THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS

Volume 25, Number 1 January/February 1998

ASPP NEWS

PRESIDENT'S LETTER

What's Next?

Change has become the norm within ASPP. Last month I discussed changes in the format of our annual meeting. Several times during the past year, then-President Don Ort discussed changes and challenges that would accompany the transition to electronic publishing of our journals. This change has finally occurred, and in the very near future our journals will be available online. Announcements elsewhere is this newsletter tell you how to access the electronic versions of both *Plant Physiology* and THE PLANT CELL. As described in the previous issue of the newsletter, the ASPP Education Foundation has activities under way, and in March the Foundation's first major outreach project, entitled "Plants for the 21st Century," will have opened at Disney World's EPCOT Center.

What's next? ASPP must continually be looking for ways to improve the services that we provide to our members, to our discipline of plant biology, and to our society as a whole. One exercise that is currently under way is the repetition of an experiment that was successful in the past. A number of years ago, ASPP formed a visioning committee to make recommendations about future directions for ASPP publications. One outcome from the effort was the recommendation to begin a new journal, advice that led eventually to the formation of THE PLANT CELL, now one of the premier journals in plant biology. This past year the Executive Committee authorized the Publications Committee to form a new ad hoc visioning committee to again have a long-term look at the future of our publications efforts. Joanne Chory agreed to lead this group and was charged by Publications Committee Chair Judy Callis to look "broadly and freely with futuristic glasses" at the needs of our members and our discipline in the coming years. The Executive Committee looks forward to receiving the results of the deliberations of the ASPP Publications Visions Subcommittee and will seriously consider any advice it offers.

What other things should ASPP be doing or consider doing? I have given this question considerable attention as I contemplate our agenda for the coming year. One of the items that I believe must be high on our list of priorities is to provide assistance to young plant biologists just embarking on their careers. Much has been written about the increasing number of postdoctoral research associates and the increasing time that young scientists are spending in postdoctoral positions. Although many people have ample anecdotal evidence of the problem, solid information about its magnitude and good ideas about solutions are still needed. Consequently, the National Research Council formed the Committee on Dimensions, Causes, and Implications of Recent Trends in the Careers of Life Scientists to examine this issue. ASPP member Pam Green served as a member of the committee. After two years of hard work and much discussion about the results, Pam indicates that the report should be published soon. ASPP must continue to pay attention to the concerns of young plant biologists and do what we can to ensure the future health of our discipline.

Finally, ASPP must continue to pursue an active program in the public affairs arena. Our record in the past few years has been strong, with ASPP

continued on page 3

INSIDE...

TABLE OF CONTENTS

Deadline for March/April 1998 *ASPP NEWS*: March 2, 1998

Future ASPP Annual Meetings

1998
Saturday, June 27, through Wednesday, July 1
Madison, Wisconsin
Meeting to overlap with the meeting of the 9th International Conference on Arabidopsis Research

1999
Saturday, July 24, through Wednesday, July 28
Washington, DC
ASPP's 75th anniversary meeting

ASPPNEWS

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

Copy deadline is about the 15th day of the preceding even-numbered month (e.g., December 15 for January/February publication). Submit copy by e-mail whenever possible; submit all other copy by mail, ***not by fax***.

Contact: Nancy A. Winchester, Editor, *ASPP NEWS*, 15501 Monona Drive, Rockville, MD 20855-2768 USA; e-mail nancyw@aspp.org; telephone 301-251-0560, ext. 17.

ASPP OFFICERS & STAFF

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

continued from page 1

being one of the most active among the several professional societies that represent the plant sciences. However, there is still much that must be done, especially in the coming months as changes in U.S. science policy are being considered. Congressman Vernon Ehlers (R-MI), who is leading this effort, challenged all of us to contribute to the debate. In a recent editorial in *Science* (vol. 279, p. 302, January 16, 1998) he said, "I seek your input. You can contribute—as individuals, scientific societies, or institutions—via the policy study's Web site at www.house.gov/science/science_policy_study.htm, which will be updated periodically with our progress and with specific requests for your contributions."

How should ASPP respond to this request for input from scientific societies? Send me your thoughts and comments at the e-mail address shown below, or contact Ken Beam, ASPP Executive Director, at kenbeam@aspp.org.

Ken Keegstra
ASPP President, 1997–1998
Michigan State University
East Lansing
keegstra@pilot.msu.edu

ASPP Prepares to Launch Online Journals

ASPP is pleased to announce the debut of its two journals online as of February 23, 1998. The electronic versions of *Plant Physiology* and THE PLANT CELL will go live with the full text of the January and February 1998 issues and will be available free of charge throughout 1998. Abstracts of articles from 1992 through 1997 for *Plant Physiology*, and from 1989 through 1997 for THE PLANT CELL, will be loaded by spring, so readers will have a comprehensive archive to search.

The Society has been working closely with Stanford University's HighWire Press to bring the journals online in a full-text, fully searchable format. The following are part of the extensive list of services that will be offered and that will add considerable value to online subscriptions:

Immediacy: Each issue will be placed online the day the journal is mailed, so you can search and view content without waiting for the journal to arrive at your lab or library.

Full-text searchability supports hyperlinking within and among full-text articles, including all graphics and tabular material. With a click, a "thumbnail" of a figure can be expanded to two levels of enlargement, revealing details that might not be as clear in print. Figures can also be printed to use in the classroom or in presentations. PDF integration will allow you to download articles in the same page format found in the print journals.

Cross-journal searching will enable you to conduct searches not just in *Plant Physiology* and THE PLANT CELL, but in other HighWire journals as well.

Enhanced international connectivity, offered through a network of private servers worldwide, will speed communication from Europe and Asia.

Medline linking: Each cited reference is hyperlinked to its abstract in Medline, or directly to the full text of the cited article if the article is online. Access is provided from cited references to most other journals' full text without the need for a subscription to the cited journal.

GenBank hyperlinks are built in for GenBank sequence accession numbers in an article.

Current and future contents alerts provide e-mailed tables of contents of current and future issues to readers who register with the site.

Export to bibliographic citation managers will allow you to "export" key citation and abstract information in an article to your citation manager to collect and index citations from multiple sources.

Plant Physiology and THE PLANT CELL join about 85 other scientific titles that already are, or soon will be, working together with Stanford University, including *Science, Cell, Proceedings of the National Academy of Sciences, Journal of Biological Chemistry*, and *Molecular Biology of the Cell*.

ASPP looks forward to launching *Plant Physiology* and THE PLANT CELL online and welcomes your comments and suggestions. The online journals will be located at **www.plantphysiol.org** and **www.plantcell.org**.

The Call for 1998 Nominations for ASPP Awards

was sent out to all members in January.

The nominations are due at ASPP headquarters by Friday, March 6, 1998.

Questions should be addressed to kenbeam@aspp.org.

Jozef Schell and Marc Van Montagu to Receive 1998 Japan Prize

Jozef Schell, Director at the Max-Planck-Institute for Plant Breeding in Cologne, Germany, and Marc Van Montagu, Professor at Gent University, Belgium, are to be awarded the Japan Prize. The ceremony will take place at the National Theatre in Tokyo on April 28, 1998.

The Japan Prize is an international prize that is awarded by the Science and Technology Foundation of Japan to scientists and technologists who are judged to have made original and outstanding achievements in their fields and to have contributed to the peace and prosperity of mankind. Each laureate receives a certificate of merit and a commemorative medal. Van Montagu and Schell will share a 50 million yen award (about $400,000, BEF14,000,000, or 700.000DM). The two scientists have been recognized for their innovative research in biotechnology in agricultural science.

During the 1970s and 1980s, Schell and Van Montagu and their research teams developed one of the leading methods to modify plants genetically. They realized that the transfer of foreign genes to a plant already happens in nature. The soil bacterium *Agrobacterium tumefaciens* transfers a part of its genetic material into cells of wounded plants. Schell and Van Montagu showed this for the first time, also proving that the transferred DNA—called the T-DNA—is part of a ring-shaped DNA molecule, the Ti-plasmid (or tumor-inducing plasmid). When the bacteria's genetic information enters a plant cell, the infected cell starts to produce substances to nourish the bacteria. Furthermore, infected plant cells start to proliferate because the bacteria also transfer genetic information for the production of plant growth substances. The proliferating cell material becomes visible as tumors on the shoots of infected plants.

Schell and Van Montagu quickly realized that the genes within the T-DNA are transferred as mere passengers from the bacterium to the plant. Only the parts of DNA that border these genes (the so-called border sequences) and some genes outside the T-DNA within the Vir-Region on the Ti-plasmid are necessary to accomplish the transfer. If the original T-DNA genes are removed, one obtains a disarmed T-DNA that is unable to cause tumors. Genes for agronomically desirable traits can be inserted between the borders of the Ti-plasmid and transferred stably into plants. In this way plants can be altered in a variety of ways—for example, to be more resistant to disease or to have improved food quality.

The festivities involved with the prize award ceremony will be held in Tokyo from April 22 to May 1. During the week events such as the presentation ceremony and commemorative lectures will take place.

Carnegie Institution Capital Science Lecture on "Molecular Conversations of Plants and Bacteria" was presented November 18, 1997, by Sharon Long of Stanford University and the Howard Hughes Medical Institute. Dr. Long explained to a diverse public audience the complex molecular interactions between legumes and nitrogen-fixing bacteria and how research in this area can contribute to agricultural production in a manner that is energy efficient and benign to the environment. Dr. Long is shown here speaking with some of the attendees who approached her after the talk. A reception where Dr. Long received further recognition for her talk was held shortly after the presentation and included Bruce Alberts, President of the National Academy of Sciences, ASPP member Machi Dilworth of NSF, Greg Dilworth of DOE, and many other scientists.

I read with interest the recent article "ASPP's 12 Principles of Plant Biology" (vol. 24, no. 5, September/October 1997, p. 18). It is vitally important that if these principles are to be used as suggested, they should be generally agreed to and, above all, accurately stated. I believe that several of the principles are not for the following reasons:

Principle 1. Why not mention photosynthesis, which is, after all, the preeminent quality of (green) plants? I suggest as the second sentence in principle 1: "Green plants are unique in that they use the energy of sunlight to convert CO_2 from the atmosphere into sugar, generating O_2 as a by-product, by the process of photosynthesis. The sugars in turn are the source of thousands of compounds within plants, including the major components of the world's food supply."

Principle 2. This statement is misleading and inaccurate. I suggest, "Plants require certain inorganic nutrients for growth and play an essential role in the circulation of inorganic nutrients in the biosphere. In some plants, associations with microorganisms allow the conversion of atmospheric N_2 into biologically useful forms.

Principle 8. The USDA, a primary benefactor of plant physiology, would object to the narrowness of this item. I suggest, "Plants provide timber and are the primary source of food and fiber for all animals, including humans. They are also the source of medicines and countless other chemicals in everyday use."

Principle 10. I take particular issue with this principle, since before my retirement in 1990, water relations was my specialty.

a. The uptake of water is *not* essential for the uptake of mineral elements as stated.
b. Cooling is not usually a beneficial feature of water loss from plant surfaces. It certainly is an *incidental* and inevitable result of water loss, but only in very limited circumstances can it be of benefit. Thus, it should not be listed as essential, and to list it first as the basis for the importance of water is absurd.

I suggest for principle 10: "Water accounts for most of the bulk of plant cells and organs and is thus essential for cell expansion and plant growth. It is also the medium in which the chemical reactions within the plant occur and in which, in specialized tissues, long-distance transport of salts and organic molecules takes place."

Principle 12. Chauvinistic; omit the word "Beneficial."

Harry Beevers
Emeritus Professor of Biology
University of California
Santa Cruz, CA 95064

ASPP's 12 PRINCIPLES OF PLANT BIOLOGY

ASPP Headquarters, in conjunction with the Education Foundation and the Education Committee, has developed 12 basic principles of plant biology that the Society feels should be included in any biological curriculum. ASPP intends to present these principles during discussion with federal, state, and local education groups, as well as with textbook publishers. The Society will work toward the inclusion of the principles in American education principles in order to increase the PQ (plant quotient) of students from kindergarten through college.

1. Plants, like other organisms, make DNA, enzymes, proteins, and other molecules. However, plants are unique in that they have the ability to use energy from sunlight along with other chemical elements for growth, and thus provide the world's supply of food and oxygen.
2. Plants play an essential role in the circulation of nutrients, such as the conversion of atmospheric nitrogen into a biologically useful form.
3. Land plants evolved from ocean-dwelling, algal-like ancestors, and plants have played a role in the evolution of life, including the addition of oxygen and ozone to the atmosphere.
4. Reproduction in flowering plants takes place sexually, resulting in the production of a seed. Reproduction can also occur via asexual propagation.
5. Plants, like animals and many microbes, respire and utilize energy to grow and reproduce.
6. Cell walls provide structural support for the plant and also provide fibers and building materials for humans, insects, birds, and many other organisms.
7. Plants exhibit diversity in size and shape, ranging from single cells to gigantic trees.
8. Plants are a source of medicines and other products used by humans.
9. Plants, like animals, are subject to injury and death due to infectious diseases caused by microorganisms. Plants have unique ways to defend themselves against pests and diseases.
10. The uptake and movement of water is essential to the plant for cooling, uptake of mineral elements, structure, and circulation.
11. Plant growth and development is under the control of hormones and can be affected by external signals such as light, gravity, touch, or environmental stresses.
12. Plants live and adapt to a wide variety of environments. Plants provide a wide variety of environments for birds, beneficial insects, and other wildlife in ecosystems.

ASPP NEWS

welcomes comments on topics covered in the newsletter and on other points of interest to the profession. Letters are published as space permits and may be edited for clarity and length. Submissions may not necessarily be published; receipt is not acknowledged. Mail letters to Editor, ASPP NEWS, 15501 Monona Drive, Rockville, MD 20855-2768 USA; e-mail: nancyw@aspp.org.

Workshop in Argentina

Thanks to the enthusiastic support of many members, ASPP will be cosponsoring a workshop in Argentina with Universidad Nacional de Río Cuarto, Comité Argentino–Brasileño de Biotecnología, Consejo Nacional de Investigaciones Cientificas y Técnicas, Consejo de Investigaciones Científicas y Tecnológicas de La Provincia de Córdoba, and Sociedad Argentina de Fisiología Vegetal. The goal of the workshop is to foster collaborations in research and training. More than 90 ASPP members have volunteered to teach in the workshop. We thank all of you who are willing to make the commitment and hope that you will support future efforts for scientific exchange in countries with newly established plant biology programs.

The two-week workshop, entitled "Frontiers in Biology," will be held in Río Cuarto, Argentina, from July 27 through August 7, 1998. It will involve lectures and laboratories and will provide time for small-group interaction. Hector Flores, of Pennsylvania State University, is the U.S. coordinator for the workshop, and Rubén Bottini, of Universidad Nacional de Río Cuarto, is the Argentinean coordinator. The U.S. and Canadian teachers are Tony Bleeker, University of Wisconsin–Madison, Linda Walling, University of California at Riverside, Elizabeth Bray, University of California at Riverside, Ann Hirsch, University of California at Los Angeles, Bruce Kohorn, Duke University, Ann Matthysse, University of North Carolina at Chapel Hill, William Plaxton, Queen's University, and Edgar Spalding, University of Wisconsin–Madison. The South American teachers will be selected by February.

