THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT PHYSIOLOGISTS

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ASPPNEWS

Preparing for a Record Turnout in Vancouver

Plant Biology '97: A View from the Pacific Rim, through a combination of factors and a lot of hard work, has culminated in what promises to be one of the largest and most international plant science meetings ever. The American Society of Plant Physiologists and the Canadian Society of Plant Physiologists, along with the help of the Japanese Society of Plant Physiologists and the Australian Society of Plant Physiologists, Inc., and the more widespread use of the Internet, have announced the meeting all over the world. Information about the meeting has been available on ASPP's web page since last summer, and numerous messages about the conference have been posted to pertinent plant science newsgroups. Full-color advertisements have been displayed in the journals or other advertising modes sponsored by all four societies. Officers and committee members of the societies have been in constant touch by e-mail for many months and have journeyed to Vancouver and Rockville to have two major face-to-face planning meetings. The coordination and cooperation among these four diverse and dynamic societies has resulted in a conference program that will highlight the forefront of plant biology from a truly global perspective.

Electronic Submission of Abstracts Is a Success!

The new method of electronic submission of abstracts was widely accepted and used. By the time the program committee met in early March, over 1,600 abstracts had been received. Over 90% were submitted via the World Wide Web. This more streamlined method of submission has several benefits. First, it was easy for abstracts to be submitted from anywhere in the world. Second, it made the sorting and planning process for the program committee go much more smoothly than usual. Third, it will result in an on-line searchable abstract database and meeting program that will be made accessible through ASPP's web page in April. And last, a more complete and cohesive abstract supplement and printed program will be the final result.

Oral and Poster Scheduling

While we are pleased and excited about the unprecedented number of abstract submissions for Plant Biology '97, the program committee was also faced with a new set of scheduling challenges. By fully using the meeting room space available to us at our meeting venue in Vancouver, we will be able to conduct six concurrent sessions for oral presentations which, over four days, will accommodate 288 talks. In past years this has been sufficient, but this year we had more than 450 requests for the oral presentation format. The program committee decided to move several of the large sessions (Environmental Response and Adaptation, Natural Products and Medicinals, Signal Transduction, and Transgenics and Biotechnology), to an all-poster format, which, with only a small amount of additional fine tuning to the remaining sessions, got us down to the 288 that could be accommodated. This year accentuates a trend that the program committee has been monitoring and discussing for a number of years. That is, in Vancouver, approximately the same amount of meeting time will be allocated to the presentation of 288 oral sessions as to the viewing

continued on page 3

INSIDE...

TABLE OF CONTENTS

Deadline for May/June 1997 ASPP News: April 25, 1997

Coming Soon—
Registration Materials for Plant Biology '97
Watch your mail and register early.

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.

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continued from page 1

of ~1400 posters. We would very much like your feedback on our proposal of experimenting next year at the Madison meeting with an all-poster format as well as your suggestions for how the time now devoted to oral presentations could be utilized to enhance the poster sessions.

Minisymposia

In addition to the poster and oral sessions, our program will again feature five major symposia (already publicized) and eight minisymposia. The very exciting minisymposia line-up is as follows:

Arabidopsis Genome Initiative
Chair : Karen Ketchum; Presenters: Nancy A. Federspiel, Steve Rounsley and Mike Cherry

Development of the Vascular System
Chair and Presenter: Hiroo Fukuda; Presenters: Ross Whetten and Zheng-Hua Ye

Elevated CO_2
Chair and Presenter: George Bowes; Presenters: Pieter J.C. Kuiper and Rowan Sage

Heavy Metal Transport and Binding
Chair and Presenter: Mary Lou Guerinot; Presenters: Peter Goldsbrough and Ilya Raskin

Osmoprotectants: Targets for Metabolic Engineering
Chair and Presenter: Andrew Hanson; Presenters: John Williamson and David Rhodes

Programmed Cell Death
Chair and Presenter: Jeff Dangl; Presenters: Guri Johal and Page Morgan

Role of Signal Transduction in the Cytoskeleton
Chair and Presenter: Chris Staiger; Presenters: TBA

Terminal Oxidases in Plant Respiration
Chair: Joe Wiskich; Presenters: Marcel Hoefnagel, Greg Vanlerberghe, Ann Umbach, and P. Finnegan

