

# ASPB News



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

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## Inside This Issue

Education Foundation  
Awards and Happenings

New Column!  
"The View from Here"

New "Principles"  
Bookmarks Available

## President's Letter

### Confronting Change

In my January/February letter (<http://www.aspb.org/newsletter/pcjanfeb02.cfm>), I reviewed the process that the Executive Committee had initiated to address the issue of a name change for *Plant Physiology*, as proposed by the editor-in-chief, Natasha Raikhel, last September. In this letter I summarize the report by the Publications Committee, the discussions of the Executive Committee at its February 2, 2002, meeting, and the additional steps that have been initiated as of February 12, when I'm writing this letter.

The Executive Committee charged the Publications Committee to assess the potential impact on finances, library subscriptions, readership, manuscript submissions, and membership, as well as the legal ramifications of the proposed name change. The Publications Committee provided the Executive Committee with a detailed written report and a recommendation. Highlights of the report follow this letter. The committee "supports the idea that a name change would help improve the quality and impact of *Plant Physiology*, especially with the leadership, energy, and vision of the current editor-in-chief, Natasha Raikhel." However, the committee was not completely happy with the name *Plant*, citing legal and philosophical reasons, but it did not identify a suitable name not already taken by another journal.

The Executive Committee reviewed the Publications Committee report, and a lengthy discussion occurred, primarily centered on the pros and cons elaborated in the Publications Committee report. One committee member articulated that it would be important to first set goals for ASPB and then address how a journal name change fit within those goals. This suggestion received substantial support from most committee members. The Executive Committee then generated a series of questions that were presented to

Natasha Raikhel when she addressed the committee later in the day. What are her goals for the journal? How will the name *Plant* achieve those goals? How does she see those goals affecting ASPB? What are her thoughts on the legal issues? Is *Plant* the only name to be considered? Would a remarketing effort or another approach achieve the same goals?

Natasha articulated her view of where plant biology is now and will likely be headed in the next five to 10 years. She noted that the field of biology is moving forward at an incredible rate and that journals must be flexible to accommodate new directions and initiatives. She characterized current research as being in five major areas: The Genome and Genetics; The Transcriptome and gene expression/regulation; The Proteome, including protein/protein interactions and signal transduction; The Cell; and The Phenome (whole organism physiology). New subdisciplines will be surfacing every year. She felt the name *Plant* would encompass all five areas and new emerging subdisciplines without restrictive boundaries, which she felt did exist for the name *Plant Physiology*. She stated that her primary goal was to position the journal to receive top-notch submissions representing excellent, rigorous science ranging from ecophysiology to molecules. She acknowledged that the dictionary definition for physiology is function, but she felt that a number of scientists, especially younger scientists, identified physiology as a specific subfield of biology and did not see themselves as physiologists. She felt strongly that a name change would enable better positioning of the journal to compete with other journals for research papers reflecting new disciplinary areas and new developments in plant biology.

*continued on page 3*



# ASPB Officers & Staff

## CONTENTS

- 1 **President's Letter**
- 4 **Committees Hold Winter Meetings**
- 6 **Membership Corner**
- 8 **Talos**
- 9 **Bioethics**
- 10 **Education Foundation**
- 11 **Foothills Footnote**
- 12 **The View from Here**
- 13 **Call for Applications:  
Editor-in-Chief, *The Plant Cell***
- 14 **Public Affairs**
- 18 **Education Forum**
- 22 **New Staff**
- 23 **Obituaries**
- 28 **Gatherings**
- 30 **Jobs**

Deadline for July/August 2002  
*ASPB News*: June 10, 2002

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## ASPB News

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

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Natasha's vision for plant biology resonated with many Executive Committee members. It was clear to many of us that a decision on the proposed journal name change needed to be made within the context of a vision for the Society. After extensive discussion, we concluded that we were not yet ready to vote on the proposed change of *Plant Physiology* to *Plant*. However, the consensus was that we would take several steps to move forward. First, the motion to consider a name change for *Plant Physiology* was made and unanimously passed. Second, I was charged with establishing an ad hoc committee to address the future of biology and how to best position our Society's journals to be in the forefront of the field. Dan Bush, president-elect, will chair the committee, which will be composed of scientists representing a diversity of our current membership and the editors-in-chief of *The Plant Cell* and *Plant Physiology*. I have also been charged with further investigating the legal ramifications of several alternative names, including *Plant*. My intention, and the intention of the Executive Committee, is to review the findings of the ad hoc committee and the additional data collected during the next several months and to make a decision at the next Executive Committee meeting in early August.

*Plant Physiology* is an excellent journal, with its citation index now at an all-time high (4.831). I suspect it will be even higher next year because of impacts from the changes already put forth by Natasha Raikhel. In the coming years, research will more fully reveal how genes and gene products interact through complex networks to determine the wonderfully diverse ways in which plants function. Physiology, in its traditional sense, will be an essential component of this endeavor. An important goal for our journal is to ensure that scientists continue to publish their best work in *Plant Physiology* while at the same time encouraging publication of excellent research in areas not traditionally published in *Plant Physiology*. The pace of scientific discovery is unprecedented, and I view a more inclusive

name of this journal as an important component toward meeting the above-stated goals.

There has been extraordinary progress in plant biology over the past 10 years. I'm very proud of the fact that our Society is at the forefront of this progress. If we are to continue to lead the field of plant biology, then we must understand where biological research is headed and be prepared to consider and make needed changes. Using ocean waves as an analogy for progress and change, we can stand still and risk being crushed by a big wave, or we can ride that wave into the future. As president, it is my responsibility to make sure that we do not overlook, and indeed, that we carefully consider the need for change.

### Summary of Publications Committee Report

**Financial impacts:** The financial impact of a name change was judged to be minimal, as library subscriptions should remain the same, since *Plant Physiology* is bundled with *The Plant Cell*.

**Impact on readership and manuscript submissions:** Surveys indicated that authors care most about impact factor, reputation, and speed of reviewing and publication rather than the actual name of a journal. Among the authors surveyed, both positive and negative perceptions of *Plant Physiology* were expressed.

**Impact on quality, content, rigor, and impact factors:** The content of *Plant Physiology* is already broad in scope; thus, a more general name may allow the journal to retain its breadth and more easily accommodate new subdivisions of plant biology. Rigor is determined by the policies and performance of the editorial board; thus, a name change is expected to have little impact on rigor.

**Legal ramifications:** It might be possible to obtain trademark registration for the name *Plant*, but the title may not qualify for regis-

tration if deemed too similar to other journal names. Another institution could start to use the name *Plant Physiology* if we discontinue using that name.

**Is *Plant* the best option for a new name?** *Plant* is short, catchy, and very broad, but it might be so broad that its precise meaning is ambiguous.

**Evaluate the missions of the Society's two journals and how the name change may affect these missions:** *The Plant Cell* has a focused mission: "to publish the most exciting, cutting-edge research in plant cellular and molecular biology." The mission of *Plant Physiology* is much broader: "to publish papers containing new and significant information on broad aspects of plant biology, including, but not limited to, biochemistry, biophysics, bioenergetics, cell and molecular biology, development, genetics, physiology, and the understanding of the plant as an entire organism, including its interactions with the environment, symbionts, pathogens and pests." Thus, a direct conflict is not considered a problem.

**Potential impact on Society membership:** Approximately 10% (nearly 600) of the membership responded on the web to the proposed name change. Over two-thirds of the responding members were not in favor of a name change. Recurring themes among the opponents were concern with compromising the 75-year legacy of *Plant Physiology*; the opinion that physiology is an all-encompassing and still relevant name; the feeling that *Plant* is too broad; concern about confusion in the literature for researchers, students, and librarians; and the opinion that instead of changing the name of *Plant Physiology*, the Society should institute a third journal to interest the group of authors currently not being attracted by our journals. The proponents indicated that the title was too narrow and outdated to describe accurately the contents of the journal and that a broader name would make the

continued on page 9

# Committees Hold Winter Meetings

## Executive Committee Addresses Full Agenda

The Executive Committee met on February 2, 2002, at ASPB headquarters in Rockville, Maryland. All members were present for this first Executive Committee meeting in the newly renovated conference room. Everyone was very pleased with the improvements, both from aesthetic and functional perspectives. President Vicki Chandler opened the meeting by thanking the committee members and staff for their efforts to improve the Society on so many levels. Online manuscript submission, article-at-a-time publishing, high impact factors for both journals, increased activation of online journals by members and institutions, and a publishing partnership with John Wiley & Sons to create a joint plant biology book program were some of the accomplishments noted. Although much of the meeting was devoted to discussing the *Plant Physiology* name change issue (which is addressed in detail in this issue's President's Letter), many other actions were also approved by the

Executive Committee. Following are some highlights:

- The Minority Affairs Committee will award 20 memberships to increase the ethnic diversity of the Society.
- A Society ethics statement is being developed.
- A policy for granting financial support of meetings, workshops, and courses in developing countries was approved.
- Financial support for specific sessions held during the ASPB annual meeting will be accepted if approved by the Program Committee.
- "The Cube," a popular educational tool, will be placed on the ASPB web site.
- Nominated postdoctoral candidates and graduate students will receive free memberships (limit to be determined) to acknowledge that these individuals are the future of the Society.
- The recommendation of the Constitution and Bylaws Committee to change the Con-

stitution by membership vote to make the International Committee a standing committee of the Society was approved. The required bylaws changes were voted by the Executive Committee.

The next meeting of the Executive Committee will be held in conjunction with Plant Biology 2002 in Denver, Colorado. All members are encouraged to attend the business meeting that will be held during the annual meeting on Tuesday, August 6, 2002, at 6:00 p.m.

## Education Committee

The Education Committee met December 15 at ASPB headquarters to plan education programs for 2002. To help address the growing list of responsibilities assumed by the committee, official adjunct members have been sought and added to the committee. Carol Reiss, former Education Committee chair, has agreed to serve as an adjunct member. Her primary responsibility is to continue design and production work on the attractive, full-color Principles of Plant Biology bookmarks (see related story in Education Forum). Former Education Committee member Dina Mandoli has been invited by ASPB President Vicki Chandler to be an adjunct member working on a web version of The Cube. Jeffrey Coker has been asked to be an adjunct member working on surveys on undergraduate and high school student mentoring by ASPB members (work he has been conducting with Committee Chair Eric Davies).

Committee member Gary Kuleck will coordinate the Education Booth at the ASPB annual meeting in Denver along with committee member Sheila Blackman. Gary and committee member Larry Griffing will provide input on the Education Committee web site. Gary and Sheila agreed to participate in the ASPB exhibit at the National Science Teachers Association (NSTA) Convention in San Diego. Les Hickok is coordinating the exhibit this year. Former committee member Paul Willams and Coe Williams of Wisconsin Fast



Executive Committee members gathered February 2 in the newly renovated conference room at ASPB headquarters. Seated (left to right): Dan Bush, Vicki Chandler, Joyce Foster, Steve Rodermel, Regina McClinton (kneeling behind Steve), Adrienne Clarke. Standing (left to right): Danny Schnell, Kris Niyogi, Becky Boston, Roger Hangarter, Elizabeth Hood, Dan Cosgrove, Dina Mandoli, Carol Reiss, Eric Davies, Jon Monroe, Ken Keegstra, Mark Brodl.

Plants continue to make significant contributions to the ASPB exhibit at NSTA.

Larry is coordinating the Education Workshop at the annual meeting, which will focus on how to participate effectively in K–12 outreach. The Education Foundation is seeking corporate grant support for this workshop and for some additional education programming at the annual meeting. Committee member Ken Nadler is working on the development of a lab exercises clearinghouse. Gary will continue to write and edit contributions to the Education Forum in the *ASPB News*.

Eric Davies will use the ASPB Hot News web page to solicit assistance and ideas from members on how to further enhance Education Committee–sponsored programs.

## Minority Affairs Committee

The Minority Affairs Committee (MAC) met at Plant Biology 2001 in July in Providence and at ASPB headquarters in Rockville, Maryland, on December 8, 2001. The following is a summary of the latest MAC initiatives.

### Membership Survey

MAC is developing a survey of ASPB members to assess the status of minority group members in the Society. The survey is intended to gauge the efficacy of various MAC activities and to identify members who are interested in the issue of under-representation of various groups in the plant sciences and who might want to mentor young scientists.

### Free Memberships

All 15 of the free memberships that were offered to minorities in 1999 were renewed. Because of this 100% retention rate, MAC will again offer 20 free memberships to a combination of undergrads, grad students, postdocs, and faculty who aren't currently members.

### Web Site

The URL for the MAC web site is [http://www.aspb.org/committees\\_societies/](http://www.aspb.org/committees_societies/)

[minorityaffairs/](#). The site includes links to information on Committee Members, Minorities in Plant Science, Featured Labs, Careers in Plant Science, Graduate School Information, Undergraduate Research Programs, Directory of Minority Institutions, and Opportunities for Minority Students.

### Levels of Intervention

MAC discussed the areas where it can most appropriately focus its efforts to enhance diversity within the Society. There was agreement to plan strategies to aid minority faculty in the area of professional development. Strategies might include outreach to minority faculty; finding mentors for these faculty who could provide advice on grant proposals or offer opportunities for summer research; and pressing funding agencies (NIH, NSF, DOE, USDA) to provide supplementary funding for minority faculty summer research at mentor labs and academic-year release time.

### Publications Committee

The Publications Committee met January 12, 2002, in Rockville. Most of the day was spent

considering the proposed name change of *Plant Physiology* to *Plant* (see related President's Letters in this issue and online at <http://www.aspb.org/newsletter/prescorner.cfm>), but a lot of other ground was covered as well. Here's a summary:

- The committee heard journal reports from the managing editors of *Plant Physiology* and *The Plant Cell*. Both journals are enjoying healthy submissions, subscriptions, and impact factors. Two special issues are in the works for *Plant Physiology* and one for *The Plant Cell*. Exciting new electronic initiatives are in the works, too, including Bench>Press, our web-based manuscript management system (still enduring some growing pains), and Plant Preview (early-publication articles), which is available free to Society members and through pay-per-view for nonmembers and institutions.
- Staff are moving ahead on the digitization of our legacy data. All issues of *The Plant Cell* will be posted online in a searchable PDF format this spring, and *Plant Physiology* content from 1993 through 1997 will be posted as well.

*continued on page 7*

## 2001–2002 Member-Get-A-Member Campaign

The Membership Committee would like to thank all the members who participated in the Member-Get-A-Member campaign that was launched last summer. This campaign marks the first time ASPB has reached out to our members to help recruit. The campaign was very successful—more than 400 new and returning members joined! We would especially like to thank Hans Kende at Michigan State University, who was instrumental in organizing and launching this campaign.

Congratulations to Melissa Ho, pictured here, who won the grand prize

(free airfare to Hawaii for the Plant Biology 2003 meeting).

Remember to participate in the new web campaign. It's easy! Please visit <http://www.aspb.org/getamember> to refer colleagues online and win great prizes.





*ASPB members share a common goal of promoting the growth, development, and outreach of plant biology as a pure and applied science. This column features some of the dedicated and innovative members of ASPB who believe that membership in our Society is crucial to the future of plant biology.*

*If you are interested in contributing to this feature, please contact Kelley Noone, ASPB membership and marketing manager, at [knoone@aspb.org](mailto:knoone@aspb.org).*



**Name:** KARL KUNERT

**Title:** Professor in Botany

**Place of work or school:** University of Pretoria/Forestry and Agricultural Biotechnology Institute

**Research area:** Molecular Plant Physiology

**Member since:** 1978

**Web page:** <http://fabinet.up.ac.za/molplantphys>

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

For many years I have been collaborating with Professor C. Foyer in the United Kingdom, who is a long-term member of ASPB. Since I am working in Africa and facing scientific isolation in my field of interest, this collaboration has greatly contributed to keeping an international scientific standard and has ultimately helped me secure my current position in academia.

**2. Why has membership in ASPB been so important?**

I think it is very important that scientists have a professional representation for their field of interest. As a member of ASPB working in Africa, I specifically appreciate that I am constantly updated about recent developments in plant science and that I have access to two first-class journals as well as to meetings that focus specifically on my research interest and that are affordable for a scientist from a developing country.

**3. Was anyone instrumental in getting you to join ASPB?**

No one was instrumental in getting me to join ASPB. But after earning my Ph.D. in 1976, I felt proud as a young German scientist working in plant science to be a member of a professional society in the United States that had many members that I admired for their scientific achievements. I also felt quite early on that I could not succeed in my scientific career without being part of a community of scientists with a similar interest.

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

By working in Africa, I have experienced the importance of having as a scientist a scientific “home” and the feeling of being part of a family where somebody still cares for you. Unfortunately, many young scientists do not see the advantage anymore of being a member of a professional scientific society, often discouraged by the dominance of the “old guard,” especially at scientific meetings. In my opinion, ASPB clearly offers advantages nowadays for young scientists. Besides offering a first-class annual meeting at an affordable price, I was deeply impressed by how ASPB actively encouraged and specifically promoted contributions by young scientists at Plant Biology 2001 in Providence this past July.

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

Being part of a generation that experienced science in the sixties and seventies, I very much admire the pioneering work of the scientists during that time. They made fundamental discoveries in science with often very simple tools by being controversial and focusing on unexplored fields. In my opinion, we are losing more and more this spirit to discover the unknown and to be controversial. Unfortunately, there is a common tendency in recent years to replace thinking with the most expensive equipment, making science extremely expensive and often inefficient.

**6. What are you reading these days?**

I have started to read the book *Hawaii*, by James Michener. I am planning to attend Plant Biology 2003 in Honolulu, and before I go I would like to learn more about the history of these wonderful islands, which are almost exactly on the other side of the world from South Africa.

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

We will make significant progress in the new sciences, such as transcriptomics, proteomics, and ultimately metabolomics, and we will learn a new way of doing biology by analyzing, studying, and taking into account simultaneously a very great amount of data. But I do not see one real “big thing” in plant biology on the horizon. In my opinion, these “big things” mostly happen by accident, and they might happen only when we learn to appreciate basic research again and to avoid constantly challenging scientists with the application potential of their science and “product development.”

continued from page 5

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

I am reading them at work in our library, and I still think that a hard copy has the advantage of letting one browse, which is somewhat difficult using exclusively an electronic version of the journal on the Internet.

**9. Have you gotten a job using ASPB job postings or through networking at the annual meeting?**

Personally, I did not get my positions via job postings or because of a meeting or by being a member. But I strongly believe that by being a member of a professional society and participating in the activities and using the services it provides, younger scientists will enjoy specific advantages at the beginning of their career because they will become connected to potential employers in the field of plant science.

**10. Do you have any hobbies?**

Tennis, which I can play year-round in South Africa, and skiing, which is, unfortunately, almost impossible in South Africa. But when I am in the United States or Canada, I head for the powder. The moguls are always a challenge.

**11. What is your most treasured possession?**

My personal qualities of trying to be honest, tolerant, and helpful, which I think are important, especially for living in Africa. Also my family, who always joined me as I lived in different parts of the world pursuing my interest in science.

**12. What do you still have left to learn?**

Since my whole life will be a learning process, there are many things left for me to learn that are either related to science or to living in Africa. In the short term I am extremely excited to learn the secrets of bioinformatics. 🌱

• The committee asked staff to draft a policy statement on dealing with scientific misconduct for consideration at the next committee meeting in August in Denver. This statement will be part of the Society's ethics statement, also a work in progress.

• The committee considered resurrecting the ASPB Science Writing Intern Program and asked staff to explore alternative ways of accomplishing the goal of training one science writer with an interest in plant biology per year. Staff will investigate ways for the Society to support an intern at a well-established program like that held at UC-Santa Cruz or at AAAS.

• The search for a new editor-in-chief for *The Plant Cell* will soon be under way. The position will be advertised in the journals and the *ASPB News*. See page 13 of this issue of the newsletter for more information.

• The big topic of discussion was the proposed journal name change. Here is the consensus opinion of the committee, as reported in the minutes of the meeting:

**1. Support for a name change.** Overall, the committee supports a name change. The committee is very impressed with Natasha Raikhel's efforts to improve the journal. The primary reason for supporting the name change is to support her continuing efforts to improve the journal.

**2. Lack of clear evidence to support outcomes.** The committee does not feel that overwhelmingly clear evidence is available to say that the name change will have a positive effect on subscriptions, readership, quality of submissions, or impact—or that it will have a negative effect on these.

**3. Concerns.** The committee is concerned about the lack of support for the name change among the members respond-

ing to the online survey [see <http://www.aspb.org/plantphysnamechange/responses.cfm>]. The committee is also concerned whether *Plant* is the best name for the journal from both philosophical and legal points of view.

## Women in Plant Biology Committee

Join us for some exciting times at Plant Biology 2002, the ASPB annual meeting being held from August 3 to 7 in Denver, where the Women in Plant Biology Committee will sponsor career workshops, a luncheon, and a networking reception.

The career workshops, "Where Are the Jobs?" and "How Do You Get the Jobs?," will be held on Sunday evening, August 4. Workshops typically feature several outside speakers who introduce topics, provide some background, share personal experiences, and then meet with participants in small groups to answer specific questions. Registration for these workshops includes pizza and beer.