For more information, contact Rubén Bottini (RBOTTINI@exa.unrc.edu.ar) in Argentina or Hector Flores (hector_flores@agcs.psu.edu) or Wendy Boss (wendy_boss@ncsu.edu) in the United States.

Minority Affairs Committee Looking for Volunteers for a Mentoring Program

As part of a long-term commitment to the enrollment of minority students in plant biology graduate programs, the ASPP Minority Affairs Committee (MAC) is planning to submit proposals to federal and private agencies in support of such activities. Critically important to the success and development of these proposals is the identification of a group of committed mentors. We are therefore seeking ASPP members who would be willing to mentor minority students over a two- to three-year period. Specifically, mentors should be willing to directly advise undergraduate minority students for two consecutive summers and be willing to maintain close contact with the mentees during the academic year and to visit their academic institutions as well. We expect the mentors to help the students develop their personal and professional skills in an integrated way, with the goal of pursuing a graduate degree in plant biology or a related field. MAC would like to identify a pool of mentors by early March. If you are interested in volunteering to be a minority student mentor, please contact the committee chair, Dr. Hector E. Flores, 315 Wartik Laboratory, The Pennsylvania State University, University Park, PA 16802. Phone 814-865-2955; fax 814-863-7217; e-mail hef1@psu.edu.

Northeastern Section

Planning is already under way for the Northeastern Section's next meeting May 1–2, 1998, at the University of Massachusetts, Amherst. The organizer, Bernie Rubinstein, says that there should be the usual full schedule of platform presentations and posters. The Jerry Schiff Symposium speaker will be Russell Jones, from the University of California, Berkeley. There will also be 25 high school biology teachers in attendance who will be part of a program devoted to plants in the classroom.

After the meeting ends Saturday afternoon, ASPP will sponsor a symposium on plant defense mechanisms under the auspices of the National Academy of Sciences. We are sure that many of the participants of the section's meeting will also want to attend the ASPP/NAS symposium along with members of the five colleges in the Amherst area. All in all, it should be an exciting weekend at U-Mass for plant scientists. Look for additional information on the Web at http://www.bio.umass.edu/plantbio/pbgrad.html and at http://aspp.org.

NSF Program Proposal Expected to Generate Innovative Approaches to Plant Genomic Research

The program announcement in December 1997 of the National Science Foundation (NSF) Plant Genome Research Program is generating many collaborative efforts on research proposals from within the plant science community. Many scientists are aligning in teams with researchers at other universities to develop proposals for genomic research. The program is expected to spur many innovative proposals for plant genomic research that can be related to economically important crops.

Mary Clutter, Assistant Director of the NSF Directorate of Biological Sciences, explained that money will not be allocated in advance for research on any particular crop. Instead, awards will be made for proposals where NSF reviewers see the best science. An article published in the December 11, 1997, issue of *Nature*, under the title "$40M Plant Genome Sequencing Effort Targets the Best Science," included comments by Clutter. When asked what direction the program will take, she said, "We're going to ask the scientific community to make proposals and find out."

There has been some question as to whether support for NSF's plant genome research program will extend beyond fiscal year 1998. Senator Christopher Bond (R-MO), who led the successful effort to provide $40 million to NSF for plant genome research in FY98, has expressed his interest in seeing a plant genome program that would continue for more years so as to provide the time necessary for needed results.

There has been some discussion about seeking a five-year program on plant genome research. "We're talking about a major effort," Clutter commented in *Nature*. "What the NSF is doing is jump-starting something that will set the stage for agriculture of the 21st century. But it isn't something that NSF will be doing forever."

As with other research programs, continued support for plant genome research depends on what President Clinton and Congress do in the next fiscal year budget. Two points bearing favorably on future support for the plant genome program are that (1) as chair of the Senate Appropriations Subcommittee with jurisdiction over NSF, Senator Bond will have significant input to the development of the appropriations bill for FY99 and (2) the administration supports plant genome research.

The goals of NSF's new plant genome research program are to support research on the structure, organization, and function of plant genomes and to accelerate the acquisition and utilization of new knowledge and innovative technologies that will aid in developing a more complete elucidation of basic biological processes in plants. The program announcement noted that an integral understanding of plant genome structure and function is essential for the development of improved, economically significant plants and of novel plant-based products. Thus, the plant genome research program will support projects that contribute to the understanding of the genome structure and organization of economically important plants and that link genome information to function at the cellular, organismal, or evolutionary levels. Included as an important element are projects to develop shared resources and research tools that will enable plant genome research to advance more efficiently and rapidly.

A number of multi-institutional networks organized as "virtual centers" or "centers without walls" are envisioned to conduct research projects. Examples of relevant activities noted in the announcement include—

- Multi-investigator research using genomics approaches on specific biological processes or biochemical pathways that are critical to the understanding of the biology of plants, especially those relevant to economically important plants. Proposed activities are expected to be multifaceted and demonstrate strong biology, robust information management strategies, and the development of new genomic research technologies.
- Development of shared resources and research tools. Technological advances are needed in areas such as informatics tools for integrating and analyzing complex plant genomic data, novel methods for analysis of plant genome organization and its effect on biological function, and analysis of the global expression patterns of plant genes under specific conditions.

Approximately $30 million to $35 million is expected to be available for proposals

NSF Biological Sciences Assistant Director Mary Clutter.

funded through this program. Proposals for accelerated sequencing of the Arabidopsis genome will be solicited under a separate announcement. Collaborative research and infrastructure projects will be supported at award sizes ranging up to $3 million per year for one to five years.

Letters of intent are due by February 2, 1998, and full proposals by April 6, 1998. The program announcement can be found on the ASPP homepage at http://aspp.org by clicking on the public affairs icon and going to "NSF Plant Genome Research Program Announcement."

The NSF program announcement was transmitted by e-mail to ASPP campus contacts when it was published in December. ASPP campus contacts played an important role in affecting FY98 appropriations legislation by requesting a plant genome (instead of just corn genome) research program that would be supported with new funds.

Research Leads to Removal of Food Allergens; European Media React

Research conducted by ASPP Past President Bob Buchanan, of the University of California, Berkeley, has led to the discovery of a new type of biotechnology to remove certain allergens from foods.

Buchanan made use of the ability of a naturally occurring product called thioredoxin to make some proteins, such as those found in wheat and milk, more digestible and less allergenic. He used thioredoxin to change the shape of proteins in problem foods so that they lose much of their ability to trigger allergies.

"Treated food has been tested on dogs bred to develop the allergies. They showed no ill effects, even though they still suffer allergic reaction if they consume the foods in their untreated state. Bob Buchanan and his colleagues at various campuses of the University of California are confident that the same approach can prevent allergic reactions in people," *New Scientist* explained in its November 29, 1997, issue in an article titled "Nuts without Fear—A Spot of Natural Chemistry Can Defeat Some of the World's Most Dangerous Allergies."

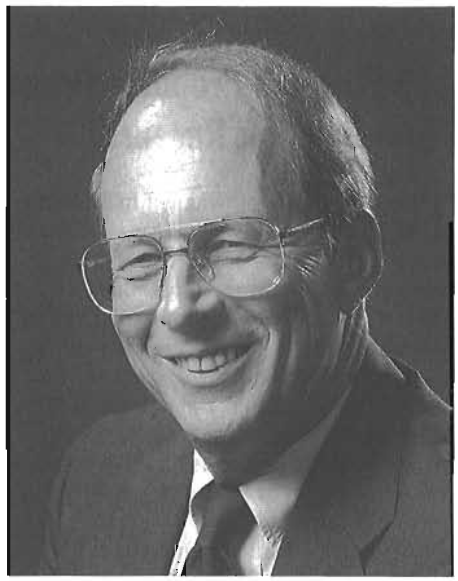
Buchanan explained in the article that the proteins in food that often trigger the strongest allergic reactions are those rich in disulfide bonds (pairs of sulfur atoms chemically bonded together). Disulfide-rich proteins already known to cause allergic reactions include betalactoglobulin in milk, the 2S protein in nuts, and a variety of proteins in cereals.

Thioredoxin mobilizes the energy reserves in organisms by breaking disulfide bonds in energy-rich molecules. "The thioredoxin changes the shape of the protein so that the immune system no longer recognizes and reacts against it. Also, the protein becomes more easily digestible," Buchanan explained in the article.

Buchanan and his colleagues have tested the treatment on wheat, barley, and milk. Milk should be the easiest food to treat because it is a liquid. "Treating wheat, flour and other cereals or cereal-based foods could be more tricky," the article noted. Rather than treating the foods directly, Buchanan and his colleagues are trying to insert additional thioredoxin genes into the plants so that they grow pretreated. "We already have barley with overexpressed thioredoxin," Buchanan said. Next to receive the supplementary genes could be nuts such as walnuts and peanuts.

Buchanan's research was also reported in the *Frankfurter Allgemein Zeitung* in Germany, on the German television network RTL, on the BBC in England, and by the media in Scotland. The ASPP Public Affairs office first contacted the *New Scientist* with the University of California news release on Buchanan's research. Other media picked up the story after the *New Scientist* coverage.

There has been some amount of public resistance to plant biotechnology in many European nations as it relates to increased crop productivity. However, this new type of biotechnology, which could be used to remove food allergens, appears to be generating favorable interest among some media in Europe. This may signal a more receptive reaction to plant biotechnology by the public in many nations with regard to foods engineered to eliminate allergens.



Bob Buchanan finds new role for thioredoxin in battling food allergens.

Substantial savings in future health care costs and avoidance of food allergy–related suffering by humans (and their best friends) worldwide may result from Buchanan's research.

Check the ASPP Web site (http://aspp.org) and watch your mail in March for the Plant Biology '98 registration package, housing information, and preliminary program. The annual meeting is much earlier than usual this year, so be sure to mark your calendar.

Former CIA Director Sees Engineering of Biomass Feedstocks Fueling Peace and Prosperity while Reducing Greenhouse Gases

R. James Woolsey, former director of the Central Intelligence Agency (CIA), testified before the Senate Committee on Agriculture, Nutrition, and Forestry on November 13, 1997, about the potentially enormous effects of the recent work on genetic engineering of biocatalysts and microbes to break down cellulosic biomass to form ethyl alcohol (ethanol). "If genetic engineering makes it possible to use biomass feedstocks to further reduce the cost of ethanol by a fraction of what it has already been reduced in the last decade, then we might look forward to a day when there would be a substantially different attitude toward the Mid-East's perpetual crises than there is now," Woolsey stated.

He said that the implications of a major transition to biofuels can be compared with the impact of a process that was begun in the mid-1960s, the production of integrated electronics circuits from silicon. What had in fact begun was the democratization of the information market, Woolsey said. Silicon chips first cracked the foundations of companies built around mainframes, then of empires. The late Albert Wohlstetter exaggerated only slightly when he wrote in the 1980s, addressing the people of the Soviet Union, that "The Fax Will Make You Free," Woolsey testified. "The democratization of the production of transportation fuel may be no less dramatic and positive in effect."

The former CIA director said the increased production of biofuels from biomass would help distribute the economic fruits of supplying the world's transportation fuel more broadly among nations and individuals. Those who work the land would begin to replace as fuel producers the owners of oil resources in a few oil-exporting states. "By any reasonable measure, such an evolution should be regarded as economically positive," he said.

Woolsey noted that transportation use of ethanol will be directly competitive with gasoline on an unsubsidized basis when the price of oil reaches about $25 a barrel. However, even if the price of oil does not reach as high as $25, there are other reasons to move to use of ethanol, he said. "In my view, the environmental, global warming, international security, and economic effects of moving toward ethanol and away from gasoline would alone justify the relatively modest cost of hedging against oil dependence," Woolsey commented. "I believe that the nation, indeed the world, could reasonably regard the cost of encouraging the industrialization of this production process as an insurance premium that in time will reduce the risks of both international conflict over energy, especially in the Mid-East, and global warming—and will enhance air quality in the bargain."

"In my view, the environmental, global warming, international security, and economic effects of moving toward ethanol and away from gasoline would alone justify the relatively modest cost of hedging against oil dependence," Woolsey commented.

Citing the Department of Energy report "Scenarios of U.S. Carbon Reductions," Woolsey noted that CO_2 produced by using fuels produced from biomass is CO_2 that has been fixed very recently in the photosynthesis process. Thus, no new CO_2 is added to the atmosphere, unlike during the burning of fossil fuels, since the latter process releases CO_2 that was fixed by plants millions of years ago, became oil, and would otherwise stay underground. "As the [DOE] Interlaboratory Report puts it, 'the most recent estimates indicate that ethanol derived from cellulosic feedstocks (as opposed to grain) produces less than 1 percent as much greenhouse gas emissions on a fuel cycle basis as conventional gasoline or diesel fuels.' "

Senate Committee on Agriculture Chair Richard Lugar (R-IN) has also held earlier hearings on opportunities offered by research and production advances in the use of biomass for biofuels. Lugar has pointed out that the cost of an imported barrel of oil is far higher than $25 when indirect costs, such as U.S. military support to help maintain the flow of foreign oil, is considered. Inclusion of associated indirect cost estimates would bring the price of oil to about $100 a barrel.

The deadline for inclusion in the 1998 ASPP Membership Directory is March 15. Please make sure that your 1998 dues are paid and that your address, telephone, fax, and e-mail information are up-to-date.

House Agriculture Committee Chair Bob Smith to Leave Washington; Combest Likely Successor

Congressman Bob Smith (R-OR), Chairman of the House Agriculture Committee, announced that he will not seek reelection this year. After returning in 1997 from an earlier retirement from Congress, Smith again demonstrated his support for agricultural research with the development and House passage of the Agricultural Research Title. Although the bill is temporarily stalled, Smith has support in his efforts to move the bill to a House/Senate conference.

The likely successor to Smith as committee chair, if Republicans keep the majority in the House next year, is Larry Combest (R-TX) of Lubbock. Combest is currently Chair of the House Agriculture Subcommittee on Forestry, Resource Conservation and Research. Combest's and Smith's committee offices played a key role this past year in making needed revisions to a Precision Agriculture Research bill before it became part of the Research Title. The revisions, which were made after ASPP opposed the earlier provisions, were needed to protect proposals submitted to the National Research Initiative from being reviewed by too narrow a standard. The detailed and specific definition of precision agriculture in the earlier bill could have dramatically narrowed the scope of research supported by the initiative.

Combest has long been a supporter of plant stress research. Plant stress research and the plant stress research lab in Combest's district were referred to in Clinton's 1995 State of the Union Address as examples of potentially wasteful spending. The impression could have been mistakenly drawn from the comments that plant stress research involved psychoanalysis of plants. ASPP and Combest quickly responded with a defense of plant stress research. Subsequent national media coverage of then-ASPP President Jim Siedow's and Combest's response to the State of the Union comment explained the important need for plant stress research.