Workshops

Plant Biology '97 will also feature workshops in several strategic areas. A special "Careers Workshop" targeted to postdoctoral associates will take place on Saturday, August 2, from 8:30 AM to 1:30 PM. This workshop committee is composed of Judy Verbeke, Dale Blevins, and Pam Green and chaired by Elizabeth Vierling. Only a limited number of slots are available in this workshop, so be sure to sign up early. The Education Workshop will be held on Monday, August 4, from 7:00 to 10:00 PM. The title will be "Our Theories of Learning and How They Affect Our Ability to Teach our Students," presented by Roger Bruning and John Markwell. The committee on public affairs will sponsor a workshop on Saturday, August 2, from 5:45 to 6:45 PM that will feature Martha Krebs, Director of the Office of Energy Research, from the U.S. Department of Energy. This committee will also sponsor a workshop by Henry Miller of the Hoover Institute of Stanford University on Monday, August 4, from 8:00 to 9:00 PM.

Special Events

The conference will also feature two luncheon programs. On Sunday, August 3, from 12:00 noon to 2:00 PM, the committee on minority affairs will sponsor a luncheon featuring Mariaelena Zavala. The title of Dr. Zavala's presentation will be "Life Underground: A Radicle Perspective." The committee on the status of women will sponsor a luncheon on Monday, August 4, from 12:00 noon to 2:00 PM featuring Sue Rosser. Dr. Rosser will speak on "Female-Friendly Science." Space will be limited for both luncheons so it would be wise to purchase your tickets with your meeting registration.

The ASPP and CSPP Awards Addresses and Ceremony will be an event not to be missed. It will be held on Sunday, August 3, from 7:30 to 10:00 PM. The ASPP Hales Award address "Serendipity: From the Secretory Pathway to Aquaporins and Insect Genes" will be given by Dr. Maarten J. Chrispeels. The CSPP Gold Medal Award address, "What are Hemoglobins Doing in Plants?," will be given by Dr. Robert D. Hill.

Other functions not to be missed include the "Small Colleges Breakfast" scheduled for Sunday morning, August 3; the "Plant Runners Stampede" 5k and 10k Fun Run scheduled for Monday morning, August 4, in beautiful Stanley Park; and the "Pacific Rim Dinner/Dance" scheduled for Tuesday evening, August 5.

Registration (Be Sure to Check the Web!)

Watch your mail for the Plant Biology '97 registration package in April. The hotel/housing forms, which can be printed and then faxed or mailed to ASPP's housing bureau, have been available on ASPP's web page since mid-March. The registration forms on the Internet will allow for on-line registration. Other program details, announcements of various satellite meetings and links to general Vancouver information can also be located through http://aspp.org.

From all indications this will be a large and dynamic meeting. Attendance very likely will surpass 2,000. Vancouver is a popular destination in August, (even if you're not a plant biologist), so make your hotel and air reservations as soon as possible.

The Program Committee would like to thank all of the Plant Biology '97 attendees and the four societies for the overwhelming response to this meeting. We'll greet you all in Vancouver for a week of great science and great fun!

The Plant Biology '97 Program Committee and Society Representatives:
ASPP: Roger Hangarter, David Ho, Ken Keegstra, Don Ort, Mike Salvucci, Judy Verbeke, Mary Jo Vesper
CSPP: Robert Guy, Iain Taylor
JSPP: Moritoshi Iino, Hide Imaseki
AuSPP: Paul Kriedemann, Joe Wiskich
ASPP Staff: Ken Beam, Susan Chambers

Make your hotel reservations NOW for
Plant Biology '97
See the housing form on our World Wide Web site
http://aspp.org,
click on Annual and Regional Meetings

A Look Forward and a Look Back on the ASPP Education Foundation

The ASPP education foundation was officially established by vote of the membership circa 1995 but its origin is thought to trace much further back in our Society's history. According to ASPP historical legend, Hans Kende's vision for a foundation for our Society, presented at the business session of our annual meeting in Pittsburgh, is credited with inspiring a then younger Russell Jones to make the creation of a foundation the focus of his presidency. Clearly, we are indebted to Russell, as well as to former president Jim Siedow, for their leadership and hard work in those early years. The modern era of the foundation is generally considered to have begun under the presidency of Bob Buchanan during which time the mission and goals of the foundation were refined and adopted. Although unchanged from that time they bear repeating here. The broad mission of the ASPP Education foundation is to develop a broad understanding of the importance of plant sciences in providing an on-going economic supply of food, fiber, and renewable fuel as well as sustaining a healthy environment. The four primary goals of the foundation emerge from this mission.