The annual Women in Plant Biology Luncheon will be held Monday, August 5, at noon. The speaker, Dr. Nancy Dickey, is president of the Texas A&M University Medical School and a recent past president of the American Medical Association. Dr. Dickey will speak on "Will the Glass Ceiling Finally Retract in the 21st Century?"

This year a networking reception will be held Monday afternoon, August 5, during the poster session and will feature a celebration of the 100th anniversary of Dr. Barbara McClintock's birthday. Please come by, have some birthday cake, and learn more about the committee's goals and activities. Committee members will be present to answer questions about career issues. Watch for more details about this event.

For more information about Women in Plant Biology, visit [http://www.aspb.org/committees\\_societies/women](http://www.aspb.org/committees_societies/women). 🌱

## The Fall of MacIntosh

by Talos

I was stunned to learn of my old friend MacIntosh's death not in the *London Times* or even in *Palynologica*, but in all places, a weekly tabloid at the tobacconist's shop! Since I was the only customer at the time, I overcame my embarrassment and purchased the paper. Slipping it between the pages of my *Times*, I exited and returned to the privacy of my study. There, I sadly read the scandalous details of the events surrounding Mac's death. I read of the candle, apparently tipped over in a sordid sexual congress, of the flames that ran up the curtains and eventually engulfed the entire estate, of the jet-setting revelers and starlets running naked from the inferno, of poor Mac's unfortunate decision to run back into the house. I was sickened by the thought that my brilliant friend's legacy would be one not of science, but of wanton frivolities and wasted opportunities.

As I pored over the photographs that accompanied Mac's "obituary," I was shocked again. There was a photograph of a youngish-looking MacIntosh, his full head of hair slicked back with the warm waters of the Mediterranean, frolicking in the St. Tropez surf with some young beauties. Although this would have been a typical pose for the graduate student/playboy MacIntosh of many decades ago, what was shocking was that the photograph had been taken this past summer! This represented an amazing transformation. Indeed, when I had last visited my friend at his estate just two years ago, after a hiatus of some 20 years or so, I scarcely recognized him, so pale, withered, and thin-haired he had become.

Mac possessed one of the keenest minds I have ever encountered, but he was born with too much privilege and too strong an appetite for worldly pleasures and never reached his full potential in academia or science as a

young man. About 10 years before my visit, however, he had abruptly given up the dissolute ways of his youth, dropped his jet-setting friends, and become almost a monastic figure wandering the deserts of North Africa in search of fossilized pollen. Back at home, he had also erected a state-of-the-art laboratory for himself, the very one that I toured during my visit. Although I vaguely recall Mac showing me his PCR machines, his scanning electron microscope, and numerous carrot plants growing in culture, I absorbed little of the tour, unable to get over how decrepit he had become. I concluded that his long hours in the laboratory and years in the desert were taking an extreme toll on his health.

Later, in the comfort of his study, as I sank back into a plush leather chair and swirled a snifter of brandy, I asked him, "What events turned you from the pursuit of sybaritic pleasures to the pursuit of ancient pollen?"

"I know it sounds a bit mad, but I suppose I took my inspiration from *Jurassic Park*. It was a fun piece of escapist fiction, but as a scientific endeavor, it was pure folly. I mean I like dinosaurs, and you like dinosaurs, and little Johnny down the street likes dinosaurs, but we like our dinosaurs in books and films, not in real life. But the idea of bringing back the extinct from fossilized DNA fired my imagination."

"And so you now strive to restore extinct species of plants from ancient pollen?"

"Not plants plural. Just one species. Silphium."

"Silphium, the herbal medicine?"

"Yes, the ultimate elixir that was described by Pliny as 'one of the most precious gifts from Nature to man.' It was literally worth its weight in silver! Imagine Rogaine, Viagra, Advil, and RU-486, all in one plant. And it's an aphrodisiac to boot! The juice of Silphium was a remedy for coughs, fevers, indigestion, seizures, aches, pains, and premenstrual cramps. The sap was even reported to be able to remove warts. Pliny wrote that Silphium could be used for a treatment of leprosy, to restore hair, and as an antidote for poisons.

Potions made from Silphium were used in birth control. According to the Greek physician Soranus [editor's note: a real figure in history, not the product of Talos's prurient imagination], the juice from a small amount of Silphium about the size of a chickpea taken with water once a month not only prevented conception but also destroyed 'anything existing.'"

"A powerful herb! What happened to it?"

"Extinct. Gone the way of the dodo bird and the passenger pigeon. Silphium only grew in an area approximately 200 kilometers by 55 kilometers, on the coastal plateaus of Kyrenaika in modern-day Libya. It proved impossible to cultivate or transplant. Its scarcity and its medicinal powers made it a major source of Kyrenaika's wealth. The species unfortunately was a victim of man's rapacious greed, and its over-gathering led to its extinction around the first century A.D. Legend has it that Nero received the last dried root."

"So what did Silphium look like?"

"It was undoubtedly a member of the Apiaceae. It had a thick root, a fennel-like stalk, large alternating leaves with leaflets like celery, spherical, terminal clusters of small yellow flowers, and broad leaf-like, heart-shaped fruit. In fact, some of the best known representations of Silphium are the stylized images used on the ancient coins of Kyrenaika. In fact, the stylized heart shape with which we are all familiar may have come from representations of the Silphium fruit that were rendered on Kyrenaika's coins."

"And have you found Silphium pollen?"

"I can't be sure, but after a decade of sifting the sands of Libya, I am certain that I have found the pollen of several extinct species of North African Apiaceae, some of them dating back to the Eocene. And if you can promise to keep a secret, I have developed ways of extracting DNA from fossilized pollen (editor's note: see also De Franceschi, Dejax, and De Ploëg (2000) *Comptes rendus de l'Académie des sciences - Série IIa - Sciences de la Terre et des planètes*, pp. 227–233). I have even succeeded in expressing this ancient



DNA in carrot cultures in vitro. But the pace of my research has made me weak. Every day is a struggle for me now, and I don't know how much longer I can continue. In fact, that is one of the reasons I contacted you after all these years. Of all my friends, you are the only one who can appreciate my research. If I die, I want you to tell the world what I have told you today!"

That is why Talos is recounting this story to you now. Whether MacIntosh succeeded in bringing Silphium back from the dead I will leave to the reader to judge. Regrettably, any confirming evidence was lost in the fire that took his life.



President's Letter continued from page 3

journal more adaptable to future research trends and modernize it to attract younger scientists. The experience of other journals indicates that there were no long-lasting negative impacts on submissions or membership after a journal name change, even in cases where the change was not initially supported by the membership.

**Recommendation from the Publications Committee:** The committee "supports the idea that a name change would help improve the quality and impact of *Plant Physiology*, especially with the leadership, energy, and vision of the current editor-in-chief, Natasha Raikhel." However, the committee was not completely happy with the name *Plant*, citing legal and philosophical reasons, but it did not identify a suitable name not already taken by another journal.



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## The Bioethics Imperative V

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

**Scenario:** A postdoc presents a photo-montage of wild-type and mutant roots to your lab group as part of her manuscript. The scale bars on the six-panel figure are identical, and the roots are all pointing in the same direction and are at the same angle. In complimenting her on the figure, several lab members ask her to show them how she made the montage. She replies that she used Photoshop to touch up the images and Canvas to make the montage. In the original single images she then shows, the roots are all of different sizes and point in different directions and angles and the backgrounds differ in color. Some of the root hairs have been cut off in the manipulations. Has the postdoc mishandled her data?

Data mishandling is an easy thing to do. In addition to the example above, I have witnessed the following, all sins of omission or commission:

- Graphing sets of tissues in groupings so as to imply a relationship between the tissues, e.g., the same numerical values in y-axis
- Where the slope is constant, filling in values where data were not actually recorded
- Using a control from another experiment rather than repeating a control every time the experiment is run
- Omitting a set of data without just cause or ignoring one analysis because it conflicts with another

- Starting all of your repeats of an experiment on the same day, at the same time, with the same reagents
- Making a standard error from two means
- Changing the aspect ratio or orientation of a photograph
- Omitting details of data purposely to confuse someone else who might want to repeat the work so that you don't get scooped.

There is an aspect of data handling that is *mokita*: The very act of trying to make sense of data can create a bias in the researcher or a tendency to look for certain outcomes. Sometimes you simply forget to take a step back from your data to be sure that you are looking at it from all possible angles before you submit it for review. Sometimes the pressure to publish or get a grant drives you to make a sin of omission. Although inadvertent, these, too, are cases of data mishandling.

Issues of data mishandling become more difficult when it is not you, but a colleague, peer, or student for whom you are responsible who is at fault. These issues quickly begin to plumb a bioethical morass.

I have posted a few case studies concerning data handling at <http://www.aspb.org/editorials/bioethics.cfm>. In addition, web resources on this and related issues have been compiled at <http://adams.dom.washington.edu/bri/bri.htm>.

Next issue: Scientific misconduct.

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# Awards and Happenings at the ASPB Education Foundation

“Award-winning” is the phrase we’re using to describe the Education Foundation’s documentary film on the history of agriculture, before it even hits the airwaves! As one of the winners of the prestigious Association Trends 2001 Publications Contest awards, the film joins the company of the best in association programs designed to convey information in print and other formats. The award winners were showcased in a special presentation on January 30, 2002, in Washington, DC, which was attended by association executives from around the country. John Lisack, executive director, and Robin Lempert, Education Foundation director, accepted the award.



ASPB Executive Director John Lisack, Jr., and Education Foundation Director Robin Lempert accept an Association Trends 2001 Publications Contest award from Jill Cornish, *Association Trends* publisher, at a special ceremony in Washington, DC.

***History's Harvest: Where Food Comes From*** is the film’s “official” title, and it’s now receiving the final editing “touches” as we get it ready for distribution. After the July preview of the film at Plant Biology 2001, Foundation chair Bob Goldberg flew to London to work on the final editing and re-recording of voice-overs. The production company is now working on a plan for the film’s distribution to television networks. The goal is to have the film aired on mainstream networks as soon as possible. At the same time, Foundation staff is planning the marketing and distribution of the film to the education and library markets.

Thank you to everyone who provided feedback on the use of science films and videos in your classes. The survey information is being used to help us develop materials to accompany this film and will be a valuable resource for developing future Foundation projects. If you have not yet completed the survey, you can still do so online at <http://www.aspb.org/education/foundation/filmsurvey.cfm>. The results so far have shown that respondents are teaching undergraduate courses (87%), graduate courses (40%), and public speaking (7%). They use films in a variety of ways, including

- after lectures, to expand understanding of, and elaborate on, the subject
- to guide discussion sessions or lead in to case studies
- as assignments for students to complete outside class time (via library).

When looking for films and videos to use in classes, the respondents rely on a variety of sources, including

- Professional science societies
- Internet searches
- Video catalogues, including
  - Teacher’s Video Company
  - Library Video Company
  - BioVideo
  - Carolina Biological Supply
  - Bullfrog Films
  - Films for Humanities and Sciences
  - Commercial Science Education and Training Films
- Science publications, magazines, newsletters, direct mail brochures
- Their university library
- Colleague recommendations
- TV stations, including
  - NOVA
  - PBS
  - Discovery Channel
  - BBC

The survey asked if length influences the decision to use a particular film. For those who said that length was a factor, we also asked what length films they prefer. The majority (60%) said length does matter and prefer films that are 30–50 minutes long. They (93%) also said they’d definitely use films that can be shown in two to three parts to keep the length of each part down. Written support materials for students and teachers are considered very helpful by almost everyone using films and videos in their classes. Please add your comments to those of the survey respondents. We really value your input.

## Information Available through Variety of Projects

The UCSD-TV’s film *Genetically Modified Crops & Foods* has been very popular with ASPB members since it was made available, with support from the Foundation, in November 2001. By mid-January, 123 copies had been ordered in video or CD-ROM format. There are still copies available to interested members. You can see a clip online and order your free copy by going to <http://www.aspb.org/education/foundation/programs.cfm#TV>.

The Foundation is also assisting in the publishing of the 2nd edition of the popular book *Plants, Genes and Crop Biotechnology*, by Maarten Chrispeels and David Sadava, by providing funds for a new art program, four-color text, and the inclusion of information on the dramatic changes in this topic over the past decade. The publisher is planning to have the book available by mid-summer. Preview chapters will be online later this spring. There will also be an option for pre-publication ordering for those of you who want to order classroom and reference materials before the summer. And ASPB members will be able to purchase the book at special member discounts.



## Winter Bloomers

Today is Groundhog Day, and Punxsutawney Phil, the nation's most famous weatherman, predicted another six weeks of winter. In some parts of the world, this is an unwelcome prediction. (Folks in such parts may take heart. According to the *StormFax Almanac*, Phil's predictions have been correct only 38 percent of the time since 1887.) Along the front range of the Rocky Mountains, Phil's cousins, the prairie dogs, see their shadows pretty much every day in February, and Phil's predictions notwithstanding, they have not gone scurrying back down into their holes to wait out six more weeks of winter underground. Here in the foothills they perch atop their burrow entrances and enjoy a strange and wonderful co-incidence of winter and spring that begins as early as February and can last until May.

Outside my window, it is 27° F in the shade; there are several inches of snow on north-facing slopes and ice on the pond. This afternoon I'll go cross-country skiing up in the Cameron Pass. But in the sun it is already 40° at 9 a.m. and promises to be in the sixties before the afternoon is over. The pavement is dry, and south-facing lawns and hillsides are free of snow. Early this morning as the sun was just beginning to cast its golden rays on

the foothills, my run turned into a walk as I stopped to witness two unmistakable and wondrous signs of spring: a flock of five vivid mountain bluebirds and Easter daisies in bloom (*Townsendia spp.*—probably *T. hookeri*, as the morphologically similar *T. exscapa* is a later spring bloomer). The bluebirds are among the earliest migrants to arrive back from wintering grounds in Texas and Mexico; this group may yet be blown back to the south temporarily by another winter storm. And *T. hookeri* is among the earliest of early spring bloomers.

Various species of *Townsendia* can be found throughout the prairies of the eastern plains, into the foothills and on up to much higher elevations. Out on the prairie and up in the mountains, the colder winter temperatures usually ensure that these rather nondescript gray-green plants will not bloom for another eight weeks or more—hence the common name “Easter daisy.” In the foothills, the warm Chinook winds, coupled with sunny, protected slopes, often create a perfect environment for these plants to bloom in what would otherwise be considered midwinter. I read one report of foothills *Townsendia* blooming as early as December 15. Other



“winter blooming” plants that I might find in this area are spring beauties (*Claytonia rosea*) and pasqueflower (*Pulsatilla patens*). I have seen the pasqueflower blooming throughout the summer and late into fall, and I am now wondering if it would be possible to document blooming plants in 12 consecutive months. With such wonders as these to behold in midwinter, Phil would undoubtedly want to spend every sunny minute of February aboveground. The foothills version of Phil's tale might go like this: On Groundhog Day, Phil's cousin Prairie Pete comes out of his hole to look for blooming Easter daisies. If he finds them, he stays out and enjoys an early spring. If he doesn't, well, he just stays out anyway and enjoys looking for them in the warm winter sun!

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### Education Foundation continued

### How We Do This

To spread the word on the importance of plants and plant research, the Foundation relies on funding from a variety of sources. On behalf of the Foundation's board we want to thank everyone who contributes to the Foundation. These contributions make it possible for the Foundation to develop new programs for teachers, students, and the public.

Several people have taken advantage of the new “Honor Gifts” program to make a con-

tribution to honor a colleague's work, celebrate an event, or remember someone special. It's now easier than ever to make a contribution through the new online giving page on the ASPB web site, where payments are accepted by credit card or by check.

The primary sources of funding for 2001 were through dues renewals, publications honoraria, and the end-of-the-year online giving campaign. In 2002, these fundraising

programs will be continued and expanded, and new campaigns will be added.

**Questions?** If you need more information about the Foundation's work, or if you have suggestions for programs and other input for us, please contact us anytime. Just call Robin Lempert at 301-251-0560, ext. 110, or send an e-mail message to rlempert@aspb.org.



## Life in Retirement

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

“Oh!” they say. “Lucky you! No more lectures, no more committee meetings, no more papers to write.” No, wait! I think to myself. Now that we’re retired, we have to find a way to establish another positive link with the world. For some that means expanding an interest in hobbies; for others, it means doing volunteer work in the community; and for others, it means reading . . . a different sort of reading—history in general, history in science, culture. There is time to read and reflect and give back. What we have to say may help those still in the trenches.

Who am I? I am Ann Oaks, professor emerita, biology, McMaster University; adjunct professor, botany (retired), University of Guelph; teacher; scientist (read: detective); contrarian (read: activist). Always a contrarian, an affliction (remember the GDH story? [Oaks, Stewart, Lea: see Oaks, 1995]). I often wish that those still active in the field would keep me up-to-date, but really I should just let go.

When I first went to university, I could have majored in history as easily as biology. I have always been interested in history, and in my teaching I tried to include it in my courses. For example, the constant battles in photosynthesis from the days of Priestly and van Ingenhousz to where oxygen came from and the source of reductant. In my day Arnon was king. I enjoyed the debates at the ASPP meetings related to the source of ATP in the electron transport chain in the chloroplast. In those days there were no posters, and people like me, outside the field of photosynthesis, could learn a lot from those debates. We saw how areas of conflict are resolved by debate and further experimentation. As our Society has grown and we have had to turn to post-

ers, we have lost something, lost a lot. We need more open discussion.

In checking the generally excellent chapter on photosynthesis in *Biochemistry & Molecular Biology of Plants* (Buchanan, Gruissem, and Jones, 2000), I noted with dismay that the participants were not named. There was the Z-scheme, the idea of Robin Hill, but no mention of Robin Hill. No mention of Arnon. Too bad. It is important that students know that real people were involved in the conception of ideas and in the debate and experimentation that led to the acceptance of those ideas. We have lost something.

This winter I am involved in a discussion group dealing with the clash of civilizations (Huntington, 1996). We are learning about Islam and the West. The thing that strikes me is how polarized we are. Despite all the information available, it seems to be impossible to talk and to resolve issues. The topic that I am preparing for the group relates to natural resources and population. I am becoming an expert in oil and water resources and in empire building. Scary.

Science—plant biology—is also polarized. The molecular biologists and ecologists have no meeting place, have no respect for each other, have a different perspective of the “elephant.” I am interested in this polarity and in the takeover of the world food supply by the multinationals (read: Monsanto and Aventis and . . .). I belong to a chat group organized by Dr. Ann Clark, a professor in plant agriculture at the University of Guelph, composed of scientists with a range of expertise from molecular biology to organic farming. We keep each other up on a broad range of literature, and our discussions are of a sort that most current practitioners of biotechnology would have no time for. We even have a web site (<http://www.canadians.org/ge-alert>). One hot topic of discussion: There are problems with genetically engineered plants—

potential health problems that have not been examined in a rigorous scientific fashion (see Domingo, 2000) and environmental problems as well (see Obrycki et al., 2001; Ellstrand, 2001). We should not be commercializing these new products until the problems are understood and shown to have a neutral impact on the consumer (us) and the environment (see Oaks, 2000; Commoner, 2002; Shiva, 1999). How valuable it would be for people still active in research and teaching to make time for meaningful discussions in areas that have not yet been resolved, areas where there clearly are different points of view. In an earlier time there would have been such discussions. We have lost something. Too bad. ♣

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## CALL FOR APPLICATIONS & NOMINATIONS

### Editor-in-Chief, *The Plant Cell*

The American Society of Plant Biologists is seeking a plant scientist to assume the duties and responsibilities of editor-in-chief of *The Plant Cell* effective July 1, 2003. The individual who takes the position must be able to make a five-year commitment to the journal.

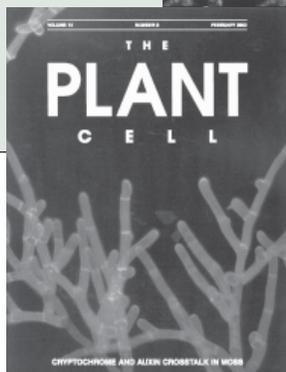
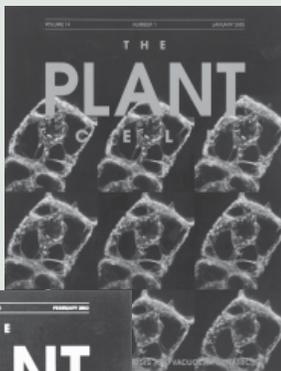
The mission of *The Plant Cell* is rapid publication of cutting-edge plant science research. The editor-in-chief must possess a broad knowledge of plant molecular and cellular biology, provide a vision for the future direction of the journal, set journal editorial policy, select coeditors, assign manuscripts to coeditors, serve as arbiter when publication decisions are in dispute, and work productively with the managing editor and news and reviews editor to assure the efficient production of each month's issue.