ASPP–NATIONAL ACADEMY OF SCIENCES SYMPOSIA

ASPP and the Plant Biology Section of the National Academy of Sciences are planning to sponsor yearly regional symposia on topics of current interest in plant biology. Typically, each symposium will feature four speakers, who will present papers at the *Scientific American* level, that is, at a level accessible to nonspecialists. It is hoped that these symposia will attract, in addition to plant scientists, undergraduate biology students, professors from small colleges, and academic administrators who make decisions on staffing and curricula in the life sciences. The first such symposium, "Frontiers in Plant Biology: Plant Diseases, Pests, and Plant Defense Mechanisms," will be held at the University of Massachusetts in Amherst on May 2, 1998, following the meeting of the Northeastern Section of ASPP. The speakers will be Frederick M. Ausubel (Massachusetts General Hospital), Ilya Raskin (Rutgers University), Anne Simon (University of Massachusetts), and Gregg A. Howe (Michigan State University). Hans Kende (Michigan State University) will moderate the symposium, and the local organization will be handled by Bernard Rubinstein. It is anticipated that similar symposia will be organized in the future in conjunction with other sectional meetings of ASPP.

ASPP Education Foundation Exhibit at EPCOT Extended Six Weeks

Plans are taking shape for the ASPP Education Foundation plant science exhibit at the EPCOT Center of Walt Disney World. This innovative plant research experience will take place in two segments. The first will be a science festival held from March 13 through April 4, 1998. Disney World has also asked ASPP to continue the exhibit as part of the annual EPCOT Flower & Garden Festival, in front of The Land from April 17 through May 31, 1998. Exhibits at last year's Flower & Garden Festival were recently highlighted on national cable television on the Home and Garden TV Network, and the network is expected to feature the event again this year.

Plants enhanced through biotechnology will be on exhibit. These plants are designed to increase crop production to meet the world's food needs; to enhance the nutritional content of food; and to generate plant-derived, life-saving pharmaceutical products. There will be genetically engineered crops on site, as well as demonstrations of newly developed crops with natural resistance to pests. The ASPP Education Committee and Education Foundation Board are active in the creation and production of the exhibit.

Guests will be able to participate in the exhibit experiences and to interact with science exhibitors. Exhibitors will make several presentations each day and will answer questions throughout the day.

DEADLINE

FOR THE MARCH/APRIL ISSUE OF

ASPP NEWS

IS MARCH 2, 1998.

ASPP Education Forum

Edited by Bob Wise, Department of Biology, University of Wisconsin–Oshkosh, Oshkosh, WI 54901, e-mail wise@uwosh.edu

List of Topical Review Titles on ASPP Homepage

At the suggestion of ASPP member David Hildebrand (University of Kentucky), a bibliographic list of reviews pertaining to plant biology has been compiled and placed on the ASPP homepage. The intent is to provide references for lecturers and students of plant physiology who need the latest word on a particular topic. More than 425 titles covering the literature from 1992 to 1997 have been assembled from the *Annual Reviews of Biochemistry*, *Cell and Developmental Biology*, *Phytopathology*, *Plant Physiology and Plant Molecular Biology*, *Photosynthesis Research*, *Plant Physiology*, and *Trends in Plant Science*. Although several other journals publish review articles, it was believed that these seven sources are the ones to which universities and colleges would most likely subscribe. The list will be updated several times a year to provide the most current titles. Look for the list under the Education subsection on the ASPP homepage (http://aspp.org).

ASPP Exhibit at Project Kaleidoscope Workshop on Biology

ASPP contributed educational materials to a recent Project Kaleidoscope workshop, "Enhancing Learning-Centered Environments: The Biology Department of the Future." The workshop was held October 31 to November 2, 1997, at the University of Wisconsin–Madison. It included about 100 invited participants, selected for their achievements toward the widespread reform of undergraduate biology education.

A highlight of the Project Kaleidoscope workshop was an exhibition of undergraduate educational resources contributed by 18 professional societies in the life sciences. Many participants remarked on their surprise and delight to find that professional societies are rich resources for faculty who teach undergraduate students. A particularly popular ASPP handout was the brochure "Teaching a Plant Physiology Laboratory Course for the First Time?" by Carol Reiss (Cornell University, Ithaca, New York) published by the ASPP Education Committee.

The exhibition of professional society materials was coordinated by the Coalition for Education in the Life Sciences (CELS). CELS is a national coalition of professional societies in the biological sciences dedicated to improving undergraduate biology education. ASPP is a founding member and a current supporting member of CELS. The CELS Web site (http://www.wisc.edu/cels) accesses undergraduate teaching resources available through dozens of professional societies in the life sciences.

Project Kaleidoscope is an informal alliance of individuals, institutions, and organizations committed to strengthening the nation's undergraduate science and mathematics community. It identifies creative people and strong programs and tells their success stories to the larger community through a coordinated series of meetings and publications. To learn more about Project Kaleidoscope, please visit its Web site at http://www.pkal.org. (Contributed by Louise Liao, CELS Program Director.)

Physiology of Plants under Stress: Abiotic Factors
by Erik T. Nilsen and David M. Orcutt, John Wiley & Sons, New York, 1996, 689 pp.
Comments by William E. Winner, Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR 97331

Erik Nilsen and David Orcutt have written this valuable book on the topic of plant stress physiology. The book explains how environmental stresses alter plant physiology and thereby have the potential to affect growth, yield, and fitness. It has its conceptual home in an earlier book on the topic by Hale and Orcutt but is completely redesigned and much expanded. The authors have worked hard to bring ideas together from the plant physiology of agricultural plants and from the physiological ecology of native plants. The book is clearly a labor of love and is the product of several years of focused effort by the authors. Rarely do professors have the time, or take the time, needed to solely write such a thoroughly prepared text. The authors are experts in the field of plant stress physiology and have extensive experience in teaching and research on the topic. The book reflects their expertise, is substantial in size and quality, and should be of interest to plant biologists involved in teaching, writing, and research in the areas of plant physiology and physiological ecology.

Physiology of Plants under Stress develops concepts on plant responses to aboveground, abiotic stresses, with a subsequent volume planned on soils and biotic stress factors. The text includes a preface and an introductory chapter that explain the context of the book and clearly present the general audience for whom the book is intended. The well-developed front matter addresses overarching concepts that link physiology to productivity, selection, and ultimately evolution. Chapters 2 to 7 provide a detailed, basic view of plant physiology and cover the physiological basis of growth, membranes as environmental sensors, phytohormone stress responses, stable isotopes, plant carbon balance, and water dynamics. Chapters 8 to 12 cover plant responses to single factors, including water limitation, flooding, irradiance, high temperature and energy balance, and low-temperature chilling and freezing. Chapters 13 to 15 integrate information and ideas on the complex topics of multiple stresses, biotechnology, and trends and future directions.

The authors have shown attention to detail, and the result is a well-written, high-quality product. The text is rich with details and explanations. The tables and figures are well produced and clearly described with headings and legends. Many of the tables and figures are drawn by the authors and are new presentations of important ideas. A single, extensive reference list is at the end of the text.

The book comes equipped with several features that make it easy to use for teaching and as a reference text. The beginning of each chapter has a brief outline that shows the approach to organizing the material. The end of each chapter has a detailed outline that shows organization and contains information and ideas that are fundamental for that unit. The review outlines contain the essence of the material and are excellent study guides for students. Study questions for students are also found at the end of each chapter, with answers available from the authors. Each chapter ends with a supplementary reading list. Additional features include an appendix of symbols and abbreviations used in the text and a well-developed glossary.

The book is thorough enough to be almost encyclopedic. As such, it is an invaluable aid to those in research in specialized areas of

continued on page 12

continued from page 11

plant physiology. I have kept the volume on my desk and used it countless times to find specific information and key references. The book will also be of great use, either as a primary text or as a supplemental text, for graduate courses in plant physiology, stress physiology, and ecophysiology. However, even in semester-long graduate courses, instructors will not be able to cover all the material. Those teaching undergraduate courses will find this book an invaluable source of information, figures, ideas, and references, but should look at it carefully before adopting the volume as a primary text. Most plant physiologists will want to have access to this book, and those that do will use it.

Advice on Student Presentations

The question of guidelines for oral presentations by students came up recently among the Council on Undergraduate Research news group (the CUR online discussion group; CUR-L@mcs.anl.gov). Carl Pike (Franklin and Marshall College) posed the original question and several people responded. Peter Russell (Reed College) posted the following outline.

How To Give 15-Minute Talks

I. Introduction (approximately 5 minutes)
  A. The mystery, reason for caring, paradox, curiosity.
  B. The background.
    1. What has been done that is relevant?
    2. Limitations of past experiments.
    3. How old results raised current questions.
II. Results
  A. Experimental design.
  B. Results.
  C. Experiment.
III. Interpretation of results
  A. Explain a small number of key experiments clearly. (If time is short, give results without experiments rather than unclear experiments.)
  B. Avoid or explain jargon.
  C. Avoid tables whenever possible.
  D. Never show data you do not discuss.
  E. Make clear, colorful figures.
  F. Involve the audience in the problem.

Other respondents provided additional sources. Jeff Strait (Williams College) said that an article by James C. Garland in *Physics Today* ("Advice to Beginning Physics Speakers," July 1991, pp. 42–45) contains useful advice for undergraduates. Linda Bush (Salisbury State University) has used a set of guidelines found on the Web at http://therion.minpet.unibas.ch/minpet/groups/thermodict/break/ttalk.html in her classes to good effect. Maryanne Simurda (Washington & Lee University) pointed out a one-page article in *THE SCIENTIST* (October 13, 1997, p. 14) by Kathryn S. Brown titled "Charisma, Content Make for Effective Scientific Presentations." And, finally, Bailey Donnally (Lake Forest College) listed three helpful URLs:

- (http://www.aspp.org/education/poster.htm
- http://www.lib.uchicago.edu/~atbrooks/CINF/guidelines_for_posters.html
- http://www.acs.org/meetings/hbook.htm)

1999–2000 Fulbright Awards for U.S. Faculty and Professionals

Opportunities for lecturing or advanced research in more than 125 countries are available to college and university faculty and professionals outside academe. U.S. citizenship and a Ph.D. or comparable professional qualifications are required. For lecturing awards, university or college teaching experience is expected. Foreign language skills are needed for some countries, but most lecturing assignments are in English.

Deadlines
- August 1, 1998, for lecturing and research grants in academic year 1999–2000
- May 1, 1998, for distinguished Fulbright chairs in Western Europe and Canada
- November 1, 1998, for international education and academic administrator seminars

Contact the USIA Fulbright Senior Scholar Program, Council for International Exchange of Scholars, 3007 Tilden Street, NW, Suite 5L, Box GNEWS, Washington, DC 20008-3009; telephone 202-686-7877, Web page (online materials) http://www.cies.org, e-mail apprequest@cies.iie.org (requests for application materials only).

NASA Awards in Space Biology Special Program for Minority Applicants

Advances in the space shuttle program and development of the space station have allowed for the development of space biology science, which offers exceptional opportunities for research. NASA is offering research associate awards in a special program for minorities at the postdoctoral level to conduct space biology research in a university laboratory or nongovernment research institute of the recipient's choice that can provide the necessary facilities and research environment. Projects should be in the gravitational and space biology discipline. The awards are $20,000 for the first year with the possibility of renewal at $22,000 for a second year. Funding will begin July 1 to October 1, 1998. This is a special program for minority applicants, and U.S. citizens and permanent resident aliens with Ph.D., M.D., D.V.M., D.M.D., or equivalent degrees are eligible to apply. Proposals are due April 15, 1998. For information and an application booklet, contact Dr. Gerald Sonnenfeld, Dept. of General Surgery Research, Carolinas Medical Center, P.O. Box 32861, Charlotte, NC 28232; telephone 704-355-2639, fax 704-355-7203.

OBITUARIES

Howard E. Joham

Dr. Howard Joham, a long-time member of ASPP, died June 7, 1997, of leukemia. Dr. Joham earned a B.S. degree at Santa Barbara in 1941; an M.S. degree in 1943 at what was then The A&M College of Texas, where he met his wife of more than 56 years; and a Ph.D. with Professor Walter Loomis at Iowa State College in 1950. He served in the U.S. Army in Europe from 1944 to 1946. Dr. Joham spent his entire post-Ph.D. career at Texas A&M, rising in the ranks from instructor in 1946 to professor and head of the Department of Plant Sciences at the time of his retirement in 1979.

Dr. Joham's research area was mineral nutrition, but he often carried that interest into studies of carbohydrate metabolism, disease resistance, plant development, and environmental interactions. His Ph.D. research became the major basis for tissue testing for mineral salt adequacy in cotton to adjust fertilizer practices. He and his students contributed to the understanding of nutrient cation interactions; the essentiality of sodium, zinc, and molybdenum; and the nutritional roles of potassium, calcium, and magnesium. Most of his work was done with cotton, and he was an international authority on the mineral nutrition of that plant. He was also a major force in the Southern Section of ASPP through his participation and that of his students.

Dr. Joham's major professional contribution was as a teacher; 14 of his Ph.D. students have staffed universities, colleges, and research institutions across the South and Southwest. Joham instructed all plant physiologists and most agronomists studying at Texas A&M University from 1950 to 1975 in a way that positively influenced their research philosophy and dedication to science.

Page W. Morgan
Texas A&M University, College Station

Raymond E. Girton

ASPP headquarters was recently informed of the death of emeritus member Dr. Raymond E. Girton, who died on October 19, 1997, at age 98. Dr. Girton had been an ASPP member since 1977.

John Milburn

Professor John Milburn, B.Sc. Hons (Dunelm), Ph.D. (Aberdeen), FIBiol., was born in Carlisle, UK, August 7, 1936. He studied first at Carlisle Grammar School and then at King's College, University of Durham, from 1955 to 1958. Next, he worked in Guyana for two years on sugar cane agronomy. From 1961 to 1964, he studied for his Ph.D. under the supervision of Professor P. E. Weatherley FRS. In 1964 he took up a lectureship at the University of Glasgow. He went to India in 1972 as a British Council Fellow, and in 1974 traveled to the United States on Fulbright and Bullard Fellowships at Harvard University.

He took up the Chair of Botany at the University of New England in 1981 and was head of the Department of Botany from 1981 to 1988. Between 1982 and 1984, he also served as Dean of the Science Faculty. From 1990 to 1993, he was the external examiner for Botany at the University of Hong Kong.

From an early age Professor Milburn was interested in aiming his innovative approaches to understanding the flow of water in plants. He played a major role in the elucidation of xylem and phloem transport physiology, in particular the detection of cavitation by acoustic detection. His research interests were, however, very broad and included such areas as the history of plant sciences, ultrastructural studies on moss and fern sporangia, physiology of latex flow, life of cut flowers, and algal flora in Armidale waters.

Professor Milburn published several books and book chapters of international standing and more than 100 research publications. His book *Water Flow in Plants*, published by Longman in 1979, is widely used as a text.

Professor Milburn died when his ultralight aircraft crashed in late 1997. He is survived by his wife, Anita, sons Dirk and Erik, and daughter Haze.

Nallamilli Prakash
University of New England, Australia

Bruce Knox

Bruce Knox, a professor in the School of Botany of Melbourne University, died August 30, 1997. Professor Knox was a major contributor to plant physiology in Australia as well as internationally. He was born in Edinburgh in 1938 and earned his B.Sc. (Hons) in 1959 at the University of Edinburgh. He subsequently studied under the direction of Professor Heslop-Harrison, first at Queen's University Belfast and then at the University of Birmingham, and earned his Ph.D. there in 1962.

His Ph.D. work on plant cell recognition led to his discovery of key proteins present in the walls of pollen grains and set the main theme of his life's work in plant science.