- To advance public understanding and appreciation of the value of the plant sciences to society.
- To promote teaching of the plant sciences at all levels.
- To support the development of new initiatives in emerging areas of education in the plant sciences.
- To provide a means for individuals and organizations to support education and research in the plant sciences.

Alright, so the look back on the history of our foundation doesn't actually cover very many years—it's been just four and a half years since the Pittsburgh meeting in 1992. But much has been accomplished and enough good things have happened that it's easy to think it has been much longer. The foundation has a very active board of directors that, in addition to the ASPP executive officers, has six members appointed by board chair Dick Laster. These include an impressive group of leaders from industry (Richard Barth, former president and CEO, CIBA GEIGY; Hendrik Verfaillie, executive vice president, Monsanto; Charles Johnson, president and CEO, Pioneer Hi-Bred) as well as two ASPP members, Charles Arntzen (president and CEO, Boyce Thompson) and Jim Seidow (professor and dean, Duke University).

We are well on our way to developing effective programs to improve public understanding and appreciation of plant science. Bob Buchanan, Ken Keegstra, Mark Jacobs, Doug Randall, Jim Siedow, Ken Beam, and I have been joined by leaders from the committee on public affairs and the education committee in advancing the ideas of ASPP members to the education foundation. The business leaders working with us on the foundation board have provided valuable insight to program design.

Last year, a study of the status of plant science education was commissioned by the education foundation and provided us with detailed feedback about the kinds of teaching tools that will be most readily accepted and used by high school biology teachers to present plant biology to their students. Perhaps the most significant outcome of this study was to identify the opportunity for ASPP to influence the teaching of plant science in entire school systems by working toward the inclusion of plant biology in educational standards and model curricula in key states, and in the tests that measure progress toward educational standards. ASPP has already received funding from the education foundation to begin to assess and influence education standards and curricula. This study was conducted as a series of focus groups at four locations around the U.S. and the report makes most interesting reading—let me now if you would like a copy.

It seems that we have come a long way in a short time and that the education foundation is poised to move forward in major ways, not only in secondary education, but also in public education where we envision our activity and impact will be the greatest in the future. In the future, the foundation envisions developing innovative teaching tools, sponsoring the development of textbooks in plant biology, and adding a variety of teaching tools to the ASPP Website. We have already participated in providing expertise to the popular public television program "The Magic School Bus," and very recently we've been invited to develop a living exhibit for Walt Disney in Orlando Florida. These are examples of clear opportunities by which ASPP can become an active and effective leader in the effort to impart a better understanding by the general public of the importance of plant biology to the welfare of society. The education foundation is the mechanism by which we can get projects such as these accomplished. Already the foundation is supporting the addition of a part-time staff person to the Public Affairs Department to increase our public education efforts.

I hope that you will agree that there is a great deal to feel good about. I can't think that two years ago when we officially launched the foundation we could have hoped for more in such a short time. Nevertheless, I feel that the foundation is at a very critical juncture in its development and that what we do this year and next will have a tremendous impact on whether the foundation attains the major role in ASPP that we envision for it. The appointed members of our foundation board are a central key to success and they have demonstrated their commitment to ASPP in numerous ways including the contribution of $65,000 (Monsanto, $25,000; CIBA-GEIGY, $25,000; Pioneer Hi-Bred, $15,000). They are clearly prepared to help us raise funds and carry out our programs, but it would be naive not to recognize that these individuals are inundated with requests for their efforts and, in time, will need to move on to focus on other areas. To engage these leaders and to attract the services of those that would replace them we, as a whole Society, need to respond in two ways:
1) we need to design strategic programs that will have a measurable impact on how plants and plant science are understood and taught in our society; and
2) we need to show our commitment to and support of our own education foundation.

As a demonstration of their commitment to the education foundation, more than 7% of ASPP members made a personal financial contribution to the foundation with their dues renewal this year. Others, particularly those on the education and public affairs committees, have contributed with their time and energies. This is a terrific beginning but we need to engage more members in both areas. The ways in which the ASPP education foundation serves our interests as plant scientists are obvious: each of us will benefit professionally from a greater public understanding and appreciation of the work we do and the importance of sustained and increased public funding for plant science research.