To effect a smooth editorial transition, we plan to name a successor to the current editor-in-chief later in 2002. Individuals interested in either applying for the position or nominating a qualified individual are invited to send a letter of interest and résumé to the chair of the Publications Committee by

June 1, 2002. Applicants should ascertain that their institutions will permit them to assume the duties and responsibilities of this position. Letters of nomination must indicate that the nominee is aware of and has approved his or her nomination.

Applications and nominations will be evaluated by the Publications Committee, which plans to interview a short list of candidates in August at Plant Biology 2002. It is anticipated that the Publications Committee will recommend a candidate to the Executive Committee at that meeting. The Executive Committee will announce the name of the new editor-in-chief either at the meeting or shortly thereafter. The successful candidate must be prepared to begin the transition process no later than January 2003.

Submit applications or nominations for editor-in-chief of *The Plant Cell* by June 1, 2002, to Krishna Niyogi, Chair, ASPB Publications Committee, University of California at Berkeley, Department of Plant & Microbial Biology, 111 Koshland Hall, Berkeley, CA 94720-3102.





## NSF Seeks 5 Percent Increase for 2003

The president's fiscal year 2003 budget requests a 5 percent increase for NSF to \$5 billion. NSF Research and Related Activities would increase 5.1 percent to \$3,783,210,000. Education and Human Resources would increase 3.8 percent to \$908 million. Major Research Equipment & Facilities Construction would go down 9 percent to \$126 million. Salaries and expenses would increase 19.1 percent to \$210 million.

The Biological Sciences Directorate would increase 3.4 percent to \$525 million. For the FY2003 request, the "Emerging Frontiers" sub-activity is established with \$68 million in funding. It will support multidisciplinary

research and networking activities that arise from advances in disciplinary research. By encouraging synergy between disciplines, this new sub-activity will provide a mechanism by which new initiatives will be fostered and subsequently integrated into core programs. The Emerging Frontiers sub-activity has been established to serve as an incubator for 21st-century biology, NSF budget documents noted.

Research on Arabidopsis contributes to 21st-century biology discoveries. Since the early 1980s, NSF has been the lead agency in the support of research using the model plant Arabidopsis. With the genome sequence com-

pleted years ahead of schedule, plant biologists have a major new enabling research resource and a way to identify the genetic basis for previously obtained experimental observations, NSF budget documents said. The 2010 Project to determine the functions of the 25,000 genes of Arabidopsis will help capture in plants the unprecedented opportunities offered in functional genomics.

The budget request for the Plant Genome Research Program is at \$75 million, which is equal to the FY2002 level approved by Congress. Senator Christopher Bond (R-MO) continues to champion research in this important area.

## NSF, EPA Team Up on Phytoremediation Research Grants

Scientists at seven universities are receiving grants totaling nearly \$2.22 million to study the plant-based phytoremediation of soils contaminated by heavy metals or organic chemicals. The joint initiative of the National Science Foundation (NSF) and the Environmental Protection Agency (EPA) seeks to foster innovative scientific solutions to the worldwide problem of contaminated soil.

Phytoremediation uses plants to degrade, remove, or stabilize toxic compounds from contaminated soil and water. The serious problem of soil contaminated with heavy metals or organic chemicals affects human health, ecosystem functions, and agriculture. Experts estimate the cost of soil cleanup in the United States in the billions of dollars. Researchers believe that phytoremediation could provide an extremely cost-effective and much less disruptive cleanup process when compared to traditional cleanup techniques, such as transporting massive amounts of contaminated soil to hazardous waste landfills.

NSF is funding three multidisciplinary research projects that will investigate the genetic components of phytoremediation of heavy metals in soils. One project will determine the suite of genes responsible for heavy-metal hyperaccumulation in *Thlaspi caerulescens*. A second will perform a search of the genomes of brassicaceous plants for genes involved in metal hyperaccumulation. A third will study the mechanisms of arsenic uptake, translocation, distribution, and detoxification by the Brake fern, a common fern in the southeastern United States and California. The research awards come from NSF's Integrative Plant Biology and Environmental Engineering/Environmental Technology programs.

EPA research projects are diverse and designed to explain the mechanisms for phytoremediation of organic chemicals including polyaromatic hydrocarbons, polychlorinated biphenyls, and chlorinated pesticides. Knowledge will be unearthed to better understand three scientific problems: the mi-

crobial ecology of chemical-degrading bacteria that live in the root systems of monoterpene-producing plants; the role of chemicals produced by roots that aid in making the organic chemicals available for uptake and metabolism by plants; and the role of plant transported oxygen for degradation of organic contaminants in waterlogged, low-oxygen salt marsh sediments or soils. The grants for these studies were awarded through EPA's Science to Achieve Results (STAR) program.

The multi-agency funding for this initiative—made through the Joint Program on Phytoremediation—also includes the Office of Naval Research and the Department of Defense/Department of Energy/EPA Strategic Environmental Research and Development Program.

A summary of one of the awards describes the research of principal investigator Leon V. Kochian at the Boyce Thompson Institute on "The Molecular Basis for Heavy Metal Accumulation and Tolerance in the Hyper-

## Plant Research Helps Farmers Become Miners with Metal Extracting Plant

Farmers will be able to mine for nickel by growing a special crop as a result of a patented process created by the U.S. Department of Agriculture's Agricultural Research Service (ARS) and Viridian Resources, L.L.C., of Houston, Texas, ARS reports.

Plants that can extract nickel and other metals from the earth do so without the aid of machinery. ARS and Viridian partnered with the University of Maryland, Oregon State University, and the United Kingdom's University of Sheffield to show that phytomining—the use of plants to extract useful amounts of metal from soil—is commercially feasible. Using certain plant species that accumulate nickel from contaminated soils, scientists developed an environmentally friendly alternative to traditional mining techniques.

ARS agronomist Rufus Chaney, working

with Scott Angle (U-MD), Alan J. M. Baker (Sheffield), Yin Li (Viridian), and Richard Roseberg (OSU), targeted a number of plant species that hyperaccumulate or recover unusually high amounts of metals through their roots.

By evaluating several hundred strains of hyperaccumulating plants for favorable genetic characteristics, the team developed the first commercial crop capable of hyperaccumulating nickel, cobalt, and other metals. This hay-like crop is burned after harvest to create an energy byproduct, and the ash is a lucrative source of metal.

ARS said that phytomining creates a win-win scenario: the inexpensive cleansing of contaminated soil and the production of a valuable cash crop. Phytomining on contaminated soils is more lucrative than growing traditional crops on the same land, according to ARS.

Harvests from low-grade pastures or forests grown on such land would bring about \$50 to \$100 per hectare per year. But a phytomining crop growing on the same land would produce an annual 400 kilograms of nickel per hectare worth more than \$2,000 even at today's depressed market price for nickel. After selling the byproduct energy, the annual per-hectare value of a phytomining crop exceeds \$3,000. Additionally, the crop can tap the vast mineral deposits in the United States and other countries that are unavailable through today's conventional mining techniques, ARS said.

Chaney presented a talk in a program coordinated by Ilya Raskin at an ASPB annual meeting held a few years ago on research that would lead to plants that could extract metals such as nickel and cadmium from the soil. 🌱

### Phytoremediation continued

accumulating Plant Species, *Thlaspi caerulescens*." The research will lead to identifying hyperaccumulation genes, which could be used to develop transgenic plants that are both metal hyperaccumulators and that produce high shoot biomass, thus making them well suited for the phytoremediation of metal-contaminated soils. A focus will be the metal transporter genes involved in metal accumulation and tolerance, as well as genes involved in the production of compounds that bind and detoxify zinc and cadmium in plant cells. 🌱

## President's Budget Seeks One-Year Doubling for NRI

The president's fiscal year 2003 budget requests \$240 million for the National Research Initiative (NRI)—a nearly 100 percent increase over the current \$120.4 million.

The proposed budget does not contain many specially designated research priorities of Congress, however, and some observers believe it will be difficult to get an increase of this size for the NRI through Congress. At the same time, this is an outstanding start of the budget process for the NRI and gives it a strong show of support from the president and the U.S. Department of Agriculture. ASPB members offered important support for the NRI last year in gaining a 14 percent increase, and further work will be needed in support of the FY2003 budget.

The Agricultural Research Service (ARS) Plant Science budget would go from \$333 million to \$368 million—an increase of 10.5 percent. USDA is seeking a \$3 million increase for ARS in the area of sequencing of plant and crop genomes. A \$4.2 million increase is in the budget for repairs needed due to tornado damage at the ARS Henry A. Wallace Beltsville Agricultural Research Center in Maryland. The overall USDA research, education, and economics budget is down \$200 million to \$2.329 billion in the FY2003 budget request. 🌱

## Terrorists Strike University of Minnesota Plant Genomics Construction Site

The University of Minnesota will request nearly \$4 million from the state for improved security measures in response to both the recent arson at the construction site of the Microbial and Plant Genomics Research Center and to the September 11 terrorist attacks.

The Earth Liberation Front (ELF) claims responsibility for setting the fire at the University of Minnesota Microbial and Plant Genomics Research Center construction site. ELF is described on its web site as “an international underground organization that uses direct action in the form of economic sabotage to stop the destruction of the natural environment.” According to a “communique” received by the ELF press office, incendiary devices left in the main construction trailer and in two pieces of heavy machinery caused extensive damage where they were placed that then spread into the adjacent crop research facility.

“The construction of this research building is being funded by biotech giant Cargill Corporation who develop, patent and market genetically modified crops, making people dependent on GE [genetically engineered] foods. We are fed up with capitalists like Cargill and major universities . . . who have only sought to develop and refine technologies which seek to exploit and control nature to the fullest extent under the guise of progress,” the ELF statement said.

Following is a February 4 Reuters News Service story on this terrorist attack at the University of Minnesota (<http://www.planetark.org/dailynewsstory.cfm/newsid/14362/story.htm>).

### Ecoterrorists Set Fire at Minnesota School Lab

St. Paul, Minn.—A shadowy environmental group that has sabotaged a ski resort, luxury homes, and logging companies claimed responsibility for a weekend fire that damaged a University of Minnesota research facility, school officials said.

The group, the Earth Liberation Front, sent an e-mail to the school saying its members set the early Saturday blaze that damaged heavy equipment and a trailer being used to build a plant genetics laboratory, Associate Dean Judson Sheridan said. “We’re obviously very, very concerned about what’s happened. It’s domestic terrorism,” Sheridan said.

Incendiary devices were used to spark the blaze that also damaged an adjacent crop science laboratory and caused at least \$250,000 in losses. No one was injured.

In its six-year campaign of vandalism in the name of protecting the environment, the ELF claimed responsibility for a fire two years ago that damaged a greenhouse at the school. Previously, the group took credit for a 1998 fire that destroyed new ski lifts and outbuildings at the Vail, Colorado, ski resort; a blaze that destroyed an Indiana luxury housing development being built near wetlands; and attacks on Oregon and Washington timber companies.

No one has been injured in roughly 30 acts of violence claimed by the ELF that have caused more than \$40 million in damage.

Law enforcement authorities made the first arrests of alleged ELF saboteurs in Indiana and New York early last year.

Sheridan said the laboratory under construction will focus on basic research in plant genetics in an effort to find plants that need fewer pesticides. 

### Lomax Directs OSU Biotechnology Public Education Program

ASPB member Terri Lomax is directing a new program for the analysis of biotechnology issues at Oregon State University. The program was established to provide impartial and scientifically accurate information to the public about some of the most pressing issues surrounding biotechnology.

Combining science and public communication, the program is one of only three university outreach efforts of its type in the nation. Lomax is professor of botany and plant pathology. The public education program is receiving support from the OSU College of Agricultural Sciences.

“In this effort, we are examining the many issues surrounding biotechnology—the real science that is being done—and communicating those findings to the public, whatever they may be,” Lomax said.

Lomax and ASPB Public Affairs staff met in September in the Washington offices of her members of Congress, and she explained the new public outreach program at OSU. Lomax was a charter member of the ASPB Committee on Public Affairs, and she has served as an officer of the Society. 

Professor Hugh Hack is looking for the following issues of *Plant Physiology*: volume 110, number 4; and volume 88, number 4. If you can help, please contact him directly at [hackh@netcomuk.co.uk](mailto:hackh@netcomuk.co.uk).

## Prakash Is Alabama's Man of the Year

ASPB member C. S. Prakash has been selected "Man of the Year for Alabama" by the agricultural magazine *Progressive Farmer*.

"I was pleasantly surprised with this honor," Prakash noted. The award comes with a plaque that includes a replica of the sketch of his photograph. The February 2002 issue of the magazine (<http://www.progressivefarmer.com>) carried the following story on this award.

### Leaders of the Year 2002 in Southeast Agriculture

#### Man of the Year—Alabama: C. S. Prakash

A man carrying on in the tradition of famed researcher George Washington Carver, Channapatna S. Prakash has emerged as a leading state, national, and international advocate for modern agricultural biotechnology.

Whatever the topic—be it Bt corn, protecting butterflies, golden rice, edible vaccine, or the recent flap over the discovery of modi-

fied DNA in corn from Mexico—Prakash is a voice of reason who provides a sound scientific perspective.

Prakash, a native of India who obtained his Ph.D. in Australia, is a professor of plant molecular genetics and serves as director of the Center for Plant Biotechnology Research at Tuskegee University. And he is the driving force behind the AgBioWorld Foundation, which was founded in January 2000. Since that time, Prakash has collected endorsements from more than 3,200 scientists, including Nobel Prize winners, in support of ag biotechnology as a means of improving conditions in the developing countries. This petition drive is his response to those who would distort the public perception of biotechnology.

Prakash also was an early advocate of utilizing the Internet as a powerful tool to enhance research and teaching. He has followed through by persuading biotech experts from around the world to contribute to the foundation's electronic news group.

Prakash's current research focuses on transgenic plants, gene expression, tissue culture, and plant genomics. His group at Tuskegee developed high-protein transgenic sweet potatoes and contributed to DNA studies and gene mapping of peanuts.

He once told an interviewer that "it has been a startling experience" to find he and his colleagues attacked as "mad scientists run amok" for their inventions, which were labeled as "Frankenfood." He and his colleagues maintain that more than 2 billion people have eaten genetically modified food during the past five years without becoming ill. Prakash says, "There is no scientific evidence to believe that genetically engineered foods are any less safe than the foods we've been eating for centuries."

*Progressive Farmer* is proud to name C. S. Prakash as its Man of the Year in Service to Alabama Agriculture. 

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## Fulbright Offers Lecturing/Research Grants in 140 Countries

The Fulbright Scholar Program is offering lecturing/research awards in some 140 countries for the 2003–2004 academic year. The competition opens March 1.

Traditional Fulbright awards are available from two months to an academic year or longer. A new short-term grants program—the Fulbright Senior Specialists Program—offers two- to six-week grants in a variety of disciplines and fields.

Application deadlines for 2003–2004 awards are

- **May 1** for Fulbright Distinguished Chair awards in Europe, Canada, and Russia
- **August 1** for Fulbright traditional lecturing and research grants worldwide

- **November 1** for the summer German Studies Seminar and for spring/summer seminars in Germany, Korea, and Japan for academic and international education administrators
- Fulbright Senior Specialists Program—**rolling deadline**

For information, contact the Council for International Exchange of Scholars (CIES) at 3007 Tilden Street, NW, Suite 5L, Washington, DC 20008-3009. Telephone: 202-686-7877; e-mail: [aprequest@cies.iie.org](mailto:aprequest@cies.iie.org). Information and an online application are also available on the Web at [www.cies.org](http://www.cies.org).

The Fulbright Scholar Program is sponsored by the United States Department of State, Bureau of Educational and Cultural Affairs.



## Science Urges Readers to See “Plants in Motion” at Hangarter’s Web Site

ASP member Roger Hangarter of Indiana University, Bloomington, was featured in the January 18, 2002, issue of *Science*, the magazine of the American Association for the Advancement of Science. “Watch the Grass Grow,” in the NETWATCH section of the magazine, describes Hangarter’s “Plants-in-Motion” and other images found at or through “The Hangarter Lab” web site.



Roger Hangarter, professor, Indiana University, Bloomington

Roger says, “I was pleased that *Science* mentioned the Plants-in-Motion web site. Being mentioned in *Science* is a great way for the site to get exposure. Hopefully more teachers will find the site as a result of the *Science* article. Since one of my objectives in creating the site and the time-lapse movies it contains is to provide a resource that will help educate others about the dynamic nature of plants, the recognition in *Science* can only help.”

The Plants-in-Motion page aptly describes itself as “Your online source of time-lapse plant movies.” Using *QuickTime* format, the viewer may select from 21 movies, ranging from Arabidopsis germination to the “sleep” movement of leaves.

This site offers students and others the opportunity to see the rare movements of roots, leaves, and stems. Difficult concepts are clearly depicted by this movie approach. For example, nutation is explained by a presentation with the fanciful title “Dancing Fools.” It includes a short explanation: “As plants elongate and grow they exhibit a bending and twisting motion called *nutation*. This movement is generally not perceptible

under normal viewing conditions, but in time-lapse movies nutation is easily observed. The function of nutation movement is not well understood, but it is thought that nutation provides a mechanism by which plants can explore and sense their environment, like a vine looking for a support to climb on.”

This explanation, along with the visual sight of a slender plant doing a pretty decent “funky chicken,” will indeed cement the concept more firmly in the mind of the student.

The article in *Science* has certainly elicited a response. Roger says, “I have had several e-mail contacts since the article appeared, some asking for permission to link the site on their pages. And the photo editor of a scientific magazine—*Muy Interesante*—in Spain contacted me about doing a story on the site and using some of my pictures, so the mention in *Science* has already led to some international interest.”

The popularity of the site and the attention it has drawn should encourage all of our members who have contemplated using the web to disseminate their efforts in the laboratory to a larger audience. If you have or know of interesting sites, please submit them and we will gladly publish them at the ASPB web site (<http://www.aspb.org/education/>).

The Hangarter Lab can be found at <http://sunflower.bio.indiana.edu/~rhangart/> and through a link from the ASPB web site: <http://www.aspb.org/education/> (click on “Plants-in-Motion”).

## West Coast Biological Sciences Undergraduate Research Conference

The 27th annual WCBSUR Conference will be held at Loyola Marymount University in Los Angeles on Saturday, April 27. This conference provides a forum for undergraduate students to present the results of their original research in the biological sciences to like-minded peers and faculty. Please consider hosting a student and becoming one of the many attendees who take part in this celebration of undergraduate research. For more information, visit the conference web site at [http://cse.eng.lmu.edu/%7Ebio\\_web/wcbsur/first\\_page.htm](http://cse.eng.lmu.edu/%7Ebio_web/wcbsur/first_page.htm).

### Important Dates in 2002

- May 3–4:** Northeast Section/ ASPB meeting at Wellesley College, Wellesley, Massachusetts. Contact Gary Harris at [gharris@wellesley.edu](mailto:gharris@wellesley.edu).
- May 31:** Plant Biology 2002—Early bird registration cutoff
- July 1:** Plant Biology 2002—Housing registration cutoff
- August 3–7:** Plant Biology 2002—Denver, Colorado

## Second Announcement! 3rd Annual ASPB Education Booth Exhibitor Competition

### Grants Available to ASPB Members in Education Exhibit Competition

Have you developed new ways of carrying out hands-on science in your teaching laboratory or classroom? The Education Committee cordially invites you to share your activity with the ASPB membership by hosting an interactive exhibit/demonstration at the Education Booth at the annual ASPB meeting this summer in Denver, August 3–7.

We are looking for new ideas and technology that is being used in the classroom, and, as an incentive, we are offering a cash grant of \$500 and registration costs for up to three presenters.

Your proposal should be no longer than four double-spaced pages. It should include a

title and the address and contact information of the presenter. Please address the following questions in your proposal:

1. State clearly the rationale behind the exhibit. Highlight the use of new techniques or technology. How is this presentation exciting and new?
2. Provide a clear, detailed summary of how the exhibit will function. (A diagram would be helpful.) In particular, it will be important to illustrate how the visitors can interact with the exhibit.
3. Indicate the equipment that will be required for the exhibit. Please indicate whether a computer, Internet connection, or VCR and monitor will be needed. We will make every effort to meet your needs.

Note that awardees are expected to spend some time hosting their exhibit and interacting with members at the booth each day. You're welcome to choose the times most convenient for you.

We can't think of a better opportunity to showcase your new approaches or new technology for the plant biology classroom. We hope that you will consider submitting a proposal and will join us at the booth for these exciting exhibits!

Your proposal should be addressed to [gkuleck@lmu.edu](mailto:gkuleck@lmu.edu) and submitted as an e-mail attachment (Microsoft Word) by no later than April 30, 2002. Winners will be notified by May 10, 2002. 🌿

## Principles of Plant Biology Bookmarks—NOW AVAILABLE

New, full-color bookmarks, each depicting a different principle of plant biology, are now available in limited quantities at no cost to ASPB members. The bookmarks are designed by Carol Reiss, of Brown University, past chair and current adjunct member of the Education Committee.