In 1963 he moved to Australia. Shortly after marrying his wife, Janice, Dr. Knox was awarded a NATO Research Fellowship to study at CSIRO Plant Industry Division in Canberra. In 1971 he joined the staff of ANU Botany as a lecturer. In 1974 he became a professor in the School of Botany, University of Melbourne, where he received a D.Sc. in 1984, and in 1989 he was elected Fellow of the Australian Academy of Science.

Together with Adrienne Clarke, Professor Knox directed the ARC Plant Cell Biology Research Centre in the School of Botany, one of the very first "centres of excellence" at the University of Melbourne. Their pioneering work made a major contribution to our current understanding of mechanisms by which flowering plants recognize "self" from "nonself" at cellular and molecular levels.

Knox's research team at Melbourne turned their attention to pollen allergies in humans, discovering the gene that encodes the main pollen allergen in rye grass and going on to explain how airborne grass pollen triggers asthma attacks. His controversial hypothesis of a causal link between air pollution and an incidence of allergic asthma received international acclaim.

He maintained a broad interest in botany while at the same time taking his place at advancing fronts of plant molecular biology. Accordingly, his many conferences, organized in conjunction with colleagues from Melbourne University, were notable for their integration of classical botany, plant physiology, biochemistry, and plant molecular biology.

The Bruce Knox Honours Prize for the top Honours Student in Botany is being established at the University of Melbourne. Those wishing to contribute should send donations, which are tax deductible, payable to the School of Botany Foundation, c/o Professor Pauline Ladiges, School of Botany, University of Melbourne, Parkville, Victoria, 3052 Australia.

Don Gaff
Monash University, Australia

James A. Weber

ASPP headquarters was recently informed of the death of ASPP member Dr. James A. Weber, who died on January 7, 1998. He joined ASPP in 1968.

Radical Biology: Advances and Perspectives on the Function of Plant Roots

Edited by
Hector E. Flores, Jonathan P. Lynch, and David Eissenstat

Proceedings
11th Annual Penn State Symposium in Plant Physiology
May 22–24, 1997

Current Topics in Plant Physiology: An American Society of Plant Physiologists Series, Volume 18

Plus 66 mini-papers

A Look Beyond Transcription: Mechanisms Determining mRNA Stability and Translation in Plants

Edited by
Julia Bailey-Serres and Daniel R. Gallie

Gatherings

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

FUTURE ASPP ANNUAL MEETING SITES

1998: Madison, Wisconsin
Saturday, June 27, through
Wednesday, July 1

1999: Washington, DC
Saturday, July 24, through
Wednesday, July 28

2000: San Diego, California
Saturday, July 15, through
Wednesday, July 19

1998

MARCH

March 8–11
Bioremediation for Industry,
Cosponsored by the Society for
Industrial Microbiology and the Center for
Environmental Science and Technology
University of Notre Dame, Notre Dame, Indiana
For more information, please contact the (SIM) office at 703-691-3357. Visit the SIM Web site at http://www.simhq.org or e-mail info@simhq.org.

March 15–18
VIII National Congress and
II Joint Mexico–USA Symposium on
Plant Biochemistry and Molecular Biology
Guanajuato, Gto. Mexico
Cosponsored by ASPP. Additional symposium speakers, graduate students, and postdoctoral scholars are eligible for travel assistantships based on submitted abstracts. Abstracts are due Jan. 15, 1998. U.S. contact: Joe Chappell, University of Kentucky, Lexington, KY; e-mail chappell@pop.uky.edu. Mexican contact: Alfredo Herrera-Estrella, CINVESTAV, Irapuato, Mexico; e-mail aherrera@irapuato.ira.cinvestav.mx. See our Web site at http://www.ira.cinvestav.mx.

March 23–27
1998 Annual Meeting of the
Society for Experimental Biology
Water and Its Transport: From Cells to
Whole Plants
University of York, England
Closing date for submissions: October 17, 1997. Abstracts for program will need to be submitted by mid-January 1998. Send information and submissions to Prof. A. Deri Tomos (SEB Water Transport), School of Biological Sciences, University of Wales Bangor, Bangor, Gwynedd, LL57 2UW, Wales, UK; fax 01248-370731, e-mail a.d.tomos@bangor.ac.uk. The Society for Experimental Biology can be contacted at Burlington House, Piccadilly, London WV1 OLQ, UK; telephone 0171 439 8732, fax 0171-287-4786, e-mail v.wragg@sebiol.demon.co.uk or Web address http://www/demon.co.uk/SEB/.

March 29–April 2
5th International Workshop on
Pathogenesis-Related Proteins in Plants:
Signaling Pathways and Biological Activities
Aussois, France
Contact: Bernard Fritig, IBMP-CNRS, 12, rue du General Zimmer, 67000 Strasbourg, France; fax 33(0)388-61-4442, e-mail PR98@ibmp-ulp.u-strasbg.fr, Internet http://scilla.u-strasbg.fr/PR98/PR98.html.

March 31
Management of Fruit Ripening Workshop
University of California, Davis
Contact: Ms. Sharon Munowitch, University Extension, University of California, Davis, California 95616; telephone 916-757-8899, fax 916-757-8634, e-mail smunowit@unexmail.ucdavis.edu.

APRIL

April 3–8
Keystone Conference
Extracellular Matrix Signaling
Steamboat Springs, Colorado
Organizers: Zena Werb and Marc Tessier-Lavigne
Contact: Keystone Symposia, Drawer 1630, Silverthorne, CO 80498; telephone 800-253-0685, fax 970-262-1525; e-mail keystone@symposia.com; Web address http://www.colorado.net/symposia.

April 3–8
Keystone Conference
Vertebrate Development
Steamboat Springs, Colorado
Organizers: Andrew P. McMahon and Douglas Melton
Contact: Keystone Symposia, Drawer 1630, Silverthorne, CO 80498; telephone 800-253-0685, fax 970-262-1525; e-mail keystone@symposia.com; Web address http://www.colorado.net/symposia.

April 4–5
The 37th Annual Northeast Algal Symposium
Plymouth, Massachusetts
For information, contact Joby Chesnick, Biology Department, Lafayette College, Easton, PA 18042; e-mail chesnick@lafayette.edu or Tracy Villareal, University of Texas at Austin, Marine Science Institute, Port Aransas, TX 78373-5015; e-mail tracy@utmsi.zo.utexas.edu.

April 4–9
Keystone Conference
The Nuclear Matrix: Involvement in
Genomic Organization, Function and Regulation
Copper Mountain, Colorado
Organizers: Ron Berezney and Gary Stein
Contact: Keystone Symposia, Drawer 1630, Silverthorne, CO 80498; telephone 800-253-0685, fax 970-262-1525; e-mail keystone@symposia.com; Web address http://www.colorado.net/symposia.

April 4–9
Keystone Conference
Epigenetic Regulation of Transcription
Copper Mountain, Colorado
Organizer: Gordon Hager
Contact: Keystone Symposia, Drawer 1630, Silverthorne, CO 80498; telephone 800-253-0685, fax 970-262-1525; e-mail keystone@symposia.com; Web address http://www.colorado.net/symposia.

April 6–8
International Meeting on Production and Uses of Starch
Edinburgh, Scotland
Contact and mailing list: Dr. Carol Duffus, Crop Science and Technology Department, SAC, West Mains Road, Edinburgh EH9 3JG, Scotland; e-mail esa216@ed.sac.ac.uk.

April 7–10
Plasma Membrane Redox Systems: Their Role in Biological Stress and Disease
Antwerp, Belgium
For full information, please contact Han Asard, Department of Biology, University of Antwerp (RUCA), Groenenborgerlaan 171, B-2020 Belgium; telephone +32-3-2180420, fax +32-3-2180417, e-mail hanasard@ruca.ua.ac.be.

April 19–22
The Phytochemical Society of Europe
Biosynthesis of Isoquinoline, Indole, and Related Alkaloids
Istanbul, Turkey
Paper deadline is January 1998. Contact: Professor G. Sariyar, Istanbul University, Faculty of Pharmacy, 34452 Beyazit, Istanbul, Turkey; telephone 90-212-526-0737, fax 90-212-519-0812.

April 27–May 2
The 3rd Asian Crop Science Conference: Regional Production Strategies to Meet Food Needs Toward the 21st Century
Taichung, Taiwan
For information, please contact Jih Min Sung, telephone 886-4-2870551, fax 886-4-2860267, e-mail acsc@dragon.nchu.edu.tw.

MAY

May 3–6
Beltsville Symposium in Agriculture XXIII
Fresh Fruits and Vegetables: Quality and Food Safety
USDA/ARS, Beltsville, Maryland
Organizers of the Symposium: Kenneth C. Gross and Chien Yi Wang. For a pre-registration form or other information, contact Kenneth C. Gross, USDA/ARS, Horticultural Crops Quality Laboratory, Building 002, 10300 Baltimore Avenue, Beltsville, MD 20705; telephone 301-504-6128; fax 301-504-5107, e-mail kgross@asrr.arsusda.gov; Web site http://www.barc.usda.gov/symp98/.

May 10–13
The Phytochemical Society of Europe
Progress in Phytochemistry
Kerkrade, The Netherlands
Contact: Professor Dr. A. W. Alfermann, Institut fur Entwicklungs- und Molekularbiologie der Pflanzen, Heinrich-Heine-Universität Dusseldorf, Universitätstrasse 1, Geb. 26.13, D-40225 Dusseldorf, Germany; telephone 49-211-811-4603, fax 49-211-811-3085, e-mail alferman@rz.uniduesseldorf.de.

May 19–26
Short Course: Microinjection Techniques in Cell Biology
Marine Biological Laboratory
Woods Hole, Massachusetts
Application Deadline: March 10, 1998. Contact: Carol Hamel, Admissions Coordinator, Marine Biological Laboratory, 7 MBL Street, Woods Hole, MA 02543-1015; telephone 508-289-7401, e-mail admissions@mbl.edu.

May 21–24
The First Conference of the International Coenzyme Q10 Association
Boston, Massachusetts
For information, contact Prof. Flint Beal, Neurology Service, Warren 408, Massachusetts General Hospital, Fruit Street, Boston, MA 02114; telephone 617-726-8463, fax 617-724-1480.

May 23–28
NABC Bioethics Institute
An International Conference
North Carolina State University, Raleigh
The deadline for applications is April 1, 1998, with preference given to those received by March 1. For more details, contact Professor Gary Comstock, 421 Catt, ISU, Ames, IA 50011-1306, telephone 515-294-0054, e-mail comstock@iastate.edu.

May 28–30
Phosphorus in Plant Biology: Regulatory Roles in Molecular, Cellular Organismic, and Ecosystem Processes
Pennsylvania State University, University Park
Organizers: Jonathan Lynch and Jill Deikman. Contact: Jonathan Lynch, Department of Horticulture, Penn State, University Park, PA 16802; telephone 814-863-2256; fax 814-863-6139, e-mail jpl4@psu.edu. For more details, visit our Web site at http://www.lsc.psu.edu/phys/annualsym.html.

May 30–June 4
The 1998 Meeting of the Society for In Vitro Biology
Bally's Las Vegas Hotel & Casino
Las Vegas, Nevada
Meeting registration deadline: May 15. Contact: Tiffany McMillan; telephone 301-324-5054; fax 301-324-5057. For more details, visit our site at www.sivb.org/cong1998.htm. Related sites are www.sivb.org/links.htm and www.sivb.org/plant.htm, and our homepage at www.sivb.org.

JUNE

June 2–6
8th International Symposium on Preharvest Sprouting in Cereals
Detmold, Germany
Contact: K. Niebuhr/D. Weipert, Assoc. of Cereal Research, Schutzenberg 10, D-32756 Detmold, Germany; telephone 49(0)5231-25530, fax 49(0)5231-20505 or M. K. Walker-Simmons, USDA-ARS, 209 Johnson Hall, Washington State University, Pullman, WA 99164-6420, e-mail ksimmons@wsu.edu.

June 2–7
8th International Conference on the Cell and Molecular Biology of Chlamydomonas
Tahoe City, California
Organizer: William J. Snell, University of Texas Southwestern Medical Center. Co-organizer: Elizabeth Harris, Duke University. For more information, check the Web site at http://www.swmed.edu/home_pages/chlamy/1998chlamy.html.

June 3–7
Graduate Research Ethics Education A Workshop at Indiana University
Bloomington, Indiana
Application Deadline: March 25. For information contact Brian Schrag, Ph.D., Project Director, "Graduate Research Ethics Education," Association for Practical and Professional Ethics, 410 North Park Avenue, Bloomington, IN, 47405; telephone 812-855-6450, fax 812-855-3315, e-mail appe@indiana.edu, Web site http://php.ucs.indiana.edu/~appe/home.html.

June 4–6
Phytopharmaceuticals: From Plant to Therapeutic
John Innes Centre, Norwich, United Kingdom
Organizing committee: Paul Christou, Deborah Gierdlestone, and Clare Robinson. For details and an application form, please contact Clare Robinson, John Innes Centre; telephone 44-1603-452571, fax 44-1603-456844, e-mail clare.robinson@bbsrc.ac.uk.

June 4–7
Joint Annual Association for the Study of Food and Society (ASFS) and Agriculture, Food, and Human Values Society (AFHVS) Meeting
Gateway Holiday Inn, San Francisco, California
The deadline for abstracts is March 1, 1998. Contact: Dr. Jacqueline M. Newman, Chairperson, FNES Department, Queens College, 65-30 Kissena Blvd., Flushing, NY 11367; telephone 718-997-4150, fax 718-997-4163, e-mail newman@qcvaxa.acc.qc.edu.

June 14–19
IX International Congress on Plant Tissue and Cell Culture
The ICC Jerusalem International Convention Center
Jerusalem, Israel
For further information contact The Secretariat, IX International Congress on Plant Tissue and Cell Culture, P.O. Box 50006, Tel Aviv 61500, Israel; telephone 972-3-514-0000, fax 972-3-517-5674 / 972-3-514-0077, e-mail plant@kenes.com.

June 22–July 3
Short Course: Postharvest Technology of Horticultural Crops
University of California, Davis
Contact: Ms. Sharon Munowich, University Extension, University of California, Davis, California 95616; telephone 916-757-8899, fax 916-757-8634, e-mail smunowit@unexmail.ucdavis.edu.

June 24–28
9th International Conference on Arabidopsis Research
Madison, Wisconsin
Contact: Arabidopsis (arabidopsis@biochem.wisc.edu), fax 608-262-3453.

June 27–July 1
Plant Biology '98
Madison, Wisconsin
The American Society of Plant Physiologists annual meeting is scheduled "back to back" with the 1998 Arabidopsis meeting. Contact Susan Chambers, 15501 Monona Drive, Rockville, MD 20855-2768; telephone 301-251-0560 ext. 11, fax 301-279-2996, e-mail chambers@aspp.org or on the World Wide Web at URL http://aspp.org.

JULY

July 1–3
8th Spanish Conference on Nitrogen Fixation
Pamplona, Spain
Contact: Cesar Arrese-Igor, Department Ciencias del Medio Natural, University Publica de Navarra, Campus de Arrosadia, E-31006 Pamplona, Spain; phone +34-48-169119, fax 34-48-169122, e-mail cesarai@upna.es.