Now it is incumbent on us to demonstrate

to the companies that have invested in our ideas—and to the foundations and corporations that we will approach for funds in 1997 and beyond—that the plant science community is truly dedicated to enhancing the standing of our field through improved education in classrooms and communities. Please add your name to the list of generous individual donors to the ASPP education foundation.

Donald R. Ort
ASPP President, 1996-1997
USDA/ARS, University of Illinois, Urbana

PEOPLE

Barbara N. Kunkel

ASPP member Dr. Barbara N. Kunkel, assistant professor of biology at Washington University in St. Louis, has been awarded a $500,000 grant from the David and Lucile Packard Foundation. The grant, to be distributed over five years, is given annually to outstanding scientists and engineers. Kunkel, among the first plant biologists to clone a disease-resistance gene, plans to use the grant funds to support her research on plant pathogen interactions, with particular emphasis on studying the molecular basis of pathogenicity of the bacterial pathogens. The Packard Foundation awards 20 such grants each year to promising young university professors in the hope of persuading exceptional scientists and engineers to remain in academia to conduct basic research and to teach the next generation of science leaders.

Martin Gibbs

The University of Illinois honored *Plant Physiology* editor emeritus Martin Gibbs with a College of Liberal Arts and Sciences Alumni Achievement Award at its Homecoming Weekend in November 1996. Dr. Gibbs, who earned his Ph.D. at the University of Illinois in 1947, is Abraham S. and Gertrude Burg professor emeritus at Brandeis University. He was editor-in-chief of *Plant Physiology* from 1963 until 1992. To commemorate Gibbs's long years of service to ASPP and to the science of plant physiology, ASPP in 1962 established the Martin Gibbs Medal to honor outstanding scholars in the plant sciences.

LETTER TO THE EDITOR

Editor:

I enjoyed the "Turning Point" article by Robert H. Burris. It fits exactly the theme that Bob Buchanan had in mind when he started the"Turning Point" articles during his ASPP presidency.

My high regard for Dr. Burris goes back to the early 1970s when I worked three summers in his laboratory. Always understated about his own high qualities, a hint about his way of dealing with what others would consider impossible hurdles is found in the article. But you had to read carefully to catch it: "After returning to the University of Wisconsin, we built a ... mass spectrometer ... so we could continue our studies with nitrogen 15."

Otherwise stated, "What? We have no mass spectrometer? Well, let's build one." Not the normal response of most mortals.

Dr. Burris also evaluated the social landscape of science better than anyone I've known before or since. He was, for example, very uncomfortable with the broadly accepted harsh criticism his colleagues were leveling at Peter Mitchell. "He has good data. They have popular notions."

Similarly, I was sitting next to him once during a three-talk symposium; two of the talks were heavily data-based, but the third, on aging, was total speculation. Dr. Burris, noticing that the lively discussion revolved entirely around the talk on aging, commented "When there are no data, everyone wants to get their oar in the water."

I eventually realized that these frequent gems, though sparely worded, were lessons in life for me and for hundreds of others who were privileged to associate with Dr. Burris.

Sincerely,

Larry N Vanderhoef
Chancellor, UC Davis

Twinning Program Grants for Estonia, Latvia, and Lithuania

The office for Central Europe and Eurasia of the National Research Council (NRC) is accepting proposals for collaborative research programs that link individual U.S. scientists with their counterparts in Estonia, Latvia, and Lithuania.

The grants awarded under this round of the Twinning Program will begin in September 1997 and run through December 1999. Subject to the availability of funding, support will be provided for travel and living expenses for research visits by American grantees and junior scientists from the same institution to the countries listed above and for visits by their foreign counterparts to the United States. Applicants may also request modest funding for scientific supplies, telecommunications fees, and publication costs.

Applications must be postmarked no later than May 16, 1997. For more information on how to apply for this Twinning Program, contact Office for Central Europe and Eurasia (FO2014), National Research Council, 2101 Constitution Avenue N.W., Washington, DC 20418; telephone 202-334-2644, fax 202-334-2614, or e-mail ocee@nas.edu.