### NEW BOOKMARKS

*Plants Respire & Utilize Energy*

*Plants Require Inorganic Elements*

*Water Is the Major Molecule Present*

### REPRINTED

*Plants Exhibit Diversity in Size and Shape*

All new orders will also receive the brochure *Principles of Plant Biology—Concepts for Science Education*. To order bookmarks, contact Paula Brooks, Education Foundation assistant, through the ASPB web site at [www.aspb.org](http://www.aspb.org) or by e-mail at [paula@aspb.org](mailto:paula@aspb.org). Or, you can fax your name, the quantity desired, your ASPB member ID number, and your complete mailing address to 301-279-2996. 🌿



## Outreach to Elementary School Education in Plant Science

ASPB member Jane Shen-Miller, of UCLA, has discovered how to reach students at the earliest stages of scientific inquiry. Her scientific work concerning germinating lotus seeds has been chosen for inclusion in a third-grade reading book called *On Your Mark*, published by Harcourt School Publishers as part of its “Trophies” reading program. Adorned with colorful illustrations and simple text, the two-page article by Mary Brown, “Seeds Can Sleep,” is paired with a fictional story about a man who tends a desert garden and is part of a larger thematic unit called “Celebrate the World.”

Dr. Shen-Miller’s success with the 1,300-year-old lotus seed was widely covered in the media, after Shen-Miller reported her research in the *American Journal of Botany* (November 1995). The student text describes how she was given the seeds in 1984 as a gift and then tested the seeds to see whether they would sprout.

“We were very excited about Dr. Shen-Miller’s work with the lotus seed,” replied the publisher, “and thought it would be of great interest to third-grade students, who are learning about seeds and plant growth in their science curriculum. As we could not find anything written at an elementary level about this project, we had this article written for us based on the information Dr. Shen-Miller so kindly provided.”

As evidenced throughout the country, interest in plant science continues to reach the beginning levels of inquiry and understanding. For example, in the Washington, DC, area, the curriculum of both the Fairfax and Montgomery counties school districts include the use of Wisconsin Fast Plants, a program that ASPB member Paul Williams developed.

In a written reply for this article, Dr. Shen-Miller responded: “In 1995, when I first published about the germination and directly dated oldest seed on record, a ~1,300-year-



Dr. Shen-Miller with lotus plants.

old lotus, I was deluged for four months with TV and newspaper reporters and radio interviewers. (The photo of the 1,300-year-old seed enjoyed a ‘15-second fame’ as it appeared with Dan Rather on the *CBS Evening News* the same evening of the news release by UCLA.) My lotus plant and I appeared in newspapers all over the world. The public was thrilled with the discovery of a fountain of youth, but our interest is in the cellular repair that occurs during germination and aging.

“Phone messages, e-mails, and letters poured in. Several third-grade teachers and many third-grade students (from Vermont to California) sent inquiries. I guided one class on the germination and cultivation of lotus seeds through daily e-mail and letters. The third graders were enthusiastic and asked many questions. We established good rapport on science and non-science. And recently, a handicapped high school student e-mailed me from Michigan for lotus information after she had read my paper. Her term paper won high

marks and was selected by her teacher for exhibition (the student’s mom initially had communicated with me, but I asked for direct contact with the student). The third-grade Harcourt piece came from a recent (2000) e-mail interview, plus my reprint. I had no clue about the detailed purpose of the interview (as lotus interviews had become commonplace), but was glad to communicate with a person who had interest in lotus.

Dr. Shen-Miller was delighted that her work could captivate such a young audience and that the impact on the public was so pronounced. Creating excitement about science at such an early stage bodes well for the creation of the next generation of scientists and also the promotion of science literacy. Dr. Shen-Miller adds, “Scientists should write papers suitable for scientists, non-specialist scientists, and educated laymen. Or, our lone science will be kept only in a little circle of specialists. That would be a shame.”

## “Link Rot” and the World Wide Web’s Usefulness in Education

ASPB member John Markwell and colleague David Brook at the University of Nebraska–Lincoln have been tracking a phenomenon since November 2000 known to all educators who use the Internet regularly. “Link rot,” the decay of World Wide Web links as the sites they connect to change or disappear, is a growing phenomenon because of the flexible and fickle nature of material on the web. What is surprising, according to Dr. Markwell, is that the loss of information occurs at a steady progressive rate, with the hyperlinks in their survey having an apparent “half-life” of 55 months. There is, of course, great variability in site survival time, with institutional and government sites showing the greatest stability.

To promote the utility of these sites for education, the two scholars recommend that professional academic societies act as hosts for the best Internet resources. These societies would play a valuable role by actively reviewing and archiving (mirroring) the best and most relevant educational materials developed by their members. It is also noted that peer-reviewed hosting will provide documentation of scholarship in science education.

For more information on this issue, visit [http://www.class.unl.edu/biochem/url/broken\\_links.html](http://www.class.unl.edu/biochem/url/broken_links.html). Information from this article is taken from a more extensive press release that can be found at <http://www.ascribe-news.com>. A short article also appeared in the March 8 edition of *Science*.

## Op-Ed on GM Foods Results in Wide Audience

ASPB member David Dennis is reaching students with his views on genetically modified (GM) foods through an unexpected source: *Writing and Reading Across the Curriculum*, a college-level text to be published this year by Prentice Hall. An emeritus professor of Queens University, Kingston, Ontario, Dr. Dennis wrote a letter to the editor of the *Financial Post* (now *National Post*) in 1999 titled “Why GM Foods Aren’t So Scary” that brought his views to the attention of Prentice Hall. Dr. Dennis is president and CEO of his own company, Performance Plants, Inc.



The article sets its tone early as it begins, “Some environmentalists want genetically modified foods to be specially labeled and eventually banned. This may sound sensible, but isn’t. The plants we see around us evolved at the time of the dinosaurs . . . for their own benefit, not ours, and filled all the planet’s ecological niches.”

Most foods, including organically grown foods, are the result of intense genetic modification. The tomato started out as a small red berry from South America that was considered toxic and was grown solely as an ornamental. The kiwi fruit was, until recently, a tiny, bitter Chinese gooseberry. The original oil from the rapeseed was an inedible industrial lubricant used in the ships that supplied Europe during WWII. Genetic modification transformed it into a health-friendly cooking oil: canola.

Dr. Dennis addresses the issues of “natural” as opposed to “unnatural” crossbreeding, the public’s fear of biotechnology through misunderstanding of that process, and the advantage of creating hardier plants so that pesticides and fertilizer can be reduced or eliminated. He also covers the issue of testing

GM plants. He sums up by encouraging the readers to do their own research and supplies web site URLs where readers can find additional information.

His concluding statements express the concerns of other scientists in this area of study:

“The majority of researchers in Performance Plants were, until recently, university biologists.

We came to this business through a fascination for the science of plants and, more generally, the science of life, and we were a little surprised by the hostility we met when our industry began producing products. We believe that sooner or later the message about the benefits of these technologies will be evident. . . . Greenpeace and related organizations have a role to play in monitoring developments in plant biotechnology, but this role could be enhanced without the rhetoric and antagonism that has characterized the debate so far. Much more could be achieved through an effective dialogue between these organizations and biotechnologists.”

Representatives of the publisher described the selection of this article as follows: “The book is sold by our reps to adopters in universities and colleges who teach academic writing across the disciplines, and then distributed through the university bookstores. The reading was selected by our authors because it helps to balance out the chapter on biogenetics, in which there appear some readings that take the view that genetically modified foods are dangerous.” The publisher expects this text to be in stock by June 2002.

Prentice Hall adds pedagogical value by appending questions for discussion to the article. For example, they ask students to contrast some of the arguments against GM

*continued on page 22*

*continued from page 21*

foods to the arguments in favor as advanced by Dr. Dennis, and they suggest that students critique how Dennis treats opposing or alternative views.

When asked if he had advice for other scientists who want to try their hand at writing to the editor, Dennis replied, "When writing a letter to the editor, it is better to send it to someone you know or at least have spoken to before it is sent. The editor at the *National Post* I dealt with was Terence Corcoran, and although I do not know him personally, he has himself written about the misinformation that is published about biotech. I knew, there-

fore, that he was sympathetic. I talked to him before I started to write the article and knew he would look at it carefully. It was exactly the length he wanted and he did little editing of it. It is very important to keep within the length the paper normally accepts. If you send an article just to 'the editor' it will end up in a heap with a pile of other unsolicited articles and could well be lost, even if it is good."

Dr. Dennis says that he'll be "delighted if college and university students read the article. It was aimed at non-biologists. I have spent my life teaching undergraduate and graduate students, and teaching is something I still enjoy. I have a talk I give to local farmers and other groups. Last fall I gave a talk to

the Biochemistry Department at the University of Missouri at Columbia called 'The Good, the Bad, and the Transgenic: Learning to Love GMOs.' I have recently repeated it here. I try to show the difference between good and bad biotech research and the appallingly bad research that is used to attack GMOs. I also criticize journals such as *Nature* for publishing rubbish [on] monarch [butterflies] and GM pollen."

To read "Why GM Foods Aren't So Scary" in its entirety, visit the Performance Plants web site at <http://www.performanceplants.com> and click on the "Media Center" icon, then "The Financial Post" icon. 🌿



## New Staff

### John Long

John Long joined ASPB in late January as the new production manager for *The Plant Cell*. John will be working with our authors, editors, ad agency, and printer, among others, to bring all aspects of the journal together for each issue. Originally from Delaware, he holds a B.A. in philosophy from the University of Delaware and most recently spent a semester studying journalism at the University of Maryland.

As former publications coordinator for the American Philosophical Association, John has experience working in a not-for-profit environment. He also is no stranger to the ASPB staff, having worked with *Plant Physiology* as journal production

manager at the publication's printer, Cadmus Professional Communications.

John looks forward to being a part of the organization, calling the opportunity "a great mix of the best parts of my past work experiences."

John replaces Jennifer Fleet, who left at the end of December to assume the position of production manager for the *Proceedings of the National Academy of Sciences*. 🌿





## George Cheniae

In late August 2001, a respected and accomplished plant scientist at the University of Kentucky passed away. George Cheniae's discoveries have already withstood the test of time and represent significant contributions to the field of photosynthesis. After the obituaries are written and the eulogies delivered, his scientific contributions, and his identification with them, will remain. During the pursuit of his career and dreams, George left a significant impression on his colleagues and friends, by virtue of his personality as well as his accomplishments. In most cases, these personal impressions do not distinguish between the individual and the scientist. The following reflections of his colleagues present a picture of a scientist and his science that tells a story as valuable as the scientific contributions themselves.

### *R. Sayre and W. Frasch*

Without a doubt George's most memorable characteristic was the intensity with which he approached his work. He was deeply committed, and his critical-thinking skills were extraordinary. His close scrutiny of a problem and the clarity of the questions he posed enriched his students and professional acquaintances.

But George did not suffer fools gladly. He was regarded as one of the sharpest critics in the field. Both young and seasoned investigators were humbled by his penetrating questions, whether during a seminar or later over a glass of Kentucky bourbon. When one spoke to George, it was best to be prepared, very well prepared. Dr. Bob Rabson, former director of the Energy Biosciences Division of the Department of Energy, referred to George as the "quality control standard" for the field of bioenergetics. George also was among the first to acknowledge a job well done. He often worked behind the scenes to help advance the careers of young scientists whose potential he recognized.

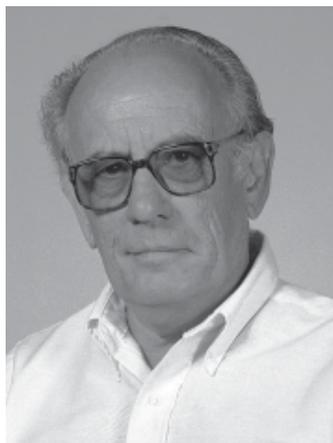
George also had many interests (perhaps

passions is a better term, for George never approached anything halfway) outside the lab. His gardening skills were renowned in the Department of Agronomy. Much of the spinach he used for his photosynthesis experiments was home grown. George's spinach always gave the best photosynthetic rates. He also loved jazz and the blues and had an extensive collection of old albums. One of the great surprises many a young student experienced was George's prowess (hustle) on the basketball court. In his mid-fifties George could still outplay many 20-year-olds. His greatest love was his family and his grandchildren, and his retirement was spent enjoying them.

Those of us who had the opportunity to know George were greatly touched by his character, scientific passion and rigor, and his humanity. George will be greatly missed, but his memory will live on, for without a doubt, George was one unique character.

### *William Cramer*

It was October 25, 2001, and we were getting ready to go down to the annual Midwest Photosynthesis Meeting. One of the highlights of this meeting for me was the opportunity to get together with George for a few drinks and jokes that cloaked serious discussion. George always had a way of penetrating to the essence of a set of experiments. His comments were cogent and could be caustic as well. In the latter case, he usually hit the nail, or the electron transfer event, right on the prosthetic group. George made me rethink some of our cytochrome b-559 experiments, reminding me periodically of Bessel's comment to me, "You can't oxidize that cytochrome any faster than you can lick the spit off the end of your nose." We had a lot of fun together some years ago, testing the hypothesis that the cytochrome b-559 would be an electron acceptor in the



pathway of oxidation of manganous ion and the assembly of the active manganese cluster in photosystem II. We showed the hypothesis to be wrong. Now that we see the x-ray structure, we realize that was a good thing.

### *R. Houtz*

George always gave me good advice, like "Just do good science," and "You

know, Bob, there comes a time when you have to quit launching your head against the wall." However, perhaps some of the best advice came from examples. When I received my first competitive grant, I was so excited that I went around telling everyone who would listen. Soon thereafter I received a call from an individual identifying herself as a news correspondent from our local newspaper, the *Lexington Herald Leader*. She went on to say that the news of my grant had come over the UPI wire service because of its importance in plant photosynthesis, and she asked when could she set up an interview. Of course I was astounded, proud, and quite willing to oblige. When I got off the phone, I immediately ran downstairs to my good friend and mentor George, to ask advice with regard to such an important opportunity. I went on and on, asking him whether he had received any such calls during his illustrious career and what I should do. I can still see his face, without any hint of prior knowledge, as he said that no, he had not received any calls like that, and he was not sure what to do, and by the way what was the name again of the person who called? I think this conversation went on for at least 15 minutes before he nearly broke his face grinning and proceeded to tell me how he had engineered the whole incident using a postdoc from Joe Chappell's lab. They had never dreamed that I would swallow the story hook,

*continued on page 24*

line, sinker, rod, and reel! I still laugh at myself and relish the lesson I learned. I sure do miss George.

### **Charlie Yocum**

George Cheniae could be pretty intimidating if you didn't know him well. He would go around saying that he was "just an ol' Kentucky briar," but this was camouflage for a keen intellect and an incredible memory. I think George knew the contents of just about every paper on photosystem II, as well as the major points made by a lot of other papers inside and outside photosynthesis. One example (a virtuoso tour de force) will illustrate my point. A leading authority in an area of physics related to photosynthesis, but which was very distantly removed from George's area, gave a talk at a Gordon Conference, covering esoteric topics like ionization energies and Debye-Waller factors. At the end of the talk, George raised his hand and pointed out that the speaker's current results and hypotheses contradicted his earlier work, published about five years prior. This event was roughly analogous to a Chaucer scholar catching an error in a 15-step organic synthesis, and it's more significant that none of the people working much closer to the speaker's area had caught the revision of history. It was this sort of in-depth scholarship on George's part that kept you on your toes. One of the most terrifying events for anyone speaking at a meeting was the sight of George's raised hand, followed by the drawling delivery of a question that should have been thought of and answered well before the talk.

There was another side to George, which wasn't too hard to uncover. He was always accessible and ready to talk to people about their research, to offer advice on techniques, or to quickly confess that he'd already tried a particular experiment and couldn't make it work. He'd try to steer you away from dead-ends in your research, and he was completely open with his own results, often telling others about work from his lab a year or more before he'd get around to publishing the pa-

per. A genuine concern for the junior people who were beginning to climb their way up through the ranks was also hiding beneath George's somewhat gruff exterior. This would take the form of lobbying on George's part to make sure that younger scientists were getting the right speaking invitations and were being included in the honorific tasks, like organizing meetings, that would make for a more impressive c.v. at tenure evaluation time.

I knew George Cheniae for about 30 years. We stayed in touch after his retirement, an event that he didn't talk much about. George refused to participate in any celebrations to honor his contributions and his retirement (and some pretty strenuous attempts were made to get him to do so), but I've come to realize that this was another typical aspect of George's style. He was really uncomfortable with any event or happening that would draw attention to him. Instead, he was satisfied to let his research and papers represent what he stood for.

### **G. Wagner**

Having spent about 18 years occupying an office next to George Cheniae, I often delighted in listening to his many stories about unusual, spice-of-life occurrences (which George often instigated) at past scientific meetings, Christmas parties (he was a reliable punch spiker), and the like. I also had the pleasure of personally experiencing some of his capers, always very well thought out, clever, and most often successful. Most memorable for me, though, are the recollections of our day-to-day interactions, traded jokes, discussions about science, comparisons of trophy tomatoes (George's were always bigger and better), and other products of a most valued friendship. What a reliable and trustworthy critic he was! George Cheniae was truly a special individual. He can't be replaced, and he will not be forgotten!

### **Pierre and Anne Joliot**

George took his French accent from Bessel Kok and thus welcomed us with a colorful

"Bonjourrrrr" when we arrived at RIAS on September 13, 1966. From that point on, we had the best and warmest of relationships. George was an excellent scientist. His pioneering work on manganese is at the basis of our present knowledge of the biochemistry of the oxygen evolving apparatus. The only subject of controversy we had was his tendency to underestimate the importance of his own work. George was also a marvelous friend, and we both remember with gratitude the kind way Rachel and he made our stay (and that of our boys!) in Baltimore so pleasant and easy.

### **Bill Rutherford**

My first contact with George was when I accidentally insulted him (in this respect George was not unique among famous photosynthesis scientists). In 1987, I described in print the Mn assembly process in PSII, so dear to George's heart, as "so-called photoactivation." During our first discussion together, while trying to talk my way out of that one, I couldn't help pointing out to him that his articles were somewhat dense and difficult to understand, citing some specific examples that had caused me pain. Digging myself further in, I asked him why he published in *Plant Physiology* since everyone else working on similar subjects published elsewhere, somehow managing to suggest that he might be an editor, or the father-in-law of the editor, or some such. George, while insulted, loved it, and straight-talk being his specialty, he rose to the occasion and responded with some incisively witty remark (that cannot be printed here). We became fast friends. Thereafter "so-called" became a prefix that we both used as an in-joke jibe, in public debate and in publications.

George didn't like people to take themselves too seriously. I often lived up to his approval in that respect. Signs of seriousness coming on were sniffed out and snuffed out. On occasion, he provided me with philosophical advice to help with whatever crisis was currently at the forefront of my existence. When I was feeling hard done by, steam-rollered,

and self-righteous, he cited Bessel Kok as saying (and I paraphrase) “the bad stuff will come out in the wash, so don’t waste your energy on it.” In hindsight he was right about not wasting too much energy on such things, but the wash is sometimes a long time in coming. He also paraphrased Sonny Boy Williams II: “Don’t go fatten’ no mo’ frogs fo’ snakes.” On that I of course concurred, although, having ruled out a literal meaning (despite for me a degree of geographic appropriateness), I remain somewhat unsure of its context or applicability.

Pomposity was something up with which George would not put. He acted to deflate such stuff by reflex action. He teased the Ivy Leaguers, taunted the Fellows of the Royal Society, and poked fun at the academy members. He wrote to me on hearing that I’d been invited to give some prestigious plenary, calling it the “Sermon on the Mount” and urging me to do it in Rap, telling me it would result in a quantum leap in my international acclaim. I replied that rapping was not culturally my thing and neither was global stardom, although, like George, I had always considered a cult following to be more my style.

George was something of a wit. He once quipped that he knew what the F. in Charles F. Yocum stood for. I am unable to repeat here the actual noun that George proposed, but believe me it was typical of the richness of the repartee in the corduroy informality of the senior common room. Another example was when George acted as referee for one of my papers: I had inadvertently miscited the Proceedings of the Montpelier Congress as something like “Photosynthesis: From Light to Shinola (P. Mathis, ed.),” a mere typo you understand. The reviewer (GC) asked, “Is this a comment on the state of photosynthesis research or the story of Paul Mathis’s religious conversion?” I was so tickled by the comment that I forgot to correct my error.

George was my blues mentor, a kind of down-home Kentucky Yoda, except without the pointy ears and with a different accent. Here’s how it began. During a plenary lec-

ture at the Nagoya Photosynthesis Congress, George and I were sitting about halfway back in the great hall, about a kilometer from the stage, chatting away and taking not a blind bit of notice of the lecture. (It was Mark Stitt’s talk as I remember, but given that neither George nor I had brought our binoculars, our attention had wandered. No reflection on the quality of the talk, Mark.) Anyway, the subject turned to the blues. George said, “So you like the blues, eh? Who are your favorite players?” I proceeded to list a series of skinny white boys from the sixties, the heart of the British blues boom, who loomed large in my childhood and teenage years. George said, “Let me tell you something,” and he paused for a second, breathed through his nose for emphasis, and then went on, “You don’t know s\_\_\_ about the blues. But,” and he paused again, “I will educate you.” Sure enough, a month or so later, I received through the mail a cassette with recordings of George’s collection of dusty old 45s of (mainly) Chicago blues from the fifties and sixties.