July 5–August 14
Summer Course:
Exploration of Plant Science
NIU at Oxford, Oriel College
Oxford, United Kingdom
Northern Illinois University is offering a summer course in plant biology open to U.S. undergraduate and graduate students interested in short-term study abroad. For more information, please see Oxford Program Web site: http://www.niu.edu/acad/english/oxford.html or contact Dr. Gabriel Holbrook, Plant Molecular Biology Center, Northern Illinois University, DeKalb, IL 60115; telephone 815-753-3199, e-mail t80gph1@wpo.cso.niu.edu.

July 7–10
25th Annual Meeting: Plant Growth Regulation Society of America
Chicago, Illinois
For information contact Dr. Warren Shafer, Abbott Laboratories, Agricultural Research Center, 6131 RFD (Oakwood Road), Long Grove, IL 60047; telephone 847-367-2654, fax 847-367-2913, e-mail pgrsa98@aol.com, Web address http://members.aol.com/pgrsa98.

July 12–17
IVth International Symposium on Cytochrome P450
Biodiversity and Biotechnology
Strasbourg, France
Information concerning this meeting and second circular can be obtained by e-mail at P450-98@ibmp-ulp.u-strasbg.fr. Information is also available from the Web P450 page: http://www.icgeb.trieste.it/p450/.

July 12–17
Gordon Conference on the Chemistry and Biology of Tetrapyrroles
Salve Regina University, Newport, Rhode Island
For information, please contact Gordon Research Conferences, University of Rhode Island, P.O. Box 984, West Kingston, RI 02892; telephone 401-783-4011, fax 401-783-7644; e-mail grc@grcmail.grc.uri.edu. The complete program of this meeting is posted on the Web at http://www.grc.uri.edu.

July 12–17
Gordon Research Conference: Gravitational Effects on Living Systems, Evolution of Gravitational Sensing and Interaction with Other Sensory Systems
Colby-Sawyer College, New London New Hampshire
Deadline for abstracts: June 1, 1998 (submit abstracts to Ruth Anne Eatock, The Bobby R. Alford Department of Otorhinolaryngology and Communicative Sciences, Baylor College of Medicine, One Baylor Plaza, Houston TX 77030). For more information, visit the Gordon Conferences general Web site at http://www.grc.uri.edu/, the specific Web site for this Gordon Conference at http://140.254.14.55/grc/, or contact Mike Evans, Department of Plant Biology, Ohio State University, Columbus, OH 43210; telephone 614-292-9162, fax 614-292-6345, e-mail evans.20@osu.edu.

July 13–17
5th International Symposium on Inorganic Nitrogen Assimilation
Luso, Portugal
Organizers: Maria Améilia Martins-Loução, Cristina, Cruz, Teresa Cabrita, Helena Freitas, Sara Amâncio. Contact: Secretariat ENAAC, Departamento de Biologia Vegetal, Faculdade de Ciências, de Lisboa, Campo Grande, Bloco C2, Piso 4., 1700 Lisboa, Portugal; telephone 351-1-757-3141, fax 351-1-750-0048, e-mail enaag@fc.ul.pt, Web address http://correio.cc.fc.ul.pt/~ENAAG.

July 13–25
Workshop Course on Molecular Techniques
Oregon State University, Corvallis
Contact: Gail Millimaki, Molecular and Cellular Biology Program, 3021 ALS, Oregon State University, Corvallis, OR 97331; telephone 541-737-3799, e-mail mcb@bcc.orst.edu.

July 19–24
Plant Molecular Biology Gordon Conference: Plant Biological Regulatory Mechanisms
New England College
Henniker, New Hampshire
Conference Chair: Pam Green; Vice Chair: Rob Last. The conference program may be viewed though the Gordon Conference Web site at http://www.grc.uri.edu. This site also provides online registration and other meeting information.

July 20–24
The Supporting Roots: Structure and Function
A Conference Sponsored by the University of Bordeaux, Bordeaux, France
Abstract Deadline: February 1, 1998. Contact: Alexia Stokes, Laboratoire de Rhéologie du Bois de Bordeaux, Domaine de L'Hermitage, B.P. 10, 33610 Cestas Gazinet, France; telephone +33- 5-57-97-91-04; fax +33-5-56-68-07-13, e-mail stokes@lrbb3.pierroton.inra.fr.

July 22–24
Carbohydrate Metabolism in Plants, the Pathways and Their Control
A meeting IN MEMORIAM to honour Professor T. ap Rees
Queens College, Cambridge, United Kingdom
Organizers: Dr. M. M. Burrell, Professor J. A. Bryant, Dr. N. J. Kruger. For further information, contact Dr. M. M. Burrell, Advanced Technologies, Cambridge, Science Park, Cambridge, UK. CB4 4WA; e-mail mmb.atc@dial.pipex.com.

June 24–27
Fifth Annual "Teaching Research Ethics" Workshop
Indiana University, Bloomington
For information, contact Kenneth D. Pimple, "Teaching Research Ethics" Project Director, Poynter Center, Indiana University, 410 North Park Avenue, Bloomington IN 47405; telephone 812-855-0261, fax 812-855-3315, e-mail pimple@indiana.edu, web address http://www.indiana.edu/~poynter/index.html.

July 26–31
1998 Phytochemical Society of North America Conference
"Phytochemicals in Human Health Protection, Nutrition and Plant Defense"
Pullman, Washington
Contact: Norman G. Lewis, Institute of Biological Chemistry, 467 Clark Hall, P.O. Box 646340, Pullman, WA 99164-6340; telephone 509-335-3412, (ask for Hiroko), fax 509-335-7643, e-mail lewisn@wsu.edu.

AUGUST

August 9–14
Annual Meeting and Exhibits
Society for Industrial Microbiology
Adams Mark Hotel, Denver, Colorado
For more information, please contact the (SIM) office at 703-691-3357. Visit the SIM Web site at http://www.simhq.org or e-mail info@simhq.org.

August 9–14
11th International Workshop on Plant Membrane Biology
Cambridge, United Kingdom
Contact: Dr. Mark Tester, Department of Plant Sciences, University of Cambridge, Downing St., Cambridge, CB2 3EA, UK; telephone +44-1223-333918, fax +44-1223-333953, e-mail plant-nut@lists.cam.ac.uk.

August 13–17
16th International Conference on Plant Growth Substances
Makuhari Messe, Chiba, Japan
Organizer: Nobutaka Takahashi. For information contact http://frpphf.riken.go.jp/IPGSA/IPGSA98.html, or Dr. Yuji Kamiya, Plant Hormone Function, FRP RIKEN, Hirosawa 2-1, Wako-shi, Saitama 351-01, Japan; fax +81-48-462-4716, e-mail ykamiya@postman.riken.go.jp.

August 16–21
Gordon Research Conference
Cellular Basis of Adaptation to Salt and Water Stress in Plants
Queen's College, Oxford, United Kingdom
Chair: Andrew Smith; Vice Chair: Beth Bray. For more information, visit the GRC at http://www.grc.uri.edu/ or contact J.A.C. Smith, Department of Plant Sciences, University of Oxford, South Parks Road, Oxford, OX1 3RB, UK; telephone 44-1865-275-009, fax 44-1865-275074, e-mail andrew.smith@plants.ox.ac.uk.

August 17–21
Sixth International Symposium on Genetics and Molecular Biology of Plant Nutrition
Elsinore, Denmark
For information, contact Arne Jensen, Plant Biology and Biogeochemistry Department, Riso, National Laboratory, P.O. Box 49, Building 330, DK - 4000, Roskilde, Denmark; e-mail arne.Jensen@risoe.dk or see http://www.risoe.dk.

August 23–28
6th International Mycological Congress, IMC6
Jerusalem, Israel
Contact: Secretariat, P.O. Box 50006, Tel-Aviv 61500, Israel; telephone 972-3-5140011, fax 972-3-5172265, e-mail mycol@kenes.com. See the program at http://lsb380.plbio.lsu.edu/ima/imc6prog.html.

SEPTEMBER

September 1–5
Cell Walls '98
8th International Cell Walls Meeting
John Innes Centre, Norwich, United Kingdom
Scientific Organizers: Keith Roberts, Maureen McCann, and Keith Waldron.
For a copy of the first circular; please contact the symposium secretary, Mrs. Gay Adams, at telephone 44-1603- 452571, fax 44-1603-501771, e-mail gay.adams@bbsrc.ac.uk.

September 5–8
European Union TMR-Euroconference on Biology and Biotechnology of the Plant Hormone Ethylene II
Island of Santorini, Cyclades, Greece
Organizer and contact: Dr. Angelos K. Kanellis, National Agricultural Research Foundation, Institute of Viticulture and Vegetable Crops, PO Box 1841, GR-711 10 Heraklion, Crete, Greece; telephone/fax +30-81-245851, 245873, 242870, e-mail kanellis@nefeli.imbb.forth.gr, Web site www.imbb.forth.gr/ethylene.

September 7–19
Workshop Course on Molecular Techniques
Oregon State University, Corvallis
Contact: Gail Millimaki, Molecular and Cellular Biology Program, 3021 ALS, Oregon State University, Corvallis, OR 97331; telephone 541-737-3799, e-mail mcb@bcc.orst.edu.

September 13–16
The Phytochemical Society of Europe
Biologically Active Polysaccharides
Oslo, Norway
Paper deadline: May 1988. Contact: Professor B. S. Paulsen, Farmasoytisk, avd c, Postboks 1068 - Blindern, 0316 Oslo, Norway; telephone 47-2285-6572, fax 47-2285-4402, e-mail b.s.paulsen@farmasi.uio.no.

We Look Forward to Seeing You

in Madison, Wisconsin,

for Plant Biology '98

Saturday, June 27, through Wednesday, July 1

ASPP Placement Service

This form may be used only by members of the American Society of Plant Physiologists.
Please print or type your placement information on this form (curriculum vitae will not be accepted) and send it to:
Estella Coley, ASPP headquarters, 15501 Monona Drive, Rockville, MD 20855-2768

LAST NAME _____ TITLE _____ FIRST NAME _____ INITIAL _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

TELEPHONE _____ FAX _____ E-MAIL _____

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

[ ] Permanent [ ] Temporary [ ] Postdoctoral [ ] Industrial
[ ] Academic [ ] Government [ ] USA only [ ] Outside USA

US citizen? [ ] Yes [ ] No **Date available:** _____

Fields of interest, specialities, and publications titles: _____

Thesis, dissertation topics, professor: _____

Professional societies and honors: _____

Degree/year	Major	Minor	College/University and its location

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

Employer and location	From	To	Position, Title, Duties

References (names, addresses, telephone numbers):

ASPP Job Placement Service

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

ASPP headquarters in Rockville, Maryland, operates a placement service in which are kept active two files of resumes of individuals who are seeking employment. Employers are urged to survey the resume files for those seeking permanent positions and those seeking postdoctoral or similar positions. The files cost $25 each and may be ordered from Estella Coley, ASPP Placement Service, 15501 Monona Drive, Rockville, MD 20855-2768 USA. Those seeking employment should complete the Placement Service Form on the facing page to be included in the service.

II. Placing a Position Ad in *ASPP NEWS* and on the ASPP World Wide Web Homepage

Submit all ads by e-mail to Sylvia J. Braxton at sbraxton@aspp.org (or by mail to Sylvia J. Braxton, 15501 Monona Drive, Rockville, MD 20855-2768; **FAXED ADS ARE NOT ACCEPTED**). A fee of $150 for print, Web, or both is charged for all academic/government/industry permanent positions and for all positions, regardless of rank, posted by private companies (private nonprofit companies are not charged a fee). If a fee is charged for your ad, please including billing information at the time the ad is submitted.

- **Academic/Government/Industry Permanent Positions (Ph.D.)**: Limited to 200 words; ad will run 12 weeks on the Web and appear in one issue of *ASPP NEWS*. (If the ad runs only on the Web, the word limit is waived.)
- **Postdoctoral Positions** and **Research/Technical Positions (non-Ph.D.)**: At universities and government installations, limited to 100 words; at private companies, limited to 200 words. Ad will run 12 weeks on the Web and appear in one issue of *ASPP NEWS*. (If the ad runs only on the Web, the word limits are waived.)
- **Assistantships, Fellowships, Internships, etc.**: Announcements of programs and fellowships or internships for students seeking advanced degrees run at no charge and without a word limit. They will run two times in *ASPP NEWS*: the first time, they will run at full length; the second time, they will include location, contact name, and address, with a reference to the original posting. These announcements will run on the ASPP World Wide Web Homepage for 12 weeks from the date of posting.

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

Faculty Position
University Of Louvain, Belgium
(Received 11/18)

The Rector of the Catholic University of Louvain in Louvain-la-Neuve, Belgium, invites applications for a full-time academic position beginning September 1, 1998. Applicants will have a Ph.D. or equivalent, postdoctoral experience, and will be expected to establish a vigorous, externally funded, collaborative research program on the mechanisms of resistance to environmental stresses. The physiological approach of abiotic stresses is essential. A knowledge of the techniques of molecular biology will be appreciated. A good knowledge of French is requested, since the successful candidate will be expected to teach in French, in plant biology. Teaching experience is desirable. Candidates should send a curriculum vitae, abstracts of five significant publications, and names and addresses of four references to Professor M. Crochet, Recteur, Université catholique de Louvain, Place de l'Université 1, B-1348 Louvain-la-Neuve, Belgium. Inquiries can be directed to: Prof. Ph. Van den Bosch de Aguilar, Head of the Department of Biology, Place Croix du Sud 5, B- 1348 Louvain-la-Neuve, Belgium; e-mail vdbosch@bani.ucl.ac.be. The closing date for applications is February 15, 1998.

Science Specialist Appointments with NBIF
New Mexico State University, Las Cruces
(Received 11/24)

Applicants with a strong interest in bioinformatics and experience in either plant biochemistry, especially secondary pathways, or cell and molecular biology are sought immediately. Six appointments of science specialists are available at the National Biotechnology Information Facility (NBIF); see http:www.nbif.org. M.S. with six years of experience in either life science or computational science or related field and a Ph.D. are strongly preferred. Responsibilities include overseeing the design, development, population, and curation of biological science databases, in particular, a database of plant specific and secondary metabolism pathways; developing and conducting workshops on bioformatics; designing and publishing interactive teaching tools on the web; molecular modeling; and modeling flux through metabolic pathways. Questions should be directed to Dr. Greg Phillips, e-mail grphilli@nmsu.edu or Dr. Mary O'Connell, telephone 505-646-5172, e-mail moconnel@nmsu.edu. Submit application, curriculum vitae, statement of interest, names of three references, and copies of transcripts to NBIF Search/Department of Agronomy & Horticulture, Box 30003, MSC 3Q, New Mexico State University, Las Cruces, NM 88003. Application deadline: December 15, 1997, or until all positions are filled. NMSU is an EEO/AA employer.

Assistant Professor and
Assistant Restoration Ecologist
University of California, Davis
(Received 11/25)

An assistant professor and assistant restoration ecologist position is available in the Agricultural Experiment Station (AES) for July 1998. This is an academic year (9-month) tenure track appointment with fiscal year (11-month) appointment offered and continued based on academic personnel review. Teaching is expected in undergraduate courses within the departmental major and in relevant graduate courses. A vital research program is expected in new principles and management techniques for revegetation of degraded wildlands or open space affected by urban and/or agricultural encroachment with emphasis on California. A Ph.D. (or equivalent) and a research record in restoration plant ecology, plant ecology, plant biology, horticulture, or related field is required. Submit statements of teaching and research interest, curriculum vitae (including list of publications and representative reprints), official undergraduate and graduate transcripts, and names and addresses of three references to Dr. Michael Barbour, Chair of Search Committee, Department of Environmental Horticulture, University of California, One Shields Avenue, Davis, CA 95616-8587. Applications should be postmarked by March 1, 1998, to assure consideration. The University of California is an affirmative action/equal opportunity employer.

