scores, and work experience. Please also include contact telephone numbers and e-mail addresses for three references to Dr. Douglass F. Jacobs, Assistant Professor, Hardwood Tree Improvement and Regeneration Center, Purdue University, Department of Forestry and Natural Resources, 1159 Forestry Building, West Lafayette, IN 47907-1159; telephone 765-494-3608, fax 765-494-2422, e-mail djacobs@fnr.purdue.edu. Graduate assistantships are currently awarded at \$16,045 per year (Ph.D.). Women and minorities are encouraged to apply.

Graduate Fellowship

Oregon State University, Corvallis (Repeat)

Funding for M.S. or Ph.D. students is available for the application of novel genomic tools to study development, adaptation, and flowering in poplars (aspens and cottonwoods). These studies will take advantage of its soon-to-be-determined complete genome sequence, as well as its large EST collections and facile transformability to create virtual mutants. Students will join a team of 15 researchers and students that conduct interdisciplinary studies, and interact with other university, government, and industry scientists intensively. Good communication ability in English, coursework or experience in molecular biology, and good GPA and GRE scores are highly desirable. Please contact Professor Steve Strauss for more information at Steve.Strauss@orst.edu.

Graduate Student Assistantship **Virginia Tech, Blacksburg (Repeat)**

A position is available in the summer or fall of 2002 for a Ph.D. student who is interested in using Arabidopsis to understand how plant disease resistance gene (R gene) clusters evolve by unequal crossing-over to form chimeric R genes with new/changed pathogen resistance specificities. This is a joint research program by John Jelesko <http://www.ppws.vt.edu/faculty/jelesko.html> and John McDowell <http://www.ppws.vt.edu/faculty/mcdowell.html> and is funded by a four-year NIH grant. We are developing a novel, high-throughput screen for unequal crossovers within R gene clusters, and we expect that this experimental system will provide new insights into meiotic

recombination of R gene clusters and R gene structure/function. This research program is housed in the recently constructed Fralin Biotechnology Center <http://www.biotech.vt.edu/>. Blacksburg is located in an attractive mountain setting, with college town amenities, exceptional outdoor recreation opportunities, and low cost of living (<http://www.bev.net/>). Interested individuals should contact John Jelesko at jelesko@vt.edu or 540-231-3728.

Postdoctoral Fellowship in Plant Molecular Genetics **INRA, Avignon, France (Repeat)**

Characterization of QTLs controlling fruit quality traits in tomato. In INRA, QTLs controlling tomato fruit quality traits were mapped. Clusters of QTLs were observed. To further characterize the major cluster of QTLs, a set of near isogenic lines were prepared. Their evaluation allowed the separation and fine mapping of three linked QTLs controlling sugar content, fruit weight, and locular number. The position is to investigate the functional characterization of these QTLs through a candidate gene approach by mapping new candidate genes putatively involved in fruit development and composition—their choice relies on known function or specific expression evaluated by transcriptome or proteome analyses; studying the expression of putative candidate genes in QTL-NIL; and researching new markers in the region of interest for fine mapping of QTLs. Fellowship is for a non-French Ph.D., available for one year, renewable once. Salary between 1500 and 2100 Euros gross per month. Applicants should send a curriculum vitae to Mathilde Causse through e-mail at mcausse@avignon.inra.fr.

ASPB/Wiley Announce Exciting New Publishing Partnership

The American Society of Plant Biologists and John Wiley & Sons are pleased to announce a new publishing partnership for the development of a joint imprint of plant biology books. ASPB and John Wiley & Sons will be working together to develop this imprint and to market and distribute it throughout the world. Our aims are to develop products within the joint imprint that are

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Buchanan, Gruissem, & Jones—

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The Education Committee (EC) Has Some News for You!

Education Workshop

In the survey we sent out almost two years ago on undergraduate and high school research and outreach, the most frequently asked question was “How do I get involved in K–12 outreach?” Accordingly, the topic for this year’s Education Workshop is “Engaging K–12 in the Process of Science: Successes, Challenges, and Funding Opportunities.” Confirmed speakers include Paul Williams (Fast Plants), Machi Dilworth (NSF), and Patricia Suchian (Howard Hughes Medical Institute). We hope to have representatives from NASA and/or DOE as well. We anticipate that this workshop will answer that frequently asked question and also help you find funding sources to do the outreach you would like to do. Details will be announced in the final program, but you may want to keep 6:30 p.m. to 8:00 p.m. free on Monday, August 5, to attend this workshop.

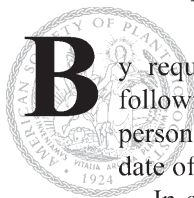
Request from the Education Committee

The Education Committee wants to do more for ASPB members. For this we are soliciting ideas and suggestions from members about education activities that they think are important and that the EC should get involved in. So the committee is not overburdened with tasks, and because we cannot take on more than the stipulated five full members, we are willing to consider individuals for “adjunct” membership with specific duties related to specific tasks (of interest to the adjunct member). This will provide institutional credibility/validity to the individual and allow the EC to keep closer contact with activities. So, if you have ideas about how we might improve the Ed Forum, the Ed Booth, the Ed Workshop, the EC Web site and URLs, Laboratory Exercise Clearinghouse, or any other ongoing or new activity, please send comments to Brian Hys at bhyps@aspb.org. If you are interested in being considered for adjunct membership, please let us know what category you would like to be considered for.

Many thanks.

Eric Davies, for ASPB Education Committee

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By requesting the special membership price and signing this form, you agree to the following: In consideration of the low member subscription rates, I agree to retain my personal copies of *Plant Physiology* and *The Plant Cell* for at least three years from the date of issue, not depositing them in any library or institution before the end of this time.

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<i>The Plant Cell</i>	\$150	\$105
Combined Subscription	\$275	\$210

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