That tape was the “Blue Light” for me: The Force was with me, so to speak. At the next Photosynthesis Congress, my blues band played in what was announced as the 1st George Cheniae International Congress on Photosynthesis Blues Concert (those posters will be worth a fortune one of these days). I think George appreciated that concert. He was up on stage with the band, and later that

night he was seen doing the boogie real slow with Anne Joliot (now there’s a good line for a song). Hundreds of photosynthesizers danced the night away. As George said afterward, “The night photosynthesis rocked.” George continued to send me tapes and CDs of bluesmen he liked (along with tons of data and handwritten arguments concerning  $\text{Ca}^{2+}$  and  $\text{Cl}^-$  depletion in PSII, etc.), and I sent him recordings of my band (and commentary on his data plus our latest scientific offerings). When the band’s CD came out, George was singled out for special thanks.

Who knows, we may have a “2nd George Cheniae Blues Concert” at a future Photosynthesis Congress (note to Montreal organizers: Contact me for a deal). However, it saddens me greatly that any future events will have the epithet “memorial” in between the “Cheniae” and the “Blues.” This is the point where I’m tempted to get maudlin, so instead let me wind up this rambling collection of thoughts. For me, George equaled fun, mischief, wisdom, good science, integrity, the blues, and friendship. That’s how I’ll remember him, and when I am driving home tonight I’ll be playing my tape of George’s “so-called” Blues Collection. And I’ll be smiling. 🌿

*This tribute to George Cheniae was assembled by Robert Houtz, professor, and George Wagner, professor, University of Kentucky.*

## Deadlines for *ASPB News*

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

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

## Oliver Evans Nelson, Jr.

Noted maize geneticist Oliver Nelson of the University of Wisconsin died in a Madison hospital November 6, 2001, after a long battle with both osteoporosis and Parkinson's disease. Having become acutely ill the afternoon of November 6, Oliver refused transport to the hospital so that he could finish the communication of a paper concerning enhanced starch synthesis to the *Proceedings of the National Academy of Sciences*. He died soon after reaching the hospital.

Born August 16, 1920, in Seattle, Oliver was raised in the vicinity of New Haven, Connecticut, and first experienced maize genetics as a summer high school assistant in the Department of Genetics, Connecticut Agricultural Experiment Station. Oliver graduated from Colgate University magna cum laude in botany at the age of 21. He subsequently received his M.S. and Ph.D. degrees from Yale University under the direction of D. F. Jones.

Oliver joined the faculty at Purdue University as an assistant professor in 1947 and was promoted to professor in 1954. To the great delight of R. A. Brink, Oliver left Purdue in 1969 for the University of Wisconsin. He spent the rest of his career there, having "retired" to emeritus status in 1991.

Throughout his long career, Oliver pursued many aspects of maize genetics and biochemistry. Initially hired at Purdue as a popcorn breeder (at which he was quite successful—some of his better lines were used in the popcorn industry long after he ended his breeding efforts), he found that most popcorn lines carried the *Ga1-s* allele and as such were cross-incompatible with dents, carrying the *ga1* allele, when used as females. This discovery led to a systematic study of the *ga1* locus. With L. R. House he showed that non-reciprocal cross-sterility was the result of poor *ga1* pollen tube growth on *Ga1-s* silks.

Oliver soon focused on the *waxy1* locus to address questions of fundamental importance to biologists of the time, as well as to test predictions about transposable elements, then in

vogue. Exploiting the finding of R. A. Brink and M. Demerec that the *wx1* gene functions in the gametophytic genotype, Oliver realized that pollen populations of sufficient size to detect rare recombination within the gene could be quickly examined. If independent mutations of the *waxy* gene occurred at different sites, he could place these relative to each other by constructing a fine structure recombination map through the occurrence of rare wild-type recombinant grains. Looking at 50,000 pollen grains at a time, he first showed that no wild-type pollen grains could be observed in plants that had two copies of the same *waxy* allele, but that rare, blue-black staining grains could be observed at frequencies between 0 and 80 per 100,000 in plants heterozygous for two independent *waxy* alleles. Characteristically, he also showed for one of these combinations that he could observe the same frequency of recombination in the seed. As he used stocks with flanking markers in this important control, this also allowed him to orient the mutations he was mapping relative to the other genes on the chromosome. Even though the frequency of recombination was not additive across the locus, he was able to construct his map using overlapping deletions. All told, the sites of 31 *waxy* mutants were mapped in this way. Among them were a number of stable transposable element-induced alleles. Oliver showed that these were distributed throughout the locus rather than being concentrated in a control region at one end of the gene. The construction of the first fine structure map of a plant gene, plus work done with the *rosy* locus of *Drosophila*, provided us with the most detailed glimpse of the structure of a gene before DNA sequencing. When the *wx1* gene was cloned, Wessler and Varagona remapped 13 of the mutants at the DNA level. An excellent correlation between the genetic and physical maps was observed.



Oliver considered himself a biochemical geneticist. He began his career at a time when there was great excitement to learn how genes worked and what they could tell us about biochemical pathways. Oliver saw no reason that such studies could not also be pursued in higher plants. Since starch was the major component of

corn seed, it stood to reason that mutations of this pathway would have a visible mutant phenotype. He and his colleagues conducted a systematic investigation of the deficiencies of a number of kernel mutations and over the course of three decades identified the biochemical defects associated with eight starch mutants, including those responsible for *wx1*, *sh1*, *sh2*, *sh4*, *bt1*, *bt2*, *du1*, and *su1*. Placing these mutants in the biochemical pathways allowed us to have a better understanding of how this process operates in the corn kernel. This accomplishment is made even more impressive when one realizes that virtually all of this was done before recombinant DNA methodology was commonplace.

The starch work produced a number of "firsts." Identification of the lesion with *wx1*, a starch-bound ADP-glucose glucosyl transferase, to our knowledge represented the first case in a higher plant in which the biochemical lesion of a gene with a visible mutant phenotype was elucidated. At the pathway level, the work with *wx1* provided the first and unexpected demonstration that amylose, the straight-chained glucose polymer, is **not** a precursor for the branched polymer of glucose, amylopectin, a fact still not presented correctly in many plant physiology textbooks.

The elucidation of the enzyme associated with *su1*, in association with subsequent cloning and characterization of the gene in the Myers-James lab at Iowa State University, showed that **debranching** of alpha 1,6 bonds in starch is essential for the synthesis of wild-type levels of starch. This, too, was

unexpected based on the then-current view of starch synthesis. The cloning and identification of the protein associated with *bt1*, coupled with subsequent physiological/biochemical studies at Penn State University, provided the first definitive evidence that ADP-glucose, the precursor for starch, is synthesized in the cytosol (and not in the plastid) in the cereal endosperm.

As mentioned, Oliver's pursuit of *wx1* was aimed initially at understanding the nature of the relationship between the gene and its associated transposable elements. This interest persisted throughout his career at Wisconsin. This line of investigation, to some extent with the *sh2* locus, but in much more detail with the *bz1* gene, also led to a number of "first" observations. These included the first reports that inserted transposable elements led to the production of a structurally altered protein. This was as expected if the elements were inserted throughout the gene—as shown in his *wx1* recombination investigations—but was contrary to the idea that transposable elements act as normal regulatory elements of gene expression. Another first was the report that excision events led to a heterogeneous group of revertant alleles that displayed different protein properties, thus anticipating the alterations in coding regions created by transposon excision. These insights came before the application of recombinant DNA methodology to the study of transposable elements.

In the 1980s, when the tools of molecular biology made it possible to address questions at the DNA level, Oliver's interest shifted to the transposable elements themselves. Another "first," in what immediately became classical work, his lab—in collaboration with Nina Fedoroff's—isolated for the first time a plant gene by a then-novel procedure of transposon tagging. The maize elements have been subsequently exported to other species and have revolutionized gene isolation procedures not only in maize but also in other plants. The second main contribution from Oliver's lab during his last decade of activity, and one that involved perhaps the largest

number of students and postdocs that he had in his career at any one time, was the elucidation of many of the changes that these highly unstable elements are capable of undergoing.

Perhaps the greatest acclaim given to Oliver came for the work done during the period 1962–1969. These studies, done primarily in collaboration with Ed Mertz of Purdue University, showed that levels of the essential amino acids lysine and tryptophan could be enhanced by mutation. The discovery that certain amino acids were enhanced in *opaque2* and *floury2* was of tremendous importance to maize breeding programs; however, problems of kernel softness and yield drag precluded early use in the corn industry. Only now, through development of "modified opaque" maize, is the *o2* mutation being incorporated into corn lines of commerce.

A little-known fact about the early *opaque2* and *floury2* work exemplifies Oliver's uncanny ability to understand biology through mutant analysis. Before the understanding of *o2* and *fl2*, biochemists at Purdue were massively screening, with little success, maize lines for amino acid content. Oliver knew that lines selected at the University of Illinois for enhanced protein content exhibited an enhanced level of zeins. Because zeins contain little to no lysine, these lines were of little value for feeding monogastric animals. These lines also exhibited a translucent phenotype. Oliver reasoned that mutants with the opposite phenotype (opaque) might have reduced zein content. If non-zein proteins increased, lysine content would increase. Accordingly, four opaque mutants were analyzed: *o1*, *o2*, *fl1*, and *fl2*. Lysine was doubled in two of the four mutants.

In addition to his many research accomplishments, Oliver was a tireless worker for the maize genetics community. He played an instrumental role in hosting the maize meeting following its move from Allerton House in central Illinois to the various sites in Wisconsin and the Chicago area. He chaired and wrote the substantially unchanged "A Standard For Maize Genetics Nomenclature." He also

served as chair of the Genetics Department at Wisconsin and as associate editor for *Plant Physiology* and devoted more than his fair share of time to grant panels in Washington.

Oliver won many prestigious awards during his career. These included an honorary doctorate of agriculture from Purdue University (1973), the Thomas Hunt Morgan Medal from the Genetics Society of America (1997), the Stephen Hales Prize from the American Society of Plant Physiologists (1998), the Herbert Newby McCoy Award (1967), the John Scott Medal (1967), the Holblitzle National Award in Agricultural Sciences (1968), and the Commemorative Medal of the Federal Land Bank System (1968). He was elected to the National Academy of Sciences in 1972.

Oliver was reserved, unfailingly courteous, rigorously honest, and forthright. He was an insightful and observant scientist. His strength was the use of genetics—mutant phenotypes and segregational analysis—to answer biologically and agronomically important questions. This careful and perceptive analytical bent of his was the hallmark of his career. Oliver played an instrumental role in maize genetics, plant biology, and the maize genetics community. He taught by example. He provided our introduction to a life-long career with the corn plant, and he gave us an everlasting appreciation of the values of Mendelism and appropriate controls. Not only was he a mentor to the three of us in the early stages of our careers, he continued to provide guidance, advice, wisdom, and an unconditional friendship to us throughout the rest of his life. He will be missed. ♣

**Curt Hannah**  
University of Florida

**Ben Burr**  
Brookhaven National Laboratory

**Hugo Dooner**  
Rutgers University

This article first appeared in the March 2002 issue of the *Maize Genetics Newsletter*.



*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](mailto:sbraxton@aspb.org) or mail to Sylvia Braxton Lee, *ASPB News*, 15501 Monona Drive, Rockville, MD 20855-2768 USA. **Faxed transmissions are not accepted.**

## 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

## 2002

### JUNE

**June 8–12**

#### **Plant Biology Canada 2002**

Annual Meeting of the Canadian Society of Plant Physiologists  
Calgary, Canada

For details see the web site <http://www.ucalgary.ca/~cspp2002/>.

**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](mailto:smunowit@unexmail.ucdavis.edu).

### JULY

**July 2–7**

#### **14th European Physarum Conference Freiburg, Germany**

For more information, see the PhysarumPlus Web site at <http://bic.usuf1.usuhs.mil/Mark/PhysarumPlus.html> or contact Mark Adelman at [adelman@bicwater.usuf1.usuhs.mil](mailto:adelman@bicwater.usuf1.usuhs.mil).

**July 10–14**

#### **The 6th International Congress on Plant Mitochondria**

#### **Perth, Western Australia**

For information contact [icpm@uwa.edu.au](mailto:icpm@uwa.edu.au) or see web site at [www.ICPM.uwa.edu.au](http://www.ICPM.uwa.edu.au).

### SEPTEMBER

**September 23–25**

#### **1st Spanish Congress on Physiology, Biochemistry and Molecular Biology of Carbohydrates Public University of Navarra, Navarra, Spain**

For detailed information see <http://www.unavarra.es/carbohidratos/indexE.html> or contact Javier Pozueta-Romero ([javier.pozueta@unavarra.es](mailto:javier.pozueta@unavarra.es)), Eburne Baroja-Fernandez ([ebaroja@unavarra.es](mailto:ebaroja@unavarra.es)), or Francisco Jose Munoz ([francisco.munoz@unavarra.es](mailto:francisco.munoz@unavarra.es)).

### OCTOBER

**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@mbl.edu](mailto:admissions@mbl.edu).

**October 23–25**

#### **XI Reunion Latinoamericana de Fisiología Vegetal**

#### **Fisiología Vegetal**

#### **XXIV Reunion Argentina de Fisiología Vegetal**

#### **I Congreso Uruguayo de Fisiología Vegetal**

#### **Conrad Resort & Casino**

#### **Punta del Este, Uruguay**

For information on the meeting see <http://www.fvegetal.edu.uy>. For information on the location see [www.conrad.com.uy](http://www.conrad.com.uy).

### NOVEMBER

**November 13–15**

#### **Plant Species-level Systematics: Patterns, Processes and New Applications**

#### **Gorlaeus Laboratory, Leiden, The Netherlands**

For information contact [symposium2002@nhn.leidenuniv.nl](mailto:symposium2002@nhn.leidenuniv.nl) or see web site at <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](mailto:bioagro@cigb.edu.cu) or see the web site at <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](mailto:girish_chand_srivastava@rediffmail.com), web site [www.ispponline.org](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](mailto:kathryn.barton@ucr.edu).



# ASP 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**

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**Postdoctoral study (specialty and with whom, where, and when):** \_\_\_\_\_

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Employer and location	From	To	Position, title, and duties

**References (names, addresses, and telephone numbers):** \_\_\_\_\_

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## I. Registering with the ASPB Placement Service and Obtaining Placement Files

ASPB 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, ASPB 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 ASPB News and on the ASPB 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 *ASPB News* and 12 weeks on the ASPB 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 *ASPB News* and 12 weeks on the ASPB 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 *ASPB News* and 12 weeks on the ASPB 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 *ASPB News*—the first time at full length and the second time in an abbreviated form—and 12 weeks on the ASPB online Job Bank.  
**Word Limit:** None.

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

#### Assistant Professor University of Florida, Gainesville (Received 01/03)

A 12-month tenure-accruing position in research (80%) and teaching (20%) is available to develop a research program in plant genomics. Candidate must have earned Ph.D. and research experience in plant genomics, and demonstrated ability to collaborate in an interdisciplinary setting. The UF Genetics Institute ([www.ufgi.ufl.edu](http://www.ufgi.ufl.edu)) and the Plant Molecular and Cellular Biology Program (<http://www.ifas.ufl.edu/~PMCB/>) offer potential for collaborations in genomics. The SFRC ([www.sfrc.ufl.edu](http://www.sfrc.ufl.edu)) is historically strong in forest biology and collaboration, manifest by cooperative programs including the Forest Biology Research Cooperative (<http://aris.sfrc.ufl.edu/www/FBRC/fbrc.html>) and a federally funded genomics project in pine molecular physiology and allele discovery (<http://dendrome.ucdavis.edu/adept/>). This position is an ideal opportunity to explore relationships between traits such as perennial growth, cell wall properties, response to environment, or domestication in models (e.g., *Arabidopsis*) and in trees. Submit a letter of

application, a one-page statement of interest in the position, curriculum vitae, transcripts of academic work, and name, address, phone number, and e-mail address of four references by January 25, 2002, to Dr. John M. Davis, Committee Chair, School of Forest Resources and Conservation, University of Florida, PO Box 110410, (courier: 134 Newins Ziegler Hall), Gainesville, FL 32611-0410; telephone 352-846-0879, e-mail [jmdavis@ufl.edu](mailto:jmdavis@ufl.edu).

#### Assistant/Associate Professor Cornell University, Geneva, New York (Received 01/03)

A 12-month, tenure-track, 100% research appointment is available. Candidates responsibilities are to develop an innovative program in genomics to examine the genetic and physiological basis of plant development and/or responses to their environment. Use of appropriate state-of-the-art structural and functional genomic, molecular and biochemical tools is expected. The appointee is expected to develop a program to examine plant developmental and/or senescence processes, and/or plant responses to biotic or abiotic stresses. The appointee should conduct

research relevant to fruit and/or vegetable crops important to New York including application of biotechnology and/or improvements in understanding of the genetics or physiology of these crops (see <http://www.nysaes.cornell.edu/>). However, the use of model systems is also encouraged. Collaboration and/or interaction with a broad range of faculty is expected, as well as a willingness to serve as a major or minor advisor to Cornell University graduate students. Extramural funding for research will be required. A generous startup package, technical support and excellent laboratory facilities are available. A Ph.D. plus at least one year postdoctoral experience emphasizing research in genomics, molecular biology or similar disciplines is required as is a solid grounding in plant biology, plant pathology, horticulture or a related field. Demonstrated proficiency in publication of scholarly research in good quality journals and experience in obtaining extramural funding is required. Starting date is July 1, 2002. Salary is competitive and commensurate with experience and qualifications. Attractive fringe benefits are available. Deadline for applications is until the position is filled. Send resume, statement of research interests, copies of recent publications,

#### THE DEADLINE FOR ADS FOR THE MAY/JUNE ISSUE OF ASPB News IS APRIL 28, 2002.

Check ASPB'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 *ASPB News*.

transcripts and names and addresses, including e-mail and fax of three references to Gary E. Harman, Chair, Search Committee, Department of Horticultural Sciences, Cornell University-Geneva Campus, Geneva, NY 14456.

**Research Plant Molecular Geneticist,  
GS12/13/14  
USDA/ARS, Western Cotton Research  
Laboratory  
Phoenix, Arizona  
(Received 01/14)**

A permanent full-time vacancy is available. The incumbent will use molecular approaches in conjunction with conventional genetics to evaluate and enhance long and/or short staple cotton germplasm. Objectives may include (1) identification, characterization, and manipulation of genes that regulate biochemical pathways that impact cotton yield, fiber/seed quality, or tolerance to environmental stress, (2) utilization of marker-assisted selection to accelerate germplasm improvement, (3) development and evaluation of new genetic resources. Incumbent will interact with team members conducting active programs in plant breeding and plant physiology/biochemistry. Salary range is \$51,927-\$94,862 per year. The full text vacancy announcement and application instructions may be obtained via the Internet ([www.ars.usda.gov](http://www.ars.usda.gov)), or call Michael Wiggett (602) 437-1376, ext. 281; indicate announcement number ARS-X2W 2101. Incomplete applications will not receive consideration. Applications must be postmarked by March 18, 2002. Applicants must be U.S. citizens; USDA/ARS is an equal opportunity employer. For more information contact Dr. S. J. Crafts-Brandner at [scraftsbrandner@wcr.ars.usda.gov](mailto:scraftsbrandner@wcr.ars.usda.gov) or 602-437-0121, ext 222.

**Faculty Positions  
The Danforth Center, St. Louis, Missouri  
(Received 01/14)**

The Danforth Center announces positions for principal investigators at the associate and assistant member levels to direct fundamental research programs. Seeking scientists with broad interests/training in at least two scientific disciplines and well-formed research programs that will benefit from interactions with scientists of other disciplines. Demonstration of prior or current support and of interdisciplinary research beneficial. Four faculty appointments will be considered in biochemistry, structural biology, phytochemistry/neutriceuticals, fundamental aspects of animal or human nutrition, cell biology, and abiotic stress biology. Send resume, brief description of research interests, reprints of three key publications, and names of three references. Visit [www.danforthcenter.org](http://www.danforthcenter.org), for

more information. Send to Ms. Billie Broeker, Human Resources, Donald Danforth Plant Science Center, 975 North Warson Road, St. Louis, MO 63132. The Donald Danforth Plant Science Center is an equal opportunity/affirmative action employer and encourages applications from underrepresented groups, including minorities, women and people with disabilities.