MAXIMIZE YOUR JOB PROSPECTS!
Check ASPP's World Wide Web site (http://aspp.org/JOBS/) every Friday for new job listings.
Jobs with early application deadlines are listed on the Web site, but might not appear in *ASPP NEWS*.

Molecular Biologist/Physiologist
USDA-ARS Northern Crop Science Laboratory
Fargo, North Dakota
(Received 12/01)
A permanent, full-time position is available in the Sugarbeet and Potato Research Facility at the USDA-ARS Northern Crop Science Laboratory in Fargo, North Dakota for a molecular biologist/physiologist. The incumbent is project leader for investigations into sucrose partitioning in sugarbeet and is expected to initiate a program investigating the synthesis, turnover, and transport of sucrose in sugarbeet. Biochemical and physiological techniques will be used to identify metabolic factors that limit sucrose accumulation in the sugarbeet root. In addition, the incumbent will oversee research in which the phenomenon of heterosis is examined using molecular marker techniques. Information generated by this research will guide future efforts aimed at increasing sucrose production using a combination of biotechnological and traditional plant breeding methods. The incumbent will work with a team of sugarbeet and potato geneticists, physiologists, and pathologists in improving the production of these crops in the U.S. Excellent facilities are available for the successful candidate. Starting salary is at the GS11-12 grade ($38,593–$46,354 plus benefits). Interested applicants should send a cover letter describing research interests, unofficial transcripts, and the names and telephone numbers of three references to USDA-ARS, Human Resources Division, Western Operations Branch, Room 220, 6305 Ivy Lane, Greenbelt, MD 20770-1435.

Visiting Professor
Rollins College, Winter Park, Florida
(Received 12/12)
The Department of Biology, Rollins College, invites applications and nominations for a nine-month (starting August 26, 1998, through May 11, 1999) visiting professor, sabbatical replacement, teaching position. Courses to be taught include plant biology and genetics for majors. Applicants should have a strong interest in teaching; teaching experience is desirable. Please submit a curriculum vitae, a summary of teaching interests, and three letters of recommendation to: Persis C. Coleman, Ph.D., Chair, Biology Department, Rollins College, 1000 Holt Avenue - 2743, Winter Park, FL 32789-4499. Review of applications will begin January 30, 1998. Rollins College is an equal opportunity employer. In accordance with the Americans with Disabilities Act, people needing special accommodation to participate in the application process, should contact 407-646-2494.

Project Leader
International Paper, Bainbridge, Georgia
(Received 12/17)
International Paper is seeking applicants to fill a vacancy in their Forestry Research Group at Bainbridge, Georgia. This position will be responsible for defining and improving nutrition management regimes for pine and hardwood stands, evaluating the effectiveness of the nutrition management program. A secondary responsibility is to evaluate the risk from pests in intensively managed pine stands, develop management control strategies, and represent International Paper in university cooperatives dealing with forest nutrition and pest management. Applicants should have a master's degree (essential) or Ph.D. (preferred) in forestry or related field with emphasis on forest tree nutrition or forest pest management. Applicants must have a working knowledge in the primary area of forest nutrition with secondary emphasis in pest management with good analytical and computer skills. Strong written and oral communication skills are also essential. Applicant must be capable of independent work and operating with a team of peers. Position requires regular travel. Offer of employment to the successful candidate is contingent upon the successful completion of a pre-employment health assessment, which includes a medical screening and drug screening, compliance with the immigration reform act, and verification of a valid driver's license. To apply, submit letter of application, resume, academic transcripts, and names of three references to Dr. Richard H. Smeltzer, International Paper, 719 Southlands Road, Bainbridge, GA 31717. Review of applications begins January 31, 1998; expected starting date is February 24, 1998, or as negotiated. International Paper is an equal opportunity employer F/M/D/V.

Project Leader
International Paper, Bainbridge, Georgia
(Received 12/22)
International Paper is seeking applicants to fill a new position in their Biotechnology Group in Bainbridge, Georgia. The primary responsibilities of the person in this position will be focused toward development of a system for efficient propagation of selected genotypes of loblolly pine via somatic embryogenesis. Responsibilities will include review of scientific literature and associated developments related to forest biotechnology, setting of direction for research at the project level, development and management of project budgets, reporting of results to program manager and senior management, and contributing to plans for business implementation of research success. A secondary responsibility of this position involves active participation in research focused toward genetic engineering of loblolly pine. Applicants should have a Ph.D. in the field of plant sciences, and extensive knowledge of developmental plant biology, molecular biology, and tissue culture. Applicant must have demonstrated success in development of new information in the field of plant tissue culture. Applicants should also have highly developed organizational skills, the ability to function as an effective team leader, be able to motivate and effectively communicate with others, be capable of independent work, and be able to work well within a team structure. An offer of employment will be contingent upon successful completion of a preemployment health assessment, which includes a medical screening and drug screening, compliance with the immigration reform act, and verification of a valid driver's license. To apply, submit letter of application, resume, academic transcripts, and names of three references to Dr. Daniel T. Carraway, International Paper, 719 Southlands Road, Bainbridge, GA, 31717. Review of applications begins on January 19, 1998; expected starting date is February 1998 or as negotiated. International Paper is an equal opportunity employer F/M/D/V.

Assistant/Associate Professor
The University of Arizona, Tucson
(Received 12/29)
This tenure-track position (80% research and 20% teaching) is available at the Assistant or Associate Professor level on July 1, 1998. Preference will be given to candidates investigating plant genetic mechanisms, including but not limited to genome structure and interactions, chromatin-level regulation of expression, gene-silencing mechanisms, or environmental/developmental control of gene expression. We expect to fill this position at the associate level, but outstanding junior candidates will be considered. The successful candidate will be expected to participate in undergraduate and graduate teaching in plant biology. The position requires a Ph.D. degree in plant genetics or a closely related field with an emphasis in molecular genetics. Candidates must demonstrate excellence in research and communication skills necessary to be an effective teacher. In addition, the individual must have demonstrated potential to attract extramural funding. Please send letter of application, including statement on research and teaching, curriculum vitae, and the names of three references to Vicki L. Chandler, Chair, Search Committee, Department of Plant Sciences, The University of Arizona, Tucson, AZ 85721; e-mail chandler@ag.arizona.edu. Review of applications begins February 15, 1998, and continues until the position is filled. The University of Arizona is an EEO/AA/ADA employer. Women and minorities are encouraged to apply.

Assistant Professor
University of Minnesota, St. Paul
(Received 01/05)
Applications are invited for a 12-month, tenure-track Assistant Professor position in floriculture breeding and genetics. Research involves the genetic improvement of annual and/or herbaceous perennial floricultural crops of potential importance in Minnesota. Emphases could include the development of new crop species, novel uses or forms of traditional crops, or genetic improvement of species to improve the sustainability of greenhouse or outdoor production systems, such as resistance and/or tolerance to biotic or abiotic stresses. Teaching in floriculture and related areas and advising of undergraduate and graduate students. Minimum requirements: Ph.D. or equivalent in plant breeding, horticulture, or related discipline with demonstrated expertise in plant genetics by date of appointment; effective oral and written communication skills. Desired: Graduate level course work in floriculture, plant breeding, genetics, and molecular biology; experience in genetic improvement of plants using traditional and/or biotechnological approaches; experience in greenhouse production systems; effectiveness in teaching. Applicants must send curriculum vitae, graduate transcripts, detailed statement of

teaching and research interests, and three letters of reference to: Chair, Floriculture Genetics Search Committee, Department of Horticultural Science, University of Minnesota, 305 Alderman Hall, St. Paul, MN 55108. Review of applications will begin February 28, 1998, and will continue until the position is filled. The University of Minnesota is an equal opportunity educator and employer.

Microbiologist/Research Food Technologist
USDA, ARS, BARC, Plant Science Institute
Beltsville, Maryland
(Received 01/08)
The USDA, Agricultural Research Service, Beltsville Agricultural Research Center, Plant Sciences Institute, Horticultural Crops Quality Laboratory, in Beltsville, Maryland, is seeking a Microbiologist/Research Food Technologist, GS-403/1382-12/13. Salary is commensurate with experience (GS-12: $45,939-$59,725 per year, GS-13: $54,629-$71,017 per year). Candidates must be U.S. citizens. The position conducts high-priority basic and applied food technology and postharvest biology research on food safety and quality of fresh and fresh-cut fruits and vegetables. In addition to the basic education requirements, applicants must demonstrate: 1) knowledge of the principles, techniques, and procedures of microbiology, food technology, and plant physiology; 2) ability to design, plan, and conduct multidisciplinary research, and analyze and publish results; 3) knowledge of plant postharvest biology and technology; and 4) skill in the application of techniques and procedures used in the study of human pathogenic bacteria. For information on the research program, contact Dr. Ken Gross at kgross@asrr.arsusda.gov. This position has specific education requirements, and factors that must be addressed. To ensure submission of a complete application, applicants must request a copy of the vacancy announcement by calling 301-344-4638 or by printing it from the Internet at http://www.ars.usda.gov. The vacancy announcement number for this position is ARS-D8B-058/B-8-02. The vacancy announcement closes 02/02/98. USDA/ARS is an equal opportunity employer.

Scientist
The Boyce Thompson Institute
Ithaca, New York
(Received 01/14)
The Boyce Thompson Institute for Plant Research at Cornell University invites applications for a tenure-track position for a scientist addressing fundamental questions relating to the functional and evolutionary diversity of plant genomes. Research areas of interest include, but are not limited to: adaptation to biotic or abiotic stresses; genetics and biochemistry of plant-insect or plant-pathogen interactions; evolution or analysis of complex traits; comparative analysis of germplasms or natural populations; and genomic analysis of the evolution of plant form or function. This position is synergistic with a molecular biodiversity/genomics initiative currently being implemented at Cornell University. Generous start-up funds and benefits are available. Candidates will be considered at all levels. Review of applications will begin February 23. Applicants should send a curriculum vitae, statement of research interests, and names of at least three references to Molecular Biodiversity Search Committee, Boyce Thompson Institute, Ithaca, NY 14853. Questions regarding appropriate research areas may be directed to Dr. David Stern, telephone 607-254-1306, fax 607-255-6695, e-mail ds28@cornell.edu. Boyce Thompson Institute is an affirmative action, equal opportunity employer. Applications from women and minorities are encouraged.

Assistant/Associate Professor
Pennsylvania State University, University Park
(Received 01/20)
Applications are invited for this 75% research/25% teaching, tenure-track position in the Plant Pathology Department, College of Ag Sciences, and affiliated with the Life Sciences Consortium. Responsible for developing a program in molecular biology of plant–bacteria interactions. Research will focus on the molecular basis of plant responses to phytopathogenic bacteria. A model system may be used, but program development should include plant–bacteria systems of concern to agriculture. Individual will be responsible for graduate education in area of plant–bacteria interactions in Plant Pathology graduate degree program and the Life Sciences Consortium and will participate in team teaching an undergraduate course in molecular plant–microbe interactions in agriculture. A Ph.D. in plant pathology, plant physiology, plant biology, or a related discipline and postdoctoral experience is required. Experience with plant–pathogen systems, expertise in plant molecular biology, and demonstrated teaching ability are also expected. Submit statement of research and teaching goals and interests; curriculum vitae; transcripts; and name, postal and e-mail addresses, and telephone numbers of three referees to Eva J. Pell, MB-102, 211 Buckhout Laboratory, University Park, PA 16802-4507. Review of resumes will begin March 31, 1998, and continue until position is filled. AA/EOE.

Assistant Level Cooperative Extension
University of California, Riverside
(Received 01/21)
The Botany and Plant Sciences Department at the University of California, Riverside, is recruiting for an assistant level position in the area of subtropical crops with emphasis on citrus and avocado. Applicants are required to have a Ph.D. in a plant science–related field and at least one year of postdoctoral experience. The position includes both CE and AES responsibilities, including educational efforts within the citrus and avocado industries; establishment of communication channels for conveyance of results from basic and applied research programs to all facets of the subtropical fruit industries; and research on subtropical crops, emphasizing citrus and avocado, using tools of plant physiology, breeding, and/or molecular genetics to enhance fruit quality and productivity. Opportunities exist for supervising graduate students. Send letter of application, curriculum vitae, statement of research interests, and transcripts to Dr. Elizabeth M. Lord, Chair, Department of Botany and Plant Sciences, University of California, Riverside, CA 92521-0124; e-mail lord@ucrac1.ucr.edu, fax 909-787-4437, web site http://cnas.ucr.edu/~bps/homepage.htm. Also arrange to have at least three confidential letters of reference sent to Dr. Lord. Review of files will begin in April 1998 and will continue until the position is filled. The position is available July 1, 1998. The University of California, Riverside, is an affirmative action/equal opportunity employer.

POSTDOCTORAL POSITIONS

Postdoctoral Fellowship
Waksman Institute, Rutgers University
Piscataway, New Jersey
(Received 10/29)
A postdoctoral research position is available to study signal transduction during induction of disease resistance to viral infections of tobacco and Arabidopsis. Genetic, molecular and biochemical approaches are being utilized. Emphasis is being placed on defining components of these pathways, particularly the salicylic acid-mediated signaling pathway (PNAS, 1996, 93:14972; Plant J., 1996, 10:1089; Plant Cell, 1997, 9:809; Plant J., 1997, 11:301; Plant J., 1997, 11:747; Plant J., 1997, 11:993; Plant Physiol., 1997, 113:1319; Genes & Dev., 1997, 11:1621; Trends Plant Sci., 1997, 2:266). Applicants should have research experience in genetics, molecular biology, and/or biochemistry. Send a curriculum vitae, a cover letter detailing experience, and three letters of recommendation to Daniel Klessig, Waksman Institute, Rutgers University, 190 Frelinghuysen Road, Piscataway, NJ 08854. Rutgers University is an equal opportunity/affirmative action employer.

Postdoctoral Position
Carnegie Institution, Stanford, California
(Received 11/11)
A position is available to study the role of the chloroplast signal recognition particle (cpSRP) in the biogenesis of thylakoid membrane proteins. cpSRP is a complex of 54- and 43- kD proteins. Genes encoding both subunits and the corresponding mutants in Arabidopsis have been isolated. Projects include investigating the structure-function relationships and biochemical properties of cpSRP. A Ph.D. and research experience in protein biochemistry and/or molecular biology is required. Send a curriculum vitae and the names of three references to Dr. Neil E. Hoffman, Carnegie Institution, 260 Panama St., Stanford, CA 94305; telephone 650-325-1521 ext. 214, e-mail hoffman@andrew.stanford.edu.

Postdoctoral or Technical Position
University of Alberta, Edmonton, Canada
(Received 11/11)
A position for a postdoctoral fellow or experienced technician is available immediately to investigate the physiological basis of nitrogen efficiency in transgenic canola. We are looking for a strong candidate who is experienced in using a broad range of physiological and biochemical techniques and is capable of working independently.