**Assistant or Associate Staff Scientist  
The Samuel Roberts Noble Foundation, Inc.  
Ardmore, Oklahoma  
(Received 01/16)**

A permanent staff scientist position is now available at the assistant or associate level (equivalent to assistant or associate professor) in the Plant Biology Division in cell or molecular biology. The Samuel Roberts Noble Foundation is a world leader in basic plant biology research, emphasizing integration of biochemistry, molecular biology and genetics for understanding plant-microbe interactions and the biosynthesis and manipulation of plant natural products. Several of its programs center on the use of *Medicago truncatula* as a model forage legume. The successful applicant will have a proven track record in the application of cell or molecular biology approaches to basic questions in plant biology. Preference will be given to candidates whose research complements one of the following areas: plant-microbe interactions (fungal, bacterial or viral, symbiotic or pathogenic); metabolic engineering; or model legume functional genomics. Please visit our Web site, [www.noble.org](http://www.noble.org), for on-line application forms and additional details. Informal enquiries can be made to Dr. Richard Dixon, Director, Plant Biology Division, PO Box 2180, Ardmore, OK 73402; telephone 580-224-6601, e-mail [radixon@noble.org](mailto:radixon@noble.org). The Foundation is an equal opportunity employer.

**Associate Dean  
University of Minnesota, St. Paul  
(Received 01/22)**

The College of Biological Sciences at the University of Minnesota is engaged in a strategic expansion of undergraduate and graduate programs, faculty and facilities. Research and teaching in the college spans the breadth of biology, from molecules to ecosystems. We seek an associate dean to provide vision for the enhancement of biology education in the context of a large, comprehensive research university. While specific responsibilities of the position will focus on undergraduate education in the biological sciences, the associate dean will also provide leadership for biology education across the K-20 continuum. The successful individual

will have interest in meeting the challenges of biological education created by a rapidly changing and expanding knowledge base. The position is a full-time, twelve-month appointment for a renewable, three-year term, and includes a tenured faculty appointment. Qualifications include an earned doctorate in a biological discipline and a record of research, scholarship and instruction sufficient to qualify for a tenured position in one of the College's departments. Knowledge of current trends and issues in biological research and education, leadership experience in educational programs, and demonstrated administrative skills are desired. The College has a strong commitment to the principles of diversity, and in that spirit seeks a broad spectrum of candidates including women, minorities, and people with disabilities. For more information, visit the college web site at [http://www.cbs.umn.edu/1ab\\_cbs/1di2\\_staffpositions.html](http://www.cbs.umn.edu/1ab_cbs/1di2_staffpositions.html). To be considered as a candidate for this position, please submit a letter of application, a statement of efforts promoting diversity, curriculum vitae, and names and contact information for four references to Dr. Kate VandenBosch, Search Committee Chair, College of Biological Science, University of Minnesota, 123 Snyder Hall, 1475 Gortner Avenue, St. Paul, MN 55108. Review of applications will begin March 15, 2002. Expected start date is on or after July 1, 2002. The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

**Assistant Specialist Position  
University of California, Albany  
(Received 01/23)**

An assistant specialist position is available to study the trafficking of the Arabidopsis CLV3 protein and identify additional members of the CLV signal transduction pathway, as well as to determine the function of CLV3-like genes in Arabidopsis meristem development. Qualified applicants will hold a Ph.D. degree in Plant Genetics or Plant Molecular Biology, and have experience with Arabidopsis genetics. Knowledge of biochemistry and bioinformatics is also required. Send curriculum vitae and name/address of three references by May 20, 2002, to Dr. Jennifer Fletcher, Plant Gene Expression Center, 800 Buchanan St., Albany, CA 94710; fax 510 559-5678. The University of California is an equal opportunity/affirmative action employer.

**Assistant/Associate/Full Professor  
Lehman College, The City University of  
New York  
(Received 01/29)**

The City University of New York is undertaking a major initiative in the biosciences by recruitment of tenure-track faculty into three focus areas: cell signaling and regulation, macromolecular assemblies, neurosciences; Lehman College is seeking faculty with research interests in cell signaling and/or regulation in plants to join an active plant sciences doctoral program that is a long-standing partnership between CUNY and The New York Botanical Garden (<http://a32.lehman.cuny.edu/PlantPhD>). Ongoing plant research includes biotechnology, metabolic engineering, natural product biochemistry, medicinal plants/economic botany, signal transduction, plant-microbial interactions, tissue culture, plant development, cell biology, ecology, biodiversity, systematics. Candidates will establish and/or sustain active, independent programs of extramurally funded research; teach undergraduate/graduate courses; publish peer-reviewed papers; advise students; and participate in university life. Qualifications: Ph.D. in appropriate area with demonstrated commitment to teaching and research; postdoctoral and teaching experience with demonstrated ability to publish in peer-reviewed journals and obtain extramural funding preferred. Appointment rank/salary is commensurate with qualifications and experience; anticipated start date September 2, 2002. Send cover letter indicating focus area, curriculum vitae, representative reprints, research proposal, three reference letters to Dean Spiro Alexandratos c/o Ms. Mabel Chee, CUNY Office of Academic Affairs, 535 East 80th Street, New York, NY 10021.

**Assistant/Associate Professor  
Texas Tech University, TAMU, Lubbock  
(Received 01/31)**

Texas Tech University and TAMU-Texas Agricultural Experiment Station at Lubbock, Texas, are seeking candidates for a twelve-month tenure-track position in molecular genetics available June, 2002 or until filled. The position has 50% teaching and 50% research responsibilities. Interest and experience in undergraduate and graduate education is required. Emphasis on functional or structural genomics, QTL identification or molecular breeding preferred. Qualifications include a Ph.D. in plant genetics or molecular biology. Applicants must have the ability to effectively communicate and teach in English; proven ability to conduct high quality research; and citizenship or permanent residence status sufficient to allow acceptance of a full-time position in the U.S. Salary will be commensurate with experience. Applicants should submit a

statement of career goals, a resume, university transcripts, and three letters of recommendations by May 1, 2002, to Dr. Dick Auld, Department of Plant and Soil Science, Box 42122, Texas Tech University, Lubbock, TX 79409-2122; telephone 806-742-2838, fax 806-742-0775, e-mail [dick.auld@ttu.edu](mailto:dick.auld@ttu.edu). Texas Tech and Texas A&M Universities are equal opportunity employers, affirmative action institutions and supporters of the Americans with Disabilities Act. Texas Tech University is sensitive to the needs of dual career couples.

**Professor and Head  
Louisiana State University Agricultural Center  
Baton Rouge  
(Received 02/01)**

The Department of Plant Pathology and Crop Physiology invites applications for a joint appointment with the LSU Agricultural Center and the LSU A&M College of Agriculture. The primary duty of the department head is to provide leadership for the development of excellence in research, extension and teaching functions of the Department of Plant Pathology and Crop Physiology. The Department Head provides leadership in: (1) recruiting and facilitating the professional development of faculty, staff and students; (2) developing short- and long-range goals and strategic plans for the department; (3) developing courses and curricula; (4) managing the department's human, physical, and financial resources; (5) administering state, regional, national, and international programs of the department; (6) establishing a working relationship with directors at regional research and extension centers to support research and extension programs; (7) evaluating the performance of the department's faculty and staff; and (8) promoting individual and departmental excellence. The Department Head represents departmental interests to the research, extension and teaching administrators of LSU Agricultural Center and Louisiana State University and A&M College; to governmental agencies; commodity groups, state, national and international groups involved in plant pathology and plant physiology; the rural and urban communities and the general public. LSU is a Research 1 institution in a state with a diversity of agricultural, urban and natural environments. The Department has well-established research and extension programs in major agricultural and forestry crops ranging from projects concerning applied field research to fundamental studies in plant pathology, plant physiology and biotechnology. The Department offers M.S. and Ph.D. degrees in plant pathology and related areas of plant physiology. Application to include a letter of application specifically addressing the candidate's qualifications, a one page administrative philosophy and vision

statement, full resume, academic transcript for terminal degree, and names, addresses and telephone numbers of four references to Gerard T. Berggren, Jr., Chair, Plant Pathology and Crop Physiology Department Head Search and Screening Committee and Professor and Resident Director, Central Research Station, 2310 Ben Hur Road, Baton Rouge, Louisiana 70820. The review of applications will begin on May 15, 2002, and continue until suitable candidates are identified. The LSU Agricultural Center is a statewide campus of the LSU System and provides equal opportunities in programs and employment. An equal opportunity/affirmative action employer.

**Scientist  
GenApps Inc., Lexington, Kentucky  
(Received 02/07)**

GenApps Inc., an agricultural research and biotechnology company located near Lexington, Kentucky, has a scientist position available immediately. Qualified candidates should possess a Ph.D. degree in biology/molecular biology. Demonstrated ability to initiate and perform independent research in molecular biology area. Strong knowledge of and outstanding skills in plant gene cloning, gene expression, and enzyme activity assays. Experience with developed nucleic acid techniques, protein expression/profiling, and automation technologies. Experience in differential display, cDNA/genomic library construction screening, and strong knowledge/hands on experience in plant biochemistry/chemistry desirable. Qualified applicant must be able to provide technical expertise and intellectual support to meet technically challenging program objectives and to assist in developing new research projects. Candidate must possess effective communication skills, math knowledge associated with technical problems, and proficiency with standard molecular biology software packages. We offer competitive salary, an excellent benefits package and the opportunity for personal and professional growth in an outstanding work environment. Must have proof of eligibility for working visa. To become part of a dynamic organization, please forward or fax your resume, salary history/requirements, and references to GenApps Inc., ATTN: Human Resources Coordinator, PO Box 237, Winchester, KY 40391; fax 859-744-4195.

**Research Plant Physiologist, Research  
Agronomist, Research Ecologist, or Research  
Soil Scientist  
Phoenix, Arizona  
(Received 02/15)**

A permanent, full-time scientist position is open at the USDA, Agricultural Research Service, U.S.

Water Conservation Laboratory, Phoenix, Arizona. In support of the ARS Global Change National Program, he/she will serve as member of a team seeking to determine the likely effects of global change on agricultural productivity and water resources in the future. Besides the basic requirements of a degree or specialized experience in one of the four disciplines or a closely related field, desired skills include: (1) expertise and computer fluency in the modeling of crop and rangeland growth as affected by environmental conditions, including elevated CO<sub>2</sub> concentrations, and by farm management strategies, (2) expertise in aggregating and scaling results from experimental plots to field and regional scales, (3) expertise in conducting experiments designed to determine effects of environmental parameters, including elevated CO<sub>2</sub> and temperature, on plant growth and carbon sequestration, and (4) proficiency in measurement techniques needed to evaluate plant responses in such experiments. The appointment will be at the GS-11 to GS-13 grade levels (Salary range from \$45,285 to \$83,902.00 per year), depending on experience. U.S. citizenship is required. For more detailed information, see the Web address <http://www.afm.ars.usda.gov/divisions/hrd/index.html> or contact Dr. Bruce Kimball, USDA-ARS US Water Conservation Laboratory, 4331 East Broadway, Phoenix, AZ 85040-8832; telephone 602-437-1702, ext. 248). Applications must include announcement number ARS-X2W-2151 and be received by April 26, 2002 at USDA, Agricultural Research Service, Human Resources Division, ATTN: ARS-X2W-2151/C. Isaac, 5601 Sunnyside Avenue, Beltsville, MD 20705 5106; telephone 301-504-1469). The US Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice or TDD).

**Professor and Head  
University of Connecticut, Storrs  
Received (02/28)**

The successful candidate will have excellent interpersonal and leadership skills and will have the ability to bring the department to the next level of national and international recognition and achievement. Applicants must have a Ph.D. in plant science or a closely related field including landscape architecture and offer a distinguished, nationally recognized record of teaching, research, and/or extension commensurate with the rank of full professor. Experience in

administration and the land-grant system is highly desirable. Ten-month appointment/competitive salary. Anticipated start date is 1/1/2003. Review of applications will begin 4/1/2002. Send curriculum vitae and the names, addresses, telephone numbers, and e-mail addresses of three professional references to Department Head Search Committee, University of Connecticut, 1376 Storrs Road, Unit 4134, Storrs, CT 06269-4134; telephone (860) 486-1987, fax (860) 486-0264, e-mail [plshead@canr.uconn.edu](mailto:plshead@canr.uconn.edu). For full position announcement visit [www.canr.uconn.edu/plsci/search.html](http://www.canr.uconn.edu/plsci/search.html). The University of Connecticut actively encourages applications from underrepresented groups, including minorities, women and people with disabilities.

**POSTDOCTORAL POSITIONS**

**Postdoctoral Research Associate  
University of Calgary, Calgary, Alberta, Canada  
(Received 01/07)**

A position is available for a highly motivated postdoctoral research associate to work on a project concerning the biosynthesis of benzyloquinoline alkaloids in opium poppy and related species. Applicants should have a Ph.D. and demonstrated abilities in plant biochemistry, molecular or cellular biology. Applications should include a curriculum vitae, a statement of research interests and career objectives, and names and complete contact information for three references. The starting date for the position is July 1, 2002, however, new applications will be accepted until a suitable candidate is found. Please send applications to Dr. Peter Facchini, Associate Professor, Department of Biological Sciences, University of Calgary, Calgary, Alberta, T2N 1N4, Canada; e mail [pfacchin@ucalgary.ca](mailto:pfacchin@ucalgary.ca).

**Postdoctoral Position  
Texas A&M University, Weslaco  
(Received 01/07)**

A postdoctoral position is available for ongoing studies on the map-based cloning of the Citrus tristeza virus resistance gene from a citrus relative (see Yang et al., *Genome* 44, 382–393, 2001). Candidates with experience in several of the following areas will be considered: molecular plant virology, map-based cloning, mapping with SSRs, protein expression and purification, in vitro characterization of protein activities, RNAi-mediated dominant mutations, and plant transformation. The position comes with benefits, and salary will be commensurate with experience. Please send curriculum vitae and names of three references to Dr. T. Erik Mirkov, Department of Plant Pathology, The Texas A&M

University System Agricultural Experiment Station, 2415 East Hwy. 83, Weslaco, TX 78596; telephone 956-969-5628, 956-968-5585, fax 956-969-0641, e-mail [e-mirkov@tamu.edu](mailto:e-mirkov@tamu.edu). Texas A&M University is an equal opportunity employer.

**Postdoctoral Research Associate (BAT-O Ila)  
Doctoral Student (BAT-O Ila/2)  
Institute of Plant Biochemistry  
Weinberg, Germany  
(Received 01/08)**

Candidate will identify and characterize leucine-rich repeat receptor-like kinases (LRR-RLK) implicated in plant disease resistance against various microbial pathogens. This project is part of a 10-year German "Arabidopsis Functional Genomics Network" (AFGN). Positions are available immediately and will be for two years with a renewal option for one year. Candidates should have a strong background in plant molecular biology/genetics and phytopathology. Knowledge on bioinformatics and protein biochemistry will surely be an asset. Interested individuals may submit their curriculum vitae and names of three references to Dr. Thorsten Nürnberger, Institute of Plant Biochemistry, Weinberg 3, D-06120 Halle/Saale, Germany; fax +49-345-55821409, e-mail [TNUERNBE@IPB-HALLE.DE](mailto:TNUERNBE@IPB-HALLE.DE). For more information please refer to <http://www.ipb-halle.de/english/institute/research/nuernberger/introduction.htm>.

**Postdoctoral Research Associate (BAT-O Ila)  
Institute of Plant Biochemistry  
Weinberg, Germany  
(Received 01/08)**

Candidate will identify and characterize Arabidopsis mutants impaired in the recognition of Phytophthora spp.-derived protein elicitors. This project is part of the BMBF-funded project "GABI-NONHOST—A consortium-based functional genomics initiative on plant non-host disease resistance." The position will be available on April 1, 2002, and will be for three years. Candidates should have a strong background in plant molecular biology/genetics, biochemistry, and phytopathology. Interested individuals may submit their curriculum vitae and names of three references to Dr. Thorsten Nürnberger, Institute of Plant Biochemistry, Weinberg 3, D-06120 Halle/Saale, Germany; fax +49-345-55821409, e-mail [TNUERNBE@IPB-HALLE.DE](mailto:TNUERNBE@IPB-HALLE.DE). For more information please refer to <http://www.ipb-halle.de/english/institute/research/nuernberger/introduction.htm>.

**Postdoctoral Research Associate (BAT-O IIa)  
Doctoral Student (BAT-O IIa/2)**

**Institute of Plant Biochemistry**

**Weinberg, Germany**

**(Received 01/08)**

Candidate will identify and characterize *Arabidopsis* mutants impaired in the non-host resistance to the oomycete *Phytophthora infestans*. This project is part of the BMBF-funded project "GABI NONHOST—A consortium-based functional genomics initiative on plant non-host disease resistance." Positions will be available on April 1, 2002, and will be for three years. Candidates should have a strong background in plant molecular biology/genetics and phytopathology. Interested individuals may submit their curriculum vitae and names of three references to Professor Dierk Scheel, Institute of Plant Biochemistry, Weinberg 3, D-06120 Halle/Saale, Germany; fax +49-345-55821409, e-mail DSCHEEL@IPB-HALLE.DE. For more information please refer to <http://www.ipb-halle.de/english/institute/research/scheel/introduction.htm>.

**Postdoctoral Position**

**Rutgers, The State University of New Jersey  
New Brunswick**

**(Received 1/10)**

A postdoctoral position is available in carbon partitioning and source/sink relations in tomato. We are studying the regulation of genes involved in carbohydrate metabolism in tomato leaves and fruit by cytokinins. The project will involve a study of the role of extracellular invertase in phloem unloading and sugar uptake by sink tissue using tomato transformed with the *ipt* gene linked to a promoter that is active in developing fruit and the starch accumulating tissue in the root and stem (Plant Science 162, 239–244; 2002). Candidates should have experience in plant molecular biology, plant tissue culture and transformation, and biochemical analyses including enzyme purification and assays. A Ph.D. in plant biology is required. Please send a letter describing research interests, a curriculum vitae and the names of three references to Dr. Thomas Gianfagna, Plant Biology Department, Rutgers, the State University of New Jersey, 59 Dudley Road, New Brunswick, NJ 08901-8520, or preferably by e-mail to [gianfagna@aesop.rutgers.edu](mailto:gianfagna@aesop.rutgers.edu). Rutgers University is an affirmative action/equal opportunity employer.

**Postdoctoral Position**

**University of California San Diego, La Jolla**

**(Received 01/14)**

A supported postdoctoral position is currently available in the Aroian Laboratory for a unique and exciting study on the potential of controlling plant-parasitic nematodes with *Bacillus thuringiensis* toxins and the interaction of the bacterial toxins with nematode pests. Plant-parasitic nematodes cause \$80 billion of damage per year and account for 10% crop loss worldwide. Our laboratory is the first to study the effects of cloned *Bacillus thuringiensis* toxin genes on nematodes (Science, 293, 860–864; 2001). We are looking for dynamic, talented scientists to study the potential to use these natural toxins to control plant-parasitic nematodes and to study interactions between toxins and the nematodes. Study involves molecular studies to improve toxin genes, transgenic root and plant work, and studies of genomic response of plants to nematode infection. Applicants should have a strong background in molecular biology and preferably experience working with plants. U.C. San Diego is a leader in plant biology research and is situated in a vibrant city that is also host to excellent biology and biotechnology communities. Interested candidates should submit a cover letter, curriculum vitae, and the names of three references to Dr. Raffi V. Aroian, Section of Cell and Developmental Biology, University of California San Diego, La Jolla, CA 92093-0349, fax 858-822-2003, e-mail [raoian@ucsd.edu](mailto:raoian@ucsd.edu) (send attachments in rich text format only).

**Postdoctoral Position**

**State University of New York at Buffalo**

**(Received 01/15)**

A postdoctoral position is available immediately to study mRNA/protein interactions and regulation of Rubisco gene expression in C4 plants. This project will focus on expression of *rbcL* gene expression and characterization of an associated mRNA binding protein (McCormac et al., J. Biol. Chem. 276, 3476–3483; 2001). Familiarity with RNA/protein interactions or transgenic plants preferred but not essential. For consideration, applicants should have publications in peer reviewed international journals. The initial appointments will be for two years, with possible renewal. Please send a letter of application outlining previous research experience and accomplishments, curriculum vitae, and the addresses of three references to Dr. James Berry, Department of Biological Sciences, University at Buffalo, Buffalo, NY 14260; telephone 716-645-3488, fax 716-645-3369, e-mail [camjob@acsu.buffalo.edu](mailto:camjob@acsu.buffalo.edu). Information about Dr. Berry's laboratory, the Department of Biological

Sciences, and the University can be viewed at <http://www.biology.buffalo.edu>. The State University of New York is an equal opportunity employer/recruiter.