Experience working with hydroponic systems, biochemical assays, and HPLC is a priority. Interested candidates should send a curriculum vitae and the names and addresses of three references to Dr. Gregory J. Taylor, Department of Biological Sciences, University of Alberta, Edmonton, Alberta, T6G 2E9, Canada; telephone 403-492-2598, fax 403-492-9234, e-mail gregory.taylor@ualberta.ca. This position will remain open until a suitable candidate has been appointed.

Postdoctoral Position
Purdue University, West Lafayette, Indiana
(Received 11/17)
A postdoctoral position is currently available to study molecular and genetic aspects of phenylpropanoid metabolism in Arabidopsis. Current work in the lab focuses on the fah1 and sng1 mutants of Arabidopsis that are defective in the biosynthesis of sinapic acid esters and lignin. For more information, see http://www.biochem.purdue.edu/~chapple/. Previous experience in molecular biology and biochemical techniques such as gas chromatography or high-performance liquid chromotography, HPLC is desirable. Send a curriculum vitae and the names, telephone numbers, and e-mail addresses of three references to Dr. Clint Chapple, Department of Biochemistry, Purdue University, West Lafayette IN 47907-1153; fax 765-494-7897, e-mail chapple@biochem.purdue.edu.

Postdoctoral Position
AgBiotech Center, Rutgers University
New Brunswick, New Jersey
(Received 11/17)
Postdoctoral positions are available immediately to study (a) the transduction of receptor-mediated signals and (b) fungal genes expressed during plant infection. Candidates should have expertise in molecular biology. Experience in gene expression, biochemistry, plant transformation, or plant pathology is also desirable. Send a curriculum vitae, a cover letter detailing research experience, and three letters of recommendation to: Dr. Michael Lawton, AgBiotech Center, Foran Hall, Cook College, 59 Dudley Road, New Brunswick, NJ 08901-8520; telephone 732-932-8165 ext. 223, fax 732-932-6535, e-mail lawton@aesop.rutgers. edu.

Postdoctoral Position
Rutgers University, New Brunswick, New Jersey
(Received 11/19)
A postdoctoral position is available at the AgBiotech Center at Rutgers University to study the mechanism of antifungal activity of pokeweed antiviral protein (PAP). PAP is a ribosome-inactivating protein, which has potent antiviral activity against plant and animal viruses. We isolated nontoxic PAP mutants and showed that transgenic plants expressing these mutants are resistant to fungal infection (Zoubenko et al., [1997] *Nature Biotechnology 15*:992–996). A postdoctoral associate is sought to work on PAP-mediated signal transduction that leads to activation of defense genes and resistance to fungal infection. Experience with molecular genetics and fungal pathogens is desirable. Please send a curriculum vitae and three letters of reference to Dr. Nilgun Tumer, AgBiotech Center, Cook College, New Brunswick, NJ 08901-8520; fax 732-932-6535, e-mail Tumer@aesop.rutgers.edu.

Postdoctoral Position
Ohio State University, Columbus
(Received 11/24)
A postdoctoral position is available beginning March 1, 1998, to characterize the chemistry of trace metal binding sites in the alga Chlamydomonas and to engineer algae expressing unique trace metal binding proteins. The overall objective is to develop organisms for the recovery of specific trace metals from solution. Applicants with experience in ligand chemistry, protein purification, and molecular genetics are encouraged to apply. The position is jointly available in the laboratories of Dr. Richard Sayre, Departments of Biochemistry and Plant Biology, and Dr. Sam Traina, Department of Natural Resources, Ohio State University. Applicants are requested to send a resume and the names, telephone numbers, and e-mail addresses of three references by e-mail to Dr. Richard Sayre, Departments of Biochemistry and Plant Biology, 2021 Coffey Rd., Room 202 Kottman Hall, Ohio State University, Columbus, OH 43210; telephone 614-292-9030, e-mail sayre.2@osu.edu.

Postdoctoral Research Associate Position
USDA-ARS Northern Crop Science Laboratory
Fargo, North Dakota
(Received 12/01)
A two-year position is available at the USDA-ARS Northern Crop Science Laboratory in Fargo, North Dakota, to investigate the use of entomopathogenic fungi to control the sugarbeet root maggot (SBRM). The sugarbeet root maggot, *Tetanops myopaeformis*, is the most serious insect pest of sugarbeet in the northern Great Plains. The project aims to (1) collect, assay, and identify fungi that exhibit potential to control SBRM, (2) test candidate biocontrol fungi in the laboratory and in the field for efficacy against the SBRM; and (3) determine the survivability of the candidate biocontrol fungi. Improvement of the biocontrol agent through insect cycling or genetic engineering also may be pursued. Applicants should have a strong background in microbiology and insect pathology. Qualifications include a Ph.D. in microbiology or related field. Starting salary is at the GS11-12 grade ($38,593–$46,254 plus benefits). Outstanding facilities and equipment are available to the successful candidate. Interested applicants should send a cover letter describing research interests, a curriculum vitae, unofficial academic transcripts, and the names and telephone numbers of three references to Dr. Garry A. Smith, Sugarbeet and Potato Research, USDA-ARS, Northern Crop Science Laboratory, Fargo, ND 58105-5677; telephone 701-239-1351, fax 701-239-1349, e-mail smithg@fargo.ars.usda.gov.

Postdoctoral Position
University of Nevada, Reno
(Received 12/04)
A postdoctoral position is available to study the effects of altered carotenoid compositions on higher plant photosystems in vivo using well characterized Arabidopsis carotenoid biosynthetic mutations (*Plant Cell 8*:1627–1639; *8*:1613–1626). In comparison with wild-type, compositional, structural, and photochemical analyses will provide insight into the role of specific xanthophylls in photosystem structure/function in vivo. Previous experience in carotenoid synthesis is not required, but experience in either biochemical or photochemical techniques is preferred. Send curriculum vitae and three reference letters to Dr. Dean DellaPenna, Department of Biochemistry/200, University of Nevada, Reno, NV 89557; telephone 702-784-1918, fax 702-784-1650. Application review begins January 1, 1998. AA/EOE.

Two Postdoctoral Positions
University of Nevada, Reno
(Received 12/16)
Two positions are available to investigate molecular mechanisms associated with chloroplast division. We have recently demonstrated that two plant homologues of the bacterial cell division protein FtsZ (*Nature 376*:473–474, 1995; *Plant Physiol. 111*S:43, 1996) are essential for plastid division in Arabidopsis. Several projects are possible, depending on the skills/interests of the successful candidates. A Ph.D. and a strong background in molecular biology or biochemistry are required. Send curriculum vitae, brief statement of research experience, and three letters of reference to Dr. Katherine Osteryoung, Dept. of Biology /314, University of Nevada, Reno, NV 89557; telephone 702-784-6258, fax 702-784-1650, e-mail oster_k@med.unr.edu. Application review begins 01/15/98. AA/EO.

Postdoctoral Position
Iowa State University, Ames
(Received 12/22)
Great flexibility exists to design and conduct a one- to three-year project related to genecology, water, or heat stress resistance, or nitrogen fixation of woody plants useful in managed landscapes. Please submit a two-page research proposal that illustrates your expertise and interests. Also send a curriculum vitae, transcripts, reprints, and names and e-mail addresses of three references to Dr. William R. Graves, 129 Horticulture Hall, Ames, IA 50011-1100 by March 31, 1998. See the faculty section of http://www.hort.iastate.edu/hort/ for more information. Iowa State University is an affirmative action/equal opportunity employer.

Postdoctoral Position
Indiana University – Purdue University at Indianapolis, Indiana
(Received 12/29)
A postdoctoral position is available to study photoregulated protein kinases from the garden pea. Expression of the two kinases under investigation is rapidly down-regulated by light.

One kinase is closely related to the blue-light photoreceptor for phototropism from Arabidopsis, while the other may be located in the nucleus. Genetic, molecular, and biochemical approaches will be utilized to elucidate the roles of these kinases in the transduction of light signals. Experience with Arabidopsis transformation, molecular biology, and/or kinase biochemistry is desirable. To apply, send a curriculum vitae, a description of research experience, and the names of three references to John C. Watson, Department of Biology, Indiana University–Purdue University at Indianapolis, 723 W. Michigan St., Indianapolis, IN 46202-5132; telephone 317-278-1366, fax 317-274-2846, e-mail jcwatso@iupui.edu.

Postdoctoral Associate
Pioneer Hi-Bred International, Inc.
Johnston, Iowa
(Received 12/29)
A postdoctoral position is immediately available for two years to study the biochemistry and molecular biology of enzymes involved in plant cell wall polysaccharide biosynthesis. The candidate must have experience in the standard state-of-the-art techniques of biochemistry and molecular biology and must be able to conduct research independently. Experience in membrane protein biochemistry, although not required, will be a strong plus. The successful candidate will have good writing and communication skills and will be expected to write up research results in a timely manner. We offer competitive salaries and excellent, comprehensive benefits. Interested individuals with a Ph.D. degree in biochemistry, molecular biology, or a related field should send their resume along with names, addresses, and telephone numbers of three references to Pioneer Hi-Bred International, Inc., Attn. Personnel (Job # QT-806), P.O. Box 1004, Johnston, IA 50131. Applications received by January 23, 1998, will be assured of full consideration.

Postdoctoral Research Associate
Brookhaven National Laboratory
Upton, New York
(Received 12/30)
A position is available immediately for a research associate trained in plant science, biochemistry, or molecular biology, with experience in photosynthetic systems and protein purification. The successful candidate will purify protein kinases from chloroplast thylakoid membranes toward cloning and sequencing the corresponding genes. Related studies on the redox control of thylakoid kinases and their substrate preferences will involve reconstitution of isolated membrane proteins and complexes. The overall goal is to elucidate reversible phosphorylation processes that regulate photosystem activities. Applicants should send a resume and the names, telephone numbers, and e-mail addresses of three references by e-mail to Dr. Geoffrey Hind, Biology Department, Brookhaven National Laboratory, Upton, NY 11973; fax 516-344-3407, e-mail hind@bnl.gov.

Postdoctoral And Graduate Positions
The University of Arizona, Tucson
(Received 01/02)
The NSF-supported Research Training Program in Plant-Insect Interactions at The University of Arizona invites applications for postdoctoral and graduate positions. A major focus of interest is the model plant *Arabidopsis thaliana*. Further information can be obtained from our Web site: http://ag.arizona.edu/pii-rtg. The application deadline is February 13, 1998, or until positions are filled. Please note, according to the conditions of the grant, applicants must be citizens, nationals, or permanent residents of the United States. The University of Arizona is an EEO/AA employer. M/W/D/V.

Postdoctoral Position
Cornell University, Ithaca, New York
(Received 01/07)
A postdoctoral position is available for molecular genetic and physiological studies of plant Al tolerance. This project will integrate genetic, molecular, and physiological information on Al tolerance in grain crops. Research includes the molecular genetic analysis of Al tolerance and the physiological genetics of Al tolerance mechanisms. Applicants must have a Ph.D., experience in molecular mapping, and skill with molecular techniques. A background in plant physiology and comparative/functional genomics would be helpful. Send curriculum vitae and three letters of recommendation to Dr. David Garvin, U.S. Plant, Soil, and Nutrition Laboratory, Tower Road, Ithaca, NY 14853; telephone 607-255-2133, e-mail dfg3@cornell.edu.

Research Associate Position
Texas Tech University, Lubbock
(Received 01/07)
A research associate position (M.S. or Ph.D. level) is available immediately or when a suitable candidate is identified to develop transgenic plants for stress resistance. The individual will be responsible for making gene constructs, generating transgenic plants using *Agrobacterium*-mediated transformation or other methods, and evaluating the progenies. Research experience in relevant molecular cloning and tissue culture techniques is desirable. Send letter of interest, resume, and three references to Prof. Henry T. Nguyen, Plant Molecular Genetics Lab, Texas Tech University, Lubbock, TX 79409-2122; fax 806-742-0775, e-mail bwhtn@ttacs.ttu.edu.

Postdoctoral Position
Plant Gene Expression Center, Albany, California
(Received 01/13)
A postdoctoral position is available at the Plant Gene Expression Center for research on mechanisms of heavy-metal tolerance. To apply, send curriculum vitae to David Ow at ow@pgec.ars.usda.gov.

Postdoctoral Position
USDA-ARS, Lubbock, Texas
(Received 01/14)
The U.S. Department of Agriculture–Agricultural Research Service (USDA–ARS) Plant Stress Unit (Lubbock, Texas) is currently seeking candidates for a USDA-funded postdoctoral position. The successful candidate will participate in a two-year project involving design, construction, and testing/screening of new plant-functional promoters. Experience with basic recombinant techniques and plant promoter structure/function analysis are strongly desired. Send curriculum vitae with names, addresses (e-mail preferred), and phone numbers for three references to Jeff Velten, USDA-ARS, Route 3 - Box 215, Lubbock, TX 79401; telephone 806-746-5353, fax 806-744-4402, e-mail jvelten@mail.csrl.ars.usda.gov (e-mail applications are encouraged).

Postdoctoral Position
Michigan State University, East Lansing
(Received 01/13)
A postdoctoral position is available to study induced resistance of plants to insects. Novel mutations affecting the systemin and jasmonic acid signaling pathways for plant defense have been identified in tomato (*Plant Cell 8*:2067; *Plant Physiol 114*: abstract 1442). Molecular genetic and biochemical approaches are being combined to study these mutants, with emphasis on identifying components of the pathway. Previous experience in molecular genetics/biology or lipid biochemistry is preferred. Send letter of interest, curriculum vitae, and names of three references to Gregg A. Howe, MSU-DOE Plant Research Laboratory, Michigan State University, East Lansing, MI 48824; e-mail howeg@pilot.msu.edu. MSU is an affirmative action/equal opportunity institution.

Postdoctoral Position
The University of Missouri, Columbia
(Received 01/15)
A postdoctoral position is available immediately to study the function of a cell death suppressor from maize (*Cell, 89*:25) and its ortholog from Arabidopsis. Applicants should have research experience in genetics, molecular biology, and/or biochemistry, and some exposure to computational genomics. Applicants should send a curriculum vitae and three letters of recommendation to Guri Johal, 202 Curtis Hall, University of Missouri, Columbia, MO 65211; e-mail agrogj@showme.missouri.edu. The University of Missouri is an equal opportunity/affirmative action employer and specifically invites and encourages applications from qualified women and minorities.

Postdoctoral Position
Institute of Plant Physiology
University of Berne, Switzerland
(Received 01/16)
A postdoctoral position is available immediately with a duration of two years and a part-time possibility. The area of research will focus on the resistance of potato against Phytophtora in the framework of the Swiss Priority Programme on Biotechnology. Teaching duties will include limited participation in undergraduate and graduate teaching. A Ph.D. in

cell or molecular biology is required. Knowledge of German is not required. Applicants should send a curriculum vitae, list of publications, relevant reprints, statement of research interests, and the names of three references with phone and fax numbers to Prof. Cris Kuhlemeier, Institute of Plant Physiology, Altenbergrain 21, CH-3013 Berne; telephone 41-31-631-4911, fax 41-31-332-2059, e-mail cris.kuhlemeier@pfp.unibe.ch. The salary will be decided according to the guidelines of the Swiss National Science Foundation. The position is available until filled.