**Postdoctoral Fellow**

**CSIRO Plant Industry, Perth, Western Australia  
(Received 01/16)**

We require a motivated researcher to join a well established team working on plant responses to environmental stress with the focus on the transcriptional control of genes important for plant defence /stress responses. The research, which will be primarily carried out in the model plant *Arabidopsis*, will involve forward genetic screens to isolate and characterise mutants involved in plant stress/defence gene expression. The screen, which is on-going in the group, is non-invasive and high-throughput and utilizes promoter elements from a stress inducible glutathione S transferase gene linked to the luciferase reporter. A large number of potential mutants have been isolated. The appointee will have proven research ability in molecular biology and a Ph.D. in molecular biology or a related discipline relevant to the project. This position is for a term of three years and will be based in the laboratory of Dr Karam Singh in CSIRO, Plant Industry, Perth. The laboratory is very well equipped and has access to state-of-the-art genomics/proteomics equipment. CSIRO is the major research organisation in Australia and is internationally recognised for its strengths in plant molecular biology. Further information about CSIRO Plant Industry can be found at [www.pi.csiro.au](http://www.pi.csiro.au). Perth is a beautiful city of 1.4 million on the coast of Western Australia. More information on Perth and the state of Western Australia can be obtained from the Western Australian Tourism Commission home page [www.westernaustralia.net](http://www.westernaustralia.net). Salary is \$49K - \$55K plus superannuation. For further information on the position contact Dr Karam Singh by e mail at [karam.singh@csiro.au](mailto:karam.singh@csiro.au) or on +61 8 9333 6320. An Information Package and Selection Documentation is available via our web site <http://www.csiro.au/careers>, This information can also be obtained by contacting the answering service on +61-8-9333-6224 or e-mail [recruit@floreat.csiro.au](mailto:recruit@floreat.csiro.au). Applicants must obtain and respond to the Selection Criteria and Duty Statement. Your application for the above position should quote Reference No. PG: 01143 and include details of your experience, skills, qualifications and the names of at least two references. Please mark 'Confidential' and forward to The Recruitment Officer, CSIRO Centre for Mediterranean Agricultural Research, PO Box 5 Wembley, WA 6913 or send by email to [recruit@floreat.csiro.au](mailto:recruit@floreat.csiro.au).

**Postdoctoral Position****Donald Danforth Plant Science Center, St. Louis (Received 01/16)**

A postdoctoral position is available to work on the signaling pathway in plant-pathogen interactions using *Arabidopsis* as a model. The project will include protein purification, applying proteomics technology for protein identification, as well as characterization of several T-DNA insertion mutants. Research experience in biochemistry/protein biochemistry and molecular biology is desirable. To apply, please send curriculum vitae to [yxia@danforthcenter.org](mailto:yxia@danforthcenter.org) or Yiji Xia, Danforth Plant Science Center, 975 N. Warson, St. Louis, MO 63132. For more information please refer to <http://www.danforthcenter.org/xia/>.

**Postdoctoral Position****Michigan Technological University Houghton, Michigan (Received 01/17)**

A bioinformatics postdoctoral position is available immediately to participate in a functional genomics program being established at the Plant Biotechnology Research Center of Michigan Technological University (<http://forestry.mtu.edu/iwr/pbrcl/>). Interdisciplinary approaches including DNA microarray and metabolite profiling will be utilized to investigate tree growth and development. Responsibilities include data mining, analysis and integration of gene expression and metabolite profiles. Strong background/training in statistics, bioinformatics or computational biology required. Experience with programming and databases desirable; knowledge about biology/chemistry data is a plus. The Plant Biotechnology Research Center offers state-of-the-art molecular biology, biochemistry, chemistry and tissue culture laboratories, including histology and new microarray facilities. Position will start as soon as possible. Ph.D. required. Send cover letter, curriculum vitae including a publication list, and names of three references to Dr. Chung-Jui Tsai, Assistant Professor, Plant Biotechnology Research Center, School of Forestry and Wood Products, Michigan Technological University, Houghton, MI 4993; fax: 906-487-2915; email: [chtsai@mtu.edu](mailto:chtsai@mtu.edu). Michigan Technological University is an equal opportunity/affirmative action employer.

**Postdoctoral Position****University of Nebraska-Lincoln (Received 01/17)**

An NSF-funded research position is available, starting as soon as possible but by June 2002, to study either (a) the structure-function relationships and regulatory phosphorylation of green

leaf (C4) and algal PEP carboxylase (PEPC), or (b) the (multisite) phosphorylation of legume root nodule sucrose synthase (SuSy [nodulin-100]); the <http://biochem.unl.edu> site can be consulted for related publications and federal grants during 1996–2002. Advanced research experience in molecular cloning, recombinant proteins and site-directed mutagenesis, enzymology and protein chemistry, and/or reversible protein phosphorylation is required. Please send curriculum vitae, reprints, and names, e-mail addresses, and telephone/fax numbers of two references to Dr. Raymond Chollet, University of Nebraska-Lincoln, Department of Biochemistry, Lincoln, NE 68588-0664, USA; e-mail [rchollet1@unl.edu](mailto:rchollet1@unl.edu), telephone 402-472-2936, fax 402-472-7842.

**Postdoctoral Position****University of Florida, Gainesville (Received 01/25)**

A postdoctoral position is available for an NIH supported project to study the mechanism of protein transport by the thylakoid delta pH-dependent (a.k.a. Tat) system. This novel translocation system transports folded proteins of varied size employing only the trans-thylakoid pH gradient. Three known components of the translocation machinery are present in two different subcomplexes (Cline and Mori, *J. Cell Biol.* 154, 719–29, 2001). Precursor binding and the pH gradient induce association of the two subcomplexes, apparently to form the active translocase of undetermined structure. Experience with protein biochemistry, recombinant DNA technology, and organelles/membranes methodology is desirable but not essential for this position. Please send resume and names of three references (with contact information) to Kenneth Cline, Plant Molecular and Cellular Biology, Box 110690, University of Florida, Gainesville, FL 32611-0690.

**Postdoctoral Research Position****Brown University, Providence, Rhode Island (Received 01/25)**

A postdoctoral position is available for up to three years to study the role of the *Arabidopsis* RCN1 protein in regulating the activity of protein phosphatase 2A (PP2A). RCN1 is a regulatory A subunit of PP2A, a highly conserved heteromeric serine/threonine phosphatase. Loss of RCN1 function causes reduced PP2A activity. Plants carrying the *rcn1* mutation exhibit defects in gravitropism and auxin transport, implicating PP2A activity in the regulation of auxin transport. For additional information see Muday and DeLong, *TIPS* 6, 535–542; 2001; Rashotte et al. (2001) *Plant Cell*. 13, 1683–1697, 2001; Deruere et al. (1999) *Plant Journal* 20, 389–399, 1999; Garbers et al. (1996) *EMBO J.* 15, 2115–

2124. Candidates must have a strong background in molecular genetics and/or biochemistry. To apply, send your current curriculum vitae, a letter outlining your research interests and accomplishments, and arrange to have three letters of reference sent directly to Prof. Alison DeLong; MCB Department, Brown University; Providence RI 02912; telephone 401-863-3888, e-mail [Alison\\_DeLong@Brown.edu](mailto:Alison_DeLong@Brown.edu), web site <http://biomed.brown.edu/Faculty/D/delonga.html>.

**Doctoral Positions****Institute of Plant Biochemistry (IPB)****Halle, Germany****(Received 1/28)**

Doctoral positions (BAT-O IIa 1/2) are now available within the Department of Natural Product Biotechnology at the Institute of Plant Biochemistry (IPB) Halle. The Institute ([www.ipb-halle.de](http://www.ipb-halle.de)) provides an excellent research environment with state-of-the-art equipment and facilities and ready access to specialized techniques in biochemistry, chemistry and genomics. Our research projects involve the analysis of the biosynthesis of plant natural products at the molecular genetic level. The experimental species are opium poppy *Papaver somniferum* and California poppy *Eschscholzia californica*. The applicant will use the most modern techniques in biochemistry and molecular biology to solve problems related to the biosynthesis and regulation of alkaloids produced in these plants. Requirements: master's degree, diploma or equivalent in biochemistry, pharmacy or biology. Applications from women are especially welcomed. Given equal qualification, handicapped applicants will be preferentially hired. For more information contact Professor Toni M. Kutchan, Institute of Plant Biochemistry, Weinberg 3, 06120 Halle (Saale), Germany; telephone +49-345-5582-1200, fax +49-345-5582-1209, e-mail [kutch@ipb-halle.de](mailto:kutch@ipb-halle.de). Please submit your application, including curriculum vitae to Institute of Plant Biochemistry, Personnel Department, Attn.: Ms. K. Balkenhohl (4/2002), Weinberg 3, 06120 Halle (Saale), Germany.

**Postdoctoral Positions****Justus-Liebig-University of Giessen, Germany (Received 01/29)**

Postdoctoral positions are available immediately for at least three years at the University of Giessen, Germany, to work as a group leader (a) in a genomic project on cereal resistance to *Fusarium* diseases and (b) in cereal transformation project focusing on disease resistance genes. A Ph.D. in molecular biology, genetics, plant pathology, or related field with experience in cDNA library, EST, DNA microarray, plant

transformation preferred. BatIIa ~53,000 EUR per year. Send curriculum vitae and the names and contact information of three references to Professor K. H. Kogel, University of Gießen, Interdisciplinary Research Centre of Environmental Sciences, D-35392 Gießen, Heinrich-Buff-Ring 26, Germany; e-mail [www-phyto@agr.uni-giessen.de](mailto:www-phyto@agr.uni-giessen.de), web site <http://www.uni-giessen.de/ipaz>.

#### Postdoctoral Position

##### CSIRO Plant Industry, Canberra, Australia (Received 01/31)

A postdoctoral position is available to develop a genetic engineering system for cowpeas using *Agrobacterium*-mediated gene transfer. The goal of this work, (funded by the Rockefeller Foundation), is to deliver genes encoding proteins that will protect cowpeas from pest insects in the field and during storage. The project involves selection of cowpea lines that regenerate efficiently in tissue culture especially in the presence of *Agrobacterium*, the construction and verification of chimeric genes designed for organ-specific expression and the molecular analysis of transgenic plants and their progeny. The candidate is expected to have experience in plant tissue culture using *Agrobacterium* as a gene vector and to have experience in gene construction, DNA, RNA and protein analyses. Familiarity with standard biochemical and molecular biology techniques is also essential. The selection criteria and duty statement can be obtained from <http://www.csiro.au/careers> and go to PG: 02014 or send a letter of interest seeking a duty statement and selection criteria to Dr T. J. Higgins, CSIRO Plant Industry, GPO Box 1600, Canberra, ACT 2601, Australia; e-mail [TJ.Higgins@csiro.au](mailto:TJ.Higgins@csiro.au).

#### Postdoctoral Position

##### CNRS/INRA, Montpellier, France (Received 02/04)

A postdoctoral position is available immediately to study post-translational regulation of plant aquaporins. Current research of the group (Plant J., 18, 577, 1999; Plant Physiol., 125, 135, 2001; Plant J., 2002, in press) focus on the function and regulation of aquaporins in the root of *Arabidopsis*. A strong background in membrane protein biochemistry and/or molecular biology is preferred. Inquiries or applications including a curriculum vitae, description of previous research experience and contact information for three referees should be sent by e-mail to Christophe Maurel, BPMP, INRA/CNRS, 2 place Viala, 34060 Montpellier, France; e-mail [maurel@ensam.inra.fr](mailto:maurel@ensam.inra.fr).

#### Postdoctoral Position

##### Institute for Plant Biotechnology University of Stellenbosch, South Africa (Received 02/04)

A postdoctoral position is available to study the regulation of carbohydrate metabolism in sugarcane. The aim is to investigate carbon partitioning and metabolic flux in genetically modified sugarcane. The incumbent will do labeling work, extract and analyze metabolites and determine expression on both protein and transcript level of the key enzymes. Candidates must have a strong background and demonstrated ability in molecular biology and biochemistry techniques. Experience in studying the regulation of plant metabolism is a requirement. Interested applicants should send curriculum vitae and arrange to have three letters of reference sent to Dr. F. C. Botha, Director, Institute for Plant Biotechnology, Private Bag X1, Matieland, 7602, South Africa; telephone +27-31-8083834, fax +27-31-808-3835, e-mail [fc@maties.sun.ac.za](mailto:fc@maties.sun.ac.za).

#### Postdoctoral Position

##### Institute for Plant Biotechnology University of Stellenbosch, South Africa (Received 02/04)

A postdoctoral position is available to participate in a project that is focused on the isolation and characterization of specific promoter elements from sugarcane and grape berries. In addition to having a solid background in biochemistry and molecular biology, working experience in transformation work and gene isolation is desired. Interested applicants should send curriculum vitae and arrange to have three letters of reference sent to Dr. F. C. Botha, Director, Institute for Plant Biotechnology, Private Bag X1, Matieland, 7602, South Africa; telephone +27-31-8083834, fax +27-31-8083835, e-mail [fc@maties.sun.ac.za](mailto:fc@maties.sun.ac.za).

#### Postdoctoral Position

##### University J. Fourier/ CNRS/CEA Grenoble, France (Received 02/05)

This position is offered to a non European Union citizen under 35 years old. Candidate will identify and characterize proteins exposed on the cytosol side of the chloroplast envelope. This project will focus on interactions of plastids with cytoskeleton. Candidate should have a strong background in biochemistry. Training and experience in molecular biology and plant transformation technology are desirable. The position will be available in Autumn 2002. Applicants should send curriculum vitae and contact information for three references to Dr.

Maryse Block, Department of Molecular and Structural Biology/PCV, CEA-Grenoble, 17 rue des martyrs, 38054 Grenoble, Cedex 9, France; e-mail [mblock@cea.fr](mailto:mblock@cea.fr). For background work from our group, see Awai et al., PNAS, 98, 10960–10965, 2001; and Ferro et al., Electrophoresis, 21, 3517–3526, 2000.

#### Postdoctoral Position

##### Ohio University, Athens, Ohio (Received 02/11)

A postdoctoral position is available immediately to study the molecular interactions and functions of LeAGP-1, a modular plasma membrane arabinogalactan-protein as part of a four-year NSF funded project (see Plant J. 18, 43–55, 1999; Plant J. 19, 321–331, 1999; Planta 210, 865–874; 2000). Candidates should have a Ph.D. in biology or chemistry and research experience with one or more of the following: glycoprotein purification and characterization, production and characterization of transgenic plants, electron microscopy, ligand binding assays. A salary of \$28,000 plus benefits is available for this position, which is renewable. Applicants should send (preferably via e-mail) a cover letter detailing experience, curriculum vitae, reprints, and three letters of reference to Dr. Allan Showalter, Ohio University, Department of Environmental and Plant Biology, Athens, OH 45701; fax 740-593-1130, e-mail [showalte@ohio.edu](mailto:showalte@ohio.edu). Ohio University is an equal opportunity/affirmative action employer and encourages applications from under-represented groups, including minorities, women, and people with disabilities.

#### Postdoctoral Positions

##### Delaware Biotechnology Institute (DBI), Newark (Received 02/13)

Openings are available in three projects: (1) Control of mRNA stability in *Arabidopsis* (Johnson et al., PNAS USA 97, 13991–13996, 2000; Perez-Amador et al., Plant Cell 13, 1–17, 2001); (2) Function and regulation of yeast and *Arabidopsis* ribonucleases (MacIntosh et al., PNAS USA 98, 1018–1023, 2001; LeBrasseur et al., Plant J 29, 1–12, 2002); and (3) Functional genomics of *Arabidopsis* non-coding RNAs (MacIntosh et al., Plant Physiol. 127, 765–776, 2001). See <http://www.bch.msu.edu/pamgreen/green.htm> for more information about our lab, which recently moved to DBI and the University of Delaware, and additional lab publications. Highly motivated candidates with demonstrated accomplishments in genetics, genomics, cell biology or biochemistry, and a molecular background, are encouraged to apply. Positions are available immediately, but starting dates are flexible. DBI ([www.dbi.udel.edu](http://www.dbi.udel.edu)) is a newly built

multidisciplinary institute of the University of Delaware with state-of-the-art equipment and facilities for genomics, bioimaging and biocomputing. The institute enjoys interactions with faculty in many university departments, as well as with scientists at nearby institutes and biotechnology companies. Centrally located in the college town of Newark, Delaware, one hour from Baltimore and Philadelphia and two hours from New York City and Washington, DC, the area offers a modest cost of living and proximity to the Chesapeake Bay and Atlantic beaches. Candidates should send a curriculum vitae and the names of three references to Dr. Pam Green, Delaware Biotechnology Institute, 15 Innovation Way, Newark, DE 19711; e-mail era@dbi.udel.edu. The University of Delaware is an equal opportunity university.

### Three Postdoctoral Positions

#### University of Erlangen, FAU-Erlangen/Germany (Received 02/13)

Candidates are expected to participate in our research program in plant molecular physiology or cell biology (topics: membrane transport, plasmodesmata) and in the teaching of molecular plant physiology and cell biology. They are also expected to interact with other groups at the FAU and to raise funding for their own independent research projects. Lab and greenhouse space, microscopy, computer facilities, and shared equipment funds will be offered to successful candidates. The languages spoken in our group are English and German. The positions are limited to six years, but extensions may be possible. The salary is approximately 40,000 Euro per year. For further information please contact Norbert Sauer at nsauer@biologie.uni-erlangen.de or by phone at +49-9131-85-28212 or see <http://www.biologie.uni-erlangen.de/botanik2/index.shtml>. The university is an equal opportunity employer.

### Postdoctoral Position

#### University of Southampton, United Kingdom (Received 02/13)

A postdoctoral position is available for up to 18 months in the lab of Lorraine Williams/John Hall to study the Nramp family, a potentially important group of membrane transporters for divalent cations, in Arabidopsis. The project will involve functional characterization of the transport properties of certain Nramps, the tissue and cellular expression and localization of the transporters, and analysis of insertional mutants, using a variety of molecular techniques. Background reference: Williams et al., *Biochem Biophys Acta* 1465, 104, 2000. To apply, please send your curriculum vitae (preferably by e-mail) to Mrs. Pat Hughes, School of Biological

Sciences, Biomedical Sciences Building, University of Southampton, Bassett Crescent East, Southampton, SO16 7PX, e-mail pah1@soton.ac.uk.

### Postdoctoral Position

#### INRA, Montpellier, France (Received 02/13)

A postdoctoral position is available to participate in the systematic and multidisciplinary study of leaf architecture, growth, and shape in Arabidopsis. The applicant must have a European nationality (non-French) and has to be younger than 35. He or she will be enrolled in a European Training Network Program entitled Development and Growth of Leaves: Identification of Genetic Networks. The role of the postdoc in the network will be to (1) analyze leaf development in Arabidopsis thaliana (wild type and mutants), (2) identify leaf growth defects in mutants, and (3) analyze the expression of genes involved in the different phases of leaf development in wild-type and contrasted mutants (microarray analyses). Candidates should have experience in plant development. A Ph.D. in plant ecophysiology or plant physiology is recommended. Strong working knowledge of computers will be appreciated. English or French language necessary. Current research in the group focuses on leaf development and its response to environmental conditions (Plant Physiology, 116, 991–1001, 1998; Plant Cell and Environment, 21, 695–703, 1998; Plant Molecular Biology, 43, 555–567, 2000; Plant Physiology 124, 1393–1412, 2000). Interested students should contact Mme. Christine Granier, INRA-LEPSE, 2 Place Viala, 34060 Montpellier FRANCE; e-mail granier@ensam.inra.fr with a full curriculum vitae and cover letter, including the names and addresses of two academic referees, place of work: INRA, Montpellier (France) and short stays in other labs involved in the network.

### Postdoctoral Positions

#### Plant Gene Expression Center, Albany, California (Received 02/14)

Two postdoctoral positions are available for developing site-specific recombination for crop transformation and/or for the molecular analysis of oxidative stress resistance genes in plants. Postdoctoral candidates should be familiar with modern plant molecular techniques, including the generation and analysis of transgenic plants. Prior experience in plant transgene expression, prokaryotic or yeast genetics is also desirable. Interested applicants should send a curriculum vitae and the names of references to David Ow, Plant Gene Expression Center, USDA/UC Berkeley, Albany, CA 94710; e-mail ow@pgec.ars.usda.gov.

### Postdoctoral Position

#### Iowa State University, Ames (Received 02/15)

A postdoctoral position is available to study gene expression during shoot development in Arabidopsis. An elegant developmental system has been established to characterize gene expression during the synchronous formation of shoots from root explants. The applicant will seek to identify genes that regulate shoot development using DNA microarray techniques in mutant and recombinant inbred lines. Candidates with Ph.D.s should have a strong background in molecular genetics. Experience with cloning, mutagenesis and various forms of gene expression is preferred. The position is based in the Plant Sciences Institute, an internationally recognized research institute on the Iowa State University campus (see <http://www.plantsciences.iastate.edu>). Please send resume and three references (with contact information) to Stephen H. Howell, Plant Sciences Institute, 112 O & L Building, Iowa State University, Ames, IA 50011; email shh@iastate.edu.

### Postdoctoral Position

#### Donald Danforth Plant Science Center St. Louis, Missouri (Received 02/15)

A postdoctoral position is available at the Donald Danforth Plant Science Center in the laboratory of Dr. Mark Running. The successful applicant will use a variety of modern techniques to understand signaling events involved in meristem function and other plant developmental processes. Helpful but not essential areas of experience include molecular biology, biochemistry, genomics/proteomics, and general Arabidopsis work. The Danforth Center is a not-for-profit organization housed in a new building with excellent facilities for modern plant research. Salaries offered will be commensurate with degree and years of experience. Includes comprehensive health/dental insurance, life insurance and retirement plan. Please send a cover letter with a short summary of research experience, curriculum vitae, and names of three references to Ms. Billie Broecker, Director of Human Resources, RE: Mark Running Laboratory, Donald Danforth Plant Science Center, 975 North Warson Road, St. Louis, Missouri 63132; e-mail bcbroecker@danforthcenter.org. The Donald Danforth Plant Science Center is an equal opportunity/affirmative action employer and encourages applications from underrepresented groups, including minorities, women, and people with disabilities.