Postdoctoral Position
Monsanto, St. Louis, Missouri
(Received 01/16)
The selected individual will be a highly motivated team player interested in potato physiology. Working experience with potatoes, water relations, plant nutrient requirements, growth regulators, and/or isotope labeling beneficial. We require a Ph.D. and demonstrated experience in growth physiology, plant development, or seed physiology. We offer a competitive salary and benefits package. For consideration, please send your resume to The Monsanto Company, Attn.: Dr. David R. Duncan, Mail Zone: GG41, 700 Chesterfield Parkway North, St. Louis, MO 63198; or e-mail to david.r.duncan@monsanto.com. We will provide reasonable accommodations upon request. EEO/AA Employer M/F/D/V. Please visit our Web site at www.monsanto.com.

RESEARCH/TECHNICAL POSITIONS (Non-Ph.D.)

Research Associate
Pioneer Hi-Bred International, Inc.
Des Moines, Iowa
(Received 11/26)
A research associate position in plant/seed physiology is available Spring 1998. The overall goal of this project is to provide a better understanding of seed quality as it relates to germination and seedling establishment. The successful candidate will work with the Research Manager to identify physiological and molecular mechanisms associated with improved seed performance under a range of environmental conditions. Additional studies will be directed toward developing laboratory germination tests that predict field performance and efficient screens for stress tolerance. The candidate will participate in research planning and will have the opportunity to design and execute independent studies. Additional responsibilities include data analysis and report writing, management of laboratory and field activities, and supervision of part-time help. Applicants should have a background in plant physiology and working experience in molecular biology, including DNA/RNA and protein techniques. Basic computer and laboratory instrumentation skills are also required, along with the ability to work and acquire new skills independently. Good communication skills are essential. Field experience a plus. Education: M.S. or equivalent in crop science, plant biology, or related field with molecular training. B.S. with relevant experience will also be considered. Please send resume, including names and addresses of three references, and a one- to two-page cover letter to: Employment Services, Job # 97-00225, Pioneer Hi-Bred International, Inc., 400 Locust Street, Suite 700, P.O. Box 14454, Des Moines, IA 50306-3454. The application deadline is January 20, 1998, or until a suitable candidate is found.

Research Specialist
International Paper, Bainbridge, Georgia
(Received 12/17)
International Paper is seeking applicants to fill a new position in their Biotechnology Group in Bainbridge, Georgia. The primary responsibility of the person in this position is to generate genetically engineered plants using transformation vectors and tissue-culture systems developed by others within the biotechnology group. A secondary responsibility is to participate in modification of existing tissue culture systems, DNA vectors, and transformation techniques to develop high-efficiency systems for production of genetically engineered plants. Applicants should have an M.S. with thesis work focused on plant genetic engineering or a B.S. in the field of plant sciences with at least two years' laboratory experience in plant genetic engineering. Thorough knowledge of molecular biology and plant tissue culture is required, as well as demonstrated success in genetic engineering of plant cell cultures and regeneration of transgenic plants. Applicant must be capable of independent work and must be able to work well within a team structure. An offer of employment will be contingent upon successful completion of a pre-employment health assessment, which includes a medical and drug screening, compliance with the immigration reform act, and verification of a valid driver's license. To apply, submit letter of application, resume, academic transcripts, and names of three references to Dr. Daniel T. Carraway, International Paper, 719 Southlands Road, Bainbridge, GA 31717. Review of applications begins on January 19, 1998; expected starting date is February 1998 or as negotiated. International Paper is an equal opportunity employer F/M/D/V.

Assistant Scientist II
Iowa State University, Ames
(Received 01/05)
Responsibilities are to manage a laboratory and lead at least one research project on ecotypic variation, stress physiology, and/or nitrogen fixation of woody plants. An M.S. degree in plant biology, microbiology, or ecology with three years of research experience is required. Knowledge of woody plant taxa is desirable. Benefits include TIAA-CREF and travel funds. Send a curriculum vitae, research interests, transcripts, reprints, and names/e-mail addresses of three references to Dr. William R. Graves, 129 Horticulture Hall, ISU, Ames, IA 50011 1100, by 3/6/98. Iowa State University (http://www.hort.iastate.edu/hort/) is an affirmative action/equal opportunity employer.

ASSISTANTSHIPS, FELLOWSHIPS, INTERNSHIPS, ETC.

Graduate Research Assistantships
Plant Molecular & Cellular Biology Program
University of Florida, Gainesville
(Received 12/09)
The University of Florida, PMCB Program is an intercollege, degree-granting program in plant molecular and cellular biology. In addition to core courses in advanced molecular biology, advanced physical biochemistry, advanced metabolism, and genetics, students select from a variety of courses in biochemistry, molecular biology, physiology, genetics, breeding, evolution, systematics, microbiology, and plant pathology. Graduate degree programs are designed by each student's committee to reflect specific professional goals and research interests. In addition to traditional course work, students participate in the weekly Plant Molecular Biology Journal Forum along with faculty and postdoctoral associates and an annual Plant Molecular Biology Workshop/Retreat, during which informal discussions and research presentations are conducted. The PMCB group is active in the campus-wide programs of the Interdisciplinary Center for Biotechnology Research (ICBR). Faculty, postdoctoral associates, and graduate students investigate fundamental plant processes through research in cellular and molecular biology, molecular genetics and genetic transformation. Important areas of study include gene structure and regulation; molecular responses to environmental stimuli; organelle biogenesis and molecular biology; genetic basis of development; cell culture, regeneration and genetic transformation; and molecular determinants of plant disease. While these studies utilize the latest recombinant DNA, transformation and biochemical technologies, they also rely upon thorough knowledge of genetics, development, physiology, and biochemistry. The overall philosophy of the PMCB Program is that a better understanding of plant biology can be achieved by fundamental studies of plant processes at the molecular, biochemical and cellular levels. Faculty include Christine D. Chase, Prem S. Chourey, David Clark, Kenneth Cline, John M. Davis, Robert J. Ferl, Dean W. Gabriel, Maria Gallo-Meagher, William B. Gurley, Charles Guy, L. Curtis Hannah, Andrew Hanson, Alice Harmon, Karen E. Koch, Donald R. McCarty, Gloria A. Moore, Charles Niblett, Daryl R. Pring, Robert Schmidt, Rex L. Smith, C. Eduardo Vallejos, and Indra K. Vasil. Financial assistance for graduate study is available through assistantships. Nonresident and resident tuition waivers are available. For assistantship application forms, contact PMCB@gnv.ifas.ufl.edu.

Graduate Fellowships in Plant Biotechnology With An Emphasis on Bioprocessing
Worcester Polytechnic Institute
Worcester, Massachusetts
(Received 12/17)
There is a need for scholars with expertise in both plant biology and engineering to support the rapidly expanding plant biotechnology industry. We have been selected for an award from USDA to educate high-quality students (U.S. citizens only) seeking a Ph.D. in this area. This is an intensive program of study that requires mature, bright individuals who are interested in working on

exciting interdisciplinary topics, such as comparative analysis of bioreactors for production of secondary products from roots, molecular analysis of root responses to changes in bioreactor environments, aerosol transport in dense root masses, scale-up of micropropagation, and light penetration into dense masses of roots in bioreactors. Funding for our research comes from NSF, NIH, USDA, and the private sector. We provide strong, interdisciplinary mentors. Faculty involved in this research include Pam Weathers, Plant Biologist; Barbara Wyslouzil, Chemical Engineer; Kristen Wobbe, Plant Molecular Biochemist; Ronald Cheetham, Plant Biologist/ Ecologist; Grover Swartzlander, Physicist; and Alexander Dilorio, Chemical Engineer. Student's qualifications are U.S. citizens only, strong academic record with a GPA of at least 3.5, GREs required. Potential to do multidisciplinary work, motivation, a B.S. or M.S. in Plant Science, biotechnology, engineering, or related discipline, commitment to plant science. The Fellowship award will include an annual stipend of $17,000 plus tuition for three years starting fall of 1998. For information and an application packet, contact Professor Pam Weathers, Department of Biology and Biotechnology, Worcester Polytechnic Institute, Worcester, MA 01609; e-mail weathers@wpi.edu. View our Web page at: http://www.wpi.edu/Academics/Depts/Bio/IPRG/index.html. Awards are contingent upon receipt of federal funding.

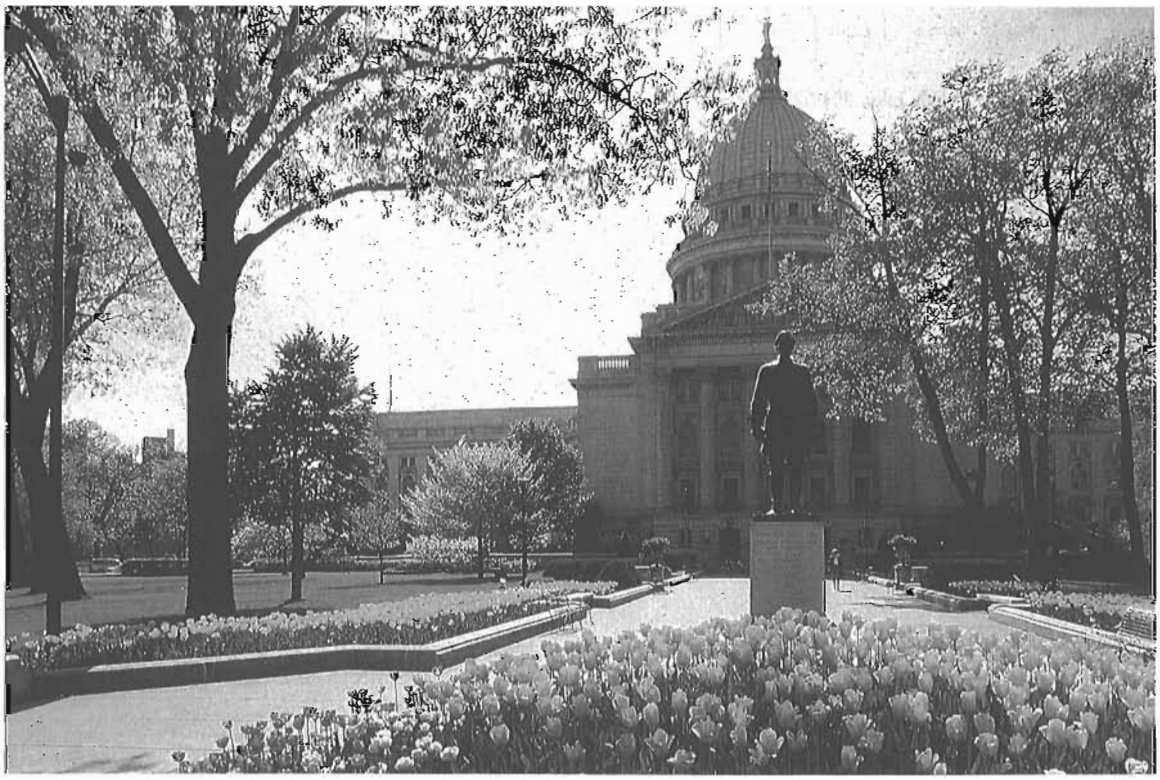
Two Graduate Student Research Assistantships
Texas Tech University, Lubbock
(Repeat)
Contact: Dr. Holaday at 806-742-2657, fax 806-742-2963, e-mail bdash@ttacs.ttu.edu or Dr. D. Krieg at 806-742-1631, e-mail dkrieg@ttu.edu. Applications will be accepted until the assistantships are appointed, but it is advisable to apply before February 1, 1998. (Details: see November/December 1997 *ASPP NEWS*.)

Graduate Research Assistantship
Texas Tech University, Lubbock
(Repeat)
Contact: Prof. Henry T. Nguyen, Plant Molecular Genetics Laboratory, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409-2122; telephone 806-742-1622, fax 806-742-0775, e-mail bwhtn@ttacs.ttu.edu. (Details: see November/December 1997 *ASPP NEWS*.)

Graduate Research Assistantship
Texas Tech University, Lubbock
(Repeat)
Contact: Prof. Henry T. Nguyen, Plant Molecular Genetics Laboratory, Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409-2122; telephone 806-742-1622, fax 806-742-0775, e-mail bwhtn@ttacs.ttu.edu. (Details: see November/December 1997 *ASPP NEWS*.)

Graduate Fellowships in Plant Biotechnology
Indiana University, Bloomington
(Repeat)
Visit our World Wide Web site (http://www.bio.indiana.edu/). For application materials contact: Ms. Gretchen Clearwater, National Needs Fellowships Program, Department of Biology, Indiana University, Bloomington, IN 47405; telephone 812-855-1861, fax 812-855-6705, e-mail biograd@bio.indiana.edu. Although NNF fellows must be US citizens or nationals, the Department of Biology also awards research assistantships on a competitive basis regardless of nationality. Indiana University is an equal opportunity/affirmative action institution. (Details: see November/December 1997 *ASPP NEWS*.)

Reserve June 27–July 1 for ASPP Plant Biology '98, Madison, Wisconsin



Madison, Wisconsin, State Capitol. Photo by Zane Williams

ASPP Headquarters Telephone Extensions and E-Mail Directory

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

Our office telephone number is
301-251-0560

	Ken Beam / ext. 15 kenbeam@aspp.org	Nancy Winchester / ext. 17 nancyw@aspp.org	Susan Chambers / ext. 11 chambers@aspp.org	Estella Coley / ext. 22 estcoley@aspp.org	Sondra Giancoli / ext. 10 giancoli@aspp.org	Judith Grollman / ext. 19 grollman@aspp.org	Brian Hyps / ext. 14 bhyps@aspp.org	Annette Kessler / ext. 20 akessler@aspp.org	Sharon Mulheron / ext. 29 skelly@aspp.org	Deborah Weiner / ext. 18 dweiner@aspp.org
▼ Missing journal issues, books									▼	
▼ Subscriptions, individual*									▼	
▼ *Plant Physiology* (except missing issues)										▼
▼ THE PLANT CELL										
Disposition of a manuscript								▼		
All other questions (except missing issues)						▼				
▼ Newsletter		▼								
▼ Advertising										
Plant Physiology										▼
THE PLANT CELL						▼				
Newsletter		▼								
▼ Address changes									▼	
▼ Membership applications									▼	
▼ Membership problems									▼	
▼ Accounts payable					▼					
▼ Accounts receivable				▼						
▼ Accounts payable/receivable problems			▼							
▼ Annual meeting			▼							
▼ Public affairs/government relations							▼			
▼ Education							▼			
▼ Society governance	▼									
▼ ASPP Education Foundation	▼									
▼ International Issues	▼									
▼ Awards	▼									

*Subscriptions, Institutional: Tracey Habich, Fulco, 201-627-2427, ext. 132

ASPPNEWS

American Society of Plant Physiologists
15501 Monona Drive
Rockville, MD 20855-2768 USA

PERIODICALS

ASPP NEWS (ISSN 0279-9936) is published bimonthly by the American Society of Plant Physiologists, 15501 Monona Drive, Rockville, MD 20855-2768 USA, telephone 301-251-0560, fax 301-279-2996. Members' dues include a subscription price of $2 per year to *ASPP NEWS*. Subscription price to nonmembers is $30 per year. Second-class postage paid at Rockville, MD, and at additional mailing offices. Postmaster: Please send address changes to *ASPP NEWS*, 15501 Monona Drive, Rockville, MD 20855-2768 USA.