**Postdoctoral Position****University of Kentucky, Lexington****(Received 02/18)**

A postdoctoral position is available to characterize genes involved in alkaloid metabolism in tobacco. Using a variety of techniques, the successful applicant will participate in the isolation and expression of several candidate genes with the ultimate goal of reducing the carcinogen content of tobacco. The candidate should have a strong background in molecular biology with experience in DNA, RNA and protein analysis. Salary is \$35K. Send application, curriculum vitae, and contact information of three references to Dr. Balazs Siminszky, University of Kentucky, Department of Agronomy, Ag. Sci. North N-122, Lexington, KY 40546-0091, fax 859-257-7874, e-mail balazs@uky.edu.

**Postdoctoral Position****Michigan State University, East Lansing****(Received 02/18)**

A postdoctoral position is available to work on plant cell wall biosynthesis in the DOE-Plant Research Lab at Michigan State University. The overall goal is to identify genes and enzymes that synthesize, regulate, and process the unique hemicelluloses of cereals. The research will involve one or more of the following projects, depending in part on the interests of the successful candidate: (1) proteomics of rice and maize Golgi proteins to identify candidate proteins and genes, (2) biochemical characterization of glycosyl transferases and glycan synthases, (3) analysis of natural variation in wall hemicelluloses in maize, rice, and barley using recombinant inbred lines and comparative genomic mapping, and (4) functional analysis of candidate hemicellulose biosynthetic genes using RNAi and Agrobacterium-mediated transformation of rice (see Hazen et al., *Plant Physiol.* 128, 336; 2002). This is a unique opportunity to do pioneering work in the fundamental but poorly understood process of cell wall biosynthesis. Depending on the project, the work will require experience in genome mapping, molecular biology, membrane protein biochemistry, and proteomics. This research is part of an NSF genomics grant that includes an active multi-investigator cell wall group within the PRL. Facilities include state-of-the-art mass spectrometric equipment for proteomics. The position is available June 2002, and is initially for one-year with the possibility of renewal. Contact Jonathan Walton, DOE-PRL, Michigan State University, E. Lansing MI 48824; telephone 517-353-4885, e-mail walton@msu.edu. MSU is an affirmative-action, equal-opportunity employer.

**Postdoctoral Position****University of Munich, Munich, Germany****(Received 02/19)**

A position is available immediately for a postdoctoral fellow to study various aspects of proteintranslocation into chloroplasts. For review see *Biochim. Biophys. Acta*, 1541, 1–134; 2001 and <http://www.chloroplasts.de>. The full time position is renewable up to five years. For further information and application contact Prof. Jürgen Soll, Plant Biochemistry, Menzinger Str. 67, D 80638 Munich, Germany; fax +49-89-17861-185, e-mail soll@uni-muenchen.de.

**Postdoctoral Position****CNRS-University of Strasbourg, France****(Received 02/19)**

A two-year postdoctoral position is available from May 2002, for a candidate with a strong background in molecular biology and transgenic plants. The project will focus on the function of ubiquitin protein-ligases in Arabidopsis. We have isolated a number of mutants in this class of enzymes and the successful candidate will work on two of them. The project involves developing constructs, transformation of Arabidopsis, analysis of transgenics and two-hybrid screening in yeast. Seven persons constitute the team and the Institute is well equipped and thus provides all the facilities for the development of the project. Current research of the group (*Plant Cell*, 10, 2063–2075, 1998; *Plant J.*, 24, 763–773; 2000; *Plant J.*, 28, 569–581, 2001). Applicants should submit a letter outlining research experience and interests, a curriculum vitae and names and addresses (including e-mail addresses) of two referees to Genschik P., Department of Cellular Biology, Institut de Biologie Moléculaire des Plantes du CNRS (IBMP), 12 rue de général Zimmer, 67084 Strasbourg Cédex, France; telephone +33-88-41-72-78, fax +33-3-88-61-44-42, e-mail Pascal.Genschik@ibmp-ulp.u-strasbg.fr.

**Postdoctoral Position****The Samuel Roberts Noble Foundation, Inc.****(Received 02/21)**

A postdoctoral position is available immediately to continue studies on phosphate acquisition by plant roots. The successful candidate will join a multi-disciplinary team utilizing molecular genetic approaches to engineer forage crops for improved phosphate acquisition. Applicants must have a Ph.D. in plant molecular biology, genetics or biochemistry and demonstrated expertise in molecular biology. Experience in plant physiology or plant tissue culture desired. Annual salary range: \$31,090–46,630. SRNF is a world leader in basic plant biology research. Please visit [www.noble.org](http://www.noble.org), for online application forms and

job details. For project details, contact Dr. Zengyu Wang at [zywang@noble.org](mailto:zywang@noble.org) or Dr. Maria Harrison at [mjharrison@noble.org](mailto:mjharrison@noble.org). Send a cover letter, detailed curriculum vitae and names of three references to The Samuel Roberts Noble Foundation, Inc., Human Resources Department, Position Number: FB-S095-13, PO Box 2180, Ardmore, OK 73402.

**Postdoctoral Positions****Hawaii Agriculture Research Center, Aiea****(Received 02/25)**

The Hawaii Agriculture Research Center is seeking a full-time postdoc research associate to investigate viral vectors for expression of heterologous protein in plants. This is a temporary, exempt position, available immediately. Selected candidate will subclone gene/promoter, construct vectors, carry out inoculation of plants, and evaluate virus symptom, perform molecular analyses of infected plants and evaluate expression of transgene. Ph.D. with a strong background in molecular biology and biochemistry. Experience with molecular biology techniques including RT-PCR, Southern blot, Northern blot, and in-situ hybridization, with protein expression and analysis including Western blot, and immunolocalization of tissue blot is required. The successful candidate must be able to design and conduct independent experiments with a strong commitment toward goals. The starting salary is based on previous research experience. Appointment is for one year, renewable contingent on satisfactory performance and availability of funding. Applicants should submit a letter of interest, a curriculum vita, and names and addresses of three references to Dr. Judy Zhu through e-mail at [jzhu@harc-hspa.com](mailto:jzhu@harc-hspa.com).

**RESEARCH/TECHNICAL POSITIONS****(Non-Ph.D.)****Technician Position****Donald Danforth Plant Science Center, St. Louis****(Received 01/16)**

A research assistant position is available to work in a plant molecular biology laboratory at Danforth Plant Science Center in St. Louis, Missouri. The successful candidates should have a BS or MS degree in biological sciences. Research experience in biochemistry/protein biochemistry and/or molecular biology is preferred. To apply, please send curriculum vitae to [yxia@danforthcenter.org](mailto:yxia@danforthcenter.org) or Yiji Xia, Danforth Plant Science Center, 975 N. Warson, St. Louis, MO 63132. For more information please refer to <http://www.danforthcenter.org/xia/>.

**Research Assistant****The Samuel Roberts Noble Foundation  
Ardmore, Oklahoma  
(Received 01/23)**

The Forage Biotechnology Group of the Noble Foundation, Inc. is seeking a research assistant. Duties include laboratory, field and greenhouse tasks associated with the forage legume breeding program. Qualifications include a B.S. in agronomy or related field. Experience with basic molecular biology techniques desirable. Salary commensurate with qualifications and experience. Health, retirement benefits provided. Application and job description available online ([www.noble.org](http://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 #FBG2RA MS3, The Samuel Roberts Noble Foundation, PO Box 2180, Ardmore, OK 73402.

**Research Associate****North Carolina State University, Raleigh  
(Received 01/25)**

A position is available for a motivated molecular biologist to investigate the regulation, expression, and role of plant endoglucanase genes during plant-microbe interactions. The experimental systems include endoglucanases that are upregulated in roots of *Arabidopsis*, tobacco, and tomato in response to infection by plant-parasitic nematodes. Analysis of available plant endoglucanase promoters and identification of new plant endoglucanase promoters will utilize promoter/reporter gene constructs, promoter deletion series, and *Agrobacterium*-mediated transformation of plant tissues. Anti-sense constructs of plant endoglucanase genes and RNA interference technologies will be used to define the role of plant endoglucanases in compatible plant-nematode interactions. Development and use of plant expression cassettes for functional analyses of candidate genes derived from genomic analyses of plant-nematode interactions will also be conducted in collaboration with existing lab personnel. A Ph.D. in the biological sciences and experience in plant molecular biology are highly desirable, however, other candidates with demonstrated research experience in molecular biology will be considered. The position is for two years, starts at \$30,000/year plus health insurance benefits, and is available as of March 1, 2002. For further information, please contact Dr. Eric L. Davis, Department of Plant Pathology, Campus Box 7616, North Carolina State University, Raleigh, NC 27695; telephone 919-515-6692, fax 919-513-1279, e-mail [eric\\_davis@ncsu.edu](mailto:eric_davis@ncsu.edu). North Carolina State University is an EO/AA employer.

**Technical Position****USDA/ARS, Western Regional Research Center  
Albany, California  
(Received 02/05)**

The U.S. Department of Agriculture (USDA) ARS, has a temporary full-time (two to four years) position available for a biological science laboratory technician, GS-4/5/6. Experience is desired in data gathering and management and in processing, extraction and analysis of plant materials. Applicants must have six months of general and specialized experience, or two years above high school for the GS-4 level. Applicants at the GS-5/6 levels must have a B.S. degree or one year of specialized experience equivalent to the next lower grade, salary is commensurate with experience, \$24,191 to \$39,222 per annum plus benefits. Vacancy announcement and application information can be obtained by ARS DIAL-A-VACANCY at 301-504-1482, or the ARS Web site at [www.ars.usda.gov](http://www.ars.usda.gov). Applications in response to this ad must be postmarked by February 25, 2002. USDA is an equal opportunity employer. Only citizens of the U.S. or Defense Treaty Nations are eligible for hire.

**Manager, Conservation Programs  
Center for Plant Conservation  
(Received 02/06)**

Candidate manages the Center for Plant Conservation's national rare plant conservation program and technical assistance program in St. Louis. Develops workshops and symposia, manages the database, and coordinates implementation of the priority regions program. Coordinates the process of developing and disseminating technical policies, standards, and protocols for CPC's network of 33 institutions. Develops/administers an internal review process for institutions to examine their programs. Assists institutions in evaluating the quality and genetic adequacy of their endangered plant collection. Writes and manages grants, supervises support staff, and participates in conservation program planning and advocacy. Requires a master's degree with extensive experience; a Ph.D. in botany/ecology with experience in plant conservation implementation strongly preferred. Three years' experience in implementing plant conservation activities or plant conservation management and/or research required. Experience in working with federal and state agencies and NGOs desired. Excellent oral and written communication skills, strong computer and database management skills, and willingness to travel essential. Benefits include medical, dental and life insurance, retirement program, and a 403(b) with generous match. Apply to the Center for Plant Conservation, c/o Missouri Botanical Garden, Human Resource Management, Attn: MCP, 2345 Tower Grove Ave., St. Louis, MO

63110 or to [jobs@mobot.org](mailto:jobs@mobot.org). Visit [www.mobot.org/CPC/](http://www.mobot.org/CPC/). Position open until filled. EOE.

**Assistant Scientist****GenApps Inc., Lexington, Kentucky  
(Received 02/07)**

GenApps Inc., an agricultural research and biotechnology company located near Lexington, Kentucky, has an assistant scientist position available immediately. Qualified candidates should possess an M. S. or a B. S. degree in biology/molecular biology or related field, and three to five years' laboratory experience emphasizing molecular biology is required. A background in application of recombinant nucleic acid techniques in plants is preferred. Knowledge of and skills in gene expression analysis and/or enzyme activity assays are desired. Qualified applicant must be able to provide technical expertise and intellectual support to meet technically challenging program objectives and to assist in developing new research projects. Candidate must possess accurate oral and written communication skills, computer skills, and the ability to independently perform assigned duties in varied environments including laboratory and greenhouse. We offer competitive salary, an excellent benefits package, and the opportunity for personal and professional growth in an outstanding work environment. Must have proof of eligibility for working visa. To become part of a dynamic organization, please forward or fax your resume, salary history/ requirements, and references to GenApps Inc., ATTN: Human Resources Coordinator, PO Box 237, Winchester, KY 40391; fax 859-744-4195.

**Research Assistant****North Carolina State University, Raleigh  
(Received 02/26)**

Basic qualifications: M.S. in crop science or closely related field. Significant experience in forage management. Ability to interact with professionals from many disciplines as well as extension agents and industry professionals. Demonstrated writing and oral communication skills are required. Familiarity with common computer software (e.g., word processing, desktop publishing, slide presentations), statistical analysis, the development of educational materials (printed and electronic), and report preparation also required. Candidate must be able to speak, write, and make public presentations in a professional manner and ensure programs are open to all citizens regardless of race, color, national origin, gender, and economic circumstance. Major responsibilities: This position will be responsible to forage

management faculty in the College of Agriculture and Life Sciences. Provide support to project leader on projects related to crop utilization of nutrients. Supervise field sites for crop management operations, including planting, fertilizing, harvesting, disease and insect control, and farmer communications. Manage data collection and manipulation. Analyze and interpret statistical data. Prepare periodic project updates, reports, audiovisual materials, and research manuscripts. Responsibilities will include working with campus faculty and extension agents to develop forage management systems that are agronomically responsible, as well as economically profitable or environmentally beneficial. Coordinate production of training materials (printed and electronic) and conduct training programs for extension agents, public agency personnel, and industry representatives. Salary is commensurate with training and experience. Date position open: April 1, 2002. Deadline for receiving applications: March 25, 2002. Send resume, copy of transcripts, and three letters of reference to Dr. H. Thomas Stalker, Department Head, Department of Crop Science, North Carolina State University, Box 7620, Raleigh, NC 27695-7620. Documentation of identity and employability of the applicant will be required before the hiring process can be finalized. North Carolina State University is an equal opportunity employer and operates under affirmative action policy. The university urges all qualified applicants to apply. Disabled applicants contact the above individual.

#### ASSISTANTSHIPS, FELLOWSHIPS, INTERNSHIPS

##### Graduate Assistantship

**Purdue University, West Lafayette, Indiana (Received 01/10)**

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 (Received 01/25)

Funding for M.S. or Ph.D. students are 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 (Received 02/05)

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/altered 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 individu-

als should contact John Jelesko at [jelesko@vt.edu](mailto:jelesko@vt.edu) or 540-231-3728.

##### Postdoctoral Fellowship in Plant Molecular Genetics

**INRA, Avignon, France**

**(Received 02/22)**

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](mailto:mcausse@avignon.inra.fr).

##### Graduate Research Assistantships Louisiana State University, Baton Rouge (Repeat)

Research assistantship positions to support graduate study leading to a Ph.D. degree in plant molecular biology will be available starting the fall semester of 2002 in the Department of Plant Pathology and Crop Physiology at Louisiana State University and LSU Agricultural Center. Particular areas of training emphasis include studies of gene regulation in transgenic rice, protein structure/stability relationships and transcriptional regulation of bean and rice seed storage proteins. Please refer to our recent publications; Dyer et al., *Protein Chem.* 14, 665–678, 1995; Kawagoe et al., *Plant J.* 5, 885–890, 1994; Zheng et al., *Plant Physiol.* 109, 777–786, 1995; Sen et al., *Transgenic Research* 2, 21–28, 1993. Research assistantships are available from the Department of Plant Pathology and Crop Physiology. Other fellowships are available from the LSU Board of Regents Graduate Fellowships in Agricultural and the LSU Alumni Federation Graduate Fellowships. Stipend ranges from

\$13,000 to 18,000 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 submit a letter of interest, résumé, undergraduate and graduate transcripts, and GRE/TOEFL scores and 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; telephone 225-578-1380, fax 225-578-1415, e-mail nmurai@lsu.edu.

### Fellowships

#### Texas A&M University, College Station (Repeat)

Texas A&M University is pleased to announce newly established fellowships in Plant Genomics, making possible the award of multiyear funding opportunities for outstanding candidates for graduate study. Plant Genomics is a graduate training program administered by faculty members from seven departments emphasizing formal academic education and research training on contemporary topics ranging from gene expression to quantitative biology using genomic tools. Entering students are awarded program fellowships and rotate among laboratories sharing their area of interest during the first year to gain familiarity with faculty and ongoing research programs. Funding for subsequent years comprises a combination of fellowships and research and teaching assistantships to provide a comprehensive educational experience. Degree programs are developed jointly between students and their faculty advisory committee, affording flexibility in academic preparation for professional careers. Enrichment activities include outstanding seminar series in genetics, biology, and biochemistry and professional enhancement scholarships to attend scientific meetings. The financial support package includes a year-round monthly stipend, waiver of out-of-state tuition, and comprehensive health care coverage for students and their dependents. Current stipends are \$20,000 for outstanding Ph.D. student candidates. The deadline for application is March 1, 2002. For information about the training program, please contact Dr. Z. Jeffrey Chen c/o Judy Pruitt, Plant Genomics Graduate Training Program, MS 2474, Texas A&M University, College Station, TX 77843-2474; e-mail zjchen@tamu.edu or jpruitt@taexgw.tamu.edu. A list of faculty participants and their research interests is shown below. Jeffrey Chen, Plant functional genomics, epigenetic regulation of

gene expression; Timothy Hall, Gene transfer and expression in higher plants, rice biotechnology; Carol Loopstra, Tree genomics, gene expression and function of wood development; Thomas McKnight, Protein secretion in plants, plant genome organization and evolution; John Mullet, Functional genomics of plant stress and development; William Park, Gene expression in storage tissues, rice genomics; Alan Pepper, Comparative genomics of plant development; Dorothy Shippen, Telomerase function and plant genome integrity; David Stelly, Molecular cytogenetics, comparative genomics in plants; Terry Thomas, Functional genomics of plant development and environmental controls; Claire Williams, Pine genome evolution, quantitative genetics; Hongbin Zhang, BAC construction, genome assembly, and gene discovery.

### Fellowships

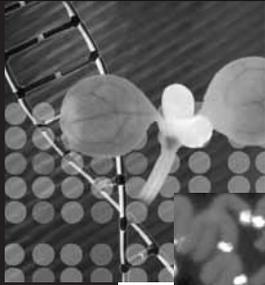
#### Texas A&M University, College Station (Repeat)

Texas A&M University is pleased to announce newly established fellowships in molecular and environmental plant sciences, making possible the award of multi-year funding opportunities for outstanding candidates for graduate study. MEPS is an intercollegiate program administered by a 50-member faculty from nine departments emphasizing formal academic education and research training on contemporary topics ranging from gene function and regulation to ecology. Entering students are awarded program fellowships and rotate among laboratories sharing their area of interest during the first year to gain familiarity with faculty and ongoing research programs. Funding for subsequent years comprises a combination of fellowships and research and teaching assistantships to provide a comprehensive educational experience. Degree programs are developed jointly between students and their faculty advisory committee, affording flexibility in academic preparation for professional careers. Enrichment activities include an outstanding seminar program, professional enhancement scholarships to attend scientific meetings, and a graduate student club. The financial support package includes a year-round monthly stipend, waiver of out-of-state tuition, and comprehensive health care coverage. Current stipends are \$15,000 for M.S. and \$16,500 for Ph.D. students, with opportunities for additional funding and complete tuition offset for truly outstanding candidates. For information about the MEPS graduate program, visit our web site at <http://meps.tamu.edu/> or contact Chair, MEPS Program, Department of Soil & Crop Sciences, Texas A&M University, College Station, TX 77843-2474. AA/EOE.

### Graduate Student Openings

#### McGill University, Montreal, Canada (Repeat)

Graduate student openings are available to investigate genome evolution in natural populations and in model systems (*Arabidopsis thaliana* and rice). Ongoing projects include the role of transposable elements in genome evolution and mutation, population level studies of genomic diversity, and rice comparative genomics. The Biology Department at McGill University (Montreal, Canada) is especially well equipped for studies in plant biology and molecular genetics. The department has a state-of-the-art plant growth facility (the McGill Phytotron) and is the recipient of recent Canadian Foundation for Innovation awards for laboratory facilities in plant genomics. More information is available on our web sites at <http://www.mcgill.ca/biology/faculty/schoen> and <http://www.tebureau.mcgill.ca/>. Interested students should contact Dr. Daniel J. Schoen (dan.schoen@mcgill.ca) or Dr. Thomas E. Bureau (thomas\_bureau@maclan.mcgill.ca), Department of Biology, McGill University, 1205 Avenue Dr., Penfield, Montreal, PQ H3A 1B1 Canada.



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

# Plant Genomics: Emerging Tools

**A**s 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.

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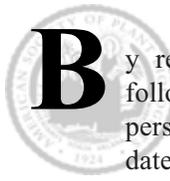
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For your convenience, keep this listing of extension numbers and e-mail addresses handy when you contact ASPB headquarters so that you can reach the person best able to assist you.

- Our office telephone number is 301-251-0560

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