Carlson Resigns as Publications Director

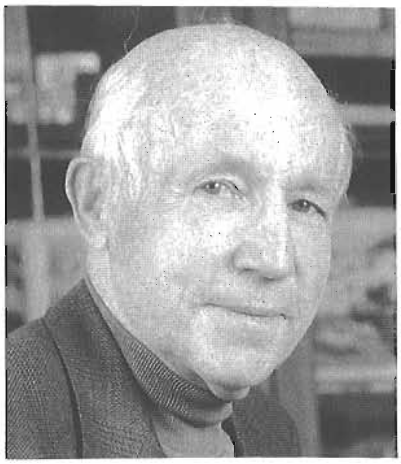
Jody Carlson, ASPP publications director since 1989, has resigned from her position effective May 9, 1997. She is marrying ASPP member Paul H. Moore, a USDA/ARS researcher based in Hawaii.

Carlson, who was hired by ASPP in December 1987, was the first staff editor ever hired by the Society. She worked first as production editor on *Plant Physiology*, and for two and a half years, from 1989 until 1991, worked as both publications director of the Society and production editor of *Plant Physiology*. In 1991, she assumed full time the duties of publications director.

A search for a new publications director is now being conducted.

Melvin Calvin

On January 8, 1997, Nobel Laureate Melvin Calvin died in Berkeley, California, at the age of 85. Born in St. Paul, Minnesota, in 1911, Calvin earned his bachelor's degree in chemistry at Michigan College of Mining and Technology in 1931 and his Ph.D. at the University of Minnesota in 1935. With a Rockefeller Foundation fellowship, he worked two years with the scientific and cultural giant, Michael Polanyi, at the University of Manchester. By good fortune he was invited by G. N. Lewis to join the Department of Chemistry of the University of California, Berkeley, as instructor, to collaborate on Lewis's study of the color of molecules. Glenn Seaborg, then finishing his graduate work with Lewis on the color of salts of trinitrotriphenylmethane (which I made for him), and Melvin became lifelong friends as they began their long tenure in the Department of Chemistry. Glenn went on to add new elements to the atomic table while Melvin added a new cycle to the metabolic chart.



My first impressions of Melvin, in 1937-1938 Chemistry Department seminars, were of his remarkable skills in asking the important questions. Visitors to the laboratory were usually riddled with questions, designed to provide useful information for the ongoing research. His questions often stimulated us and visitors alike to assemble our information and provide, in the end, the answers. Most difficult, though, was his "Well, what's new?" at 8:00 every morning after having asked the same question at 5:30 on his way home the previous evening. By asking questions and quickly reading some books he felt comfortable in many fields of endeavor. He stimulated and supported interdisciplinary thought and research.

In work that extended from 1945 until 1960, Calvin and his co-workers, using radioactive carbon 14 to trace stages in the process, helped explain how plants turn carbon dioxide and water into sugar during photosynthesis. For identifying the so-called Calvin cycle, Calvin was awarded the Nobel Prize for Chemistry in 1961. The work was significant for a number of reasons, chief among them that it was the first successful application of carbon-14 as a tracer in discovering a metabolic pathway.

Calvin was known for impressive presentations of his research and ideas. At one AAAS meeting, when he began his symposium lecture on the mechanism of photosynthesis in his usual hesitating manner, but ended with a crescendo of rapid-fire supportive information, the audience was deeply impressed with his solution of a central problem of plant physiology. Even Professor C. B. van Niel was so touched that he jumped from his seat in the front row and, with tears in his eyes, congratulated Melvin for the brilliant solution of the age-old problem.

Melvin Calvin was a fearless scientist, totally unafraid to venture into new fields like hot atom chemistry, carcinogenesis, origin of life, immunochemistry, petroleum production from plants, farming, moon rock analysis, development of novel synthetic biomembrane models for plant photosystems. He had no qualms about publishing papers which further research soon undermined. The first was our suggestion for a C-4 cycle of photosynthetic carbon reduction. I had isolated radioactive succinate from algae fed radioactive CO_2 in the dark, conditions where succinate accumulates. The fact that such a cycle provided no information on photosynthetic carbon dioxide reduction didn't bother him a bit. We just went on. The most exciting of his failed hypotheses was his Thioctic Acid Theory of Photosynthesis, which consumed over a year's work by the group in the Old Radiation Laboratory. Even I was enthusiastic about it, while it lasted. As the several pillars of evidence began to fall, Melvin was unperturbed and went on to new approaches.

Among Calvin's skills was effective management of personnel, budgets, publication, consultancies, and presentations at important scientific conferences. From our viewpoint in the laboratory, there was a silent shield between Melvin's office and our research; this freed our time for total dedication to the path of carbon in photosynthesis.

Melvin's love of plants shone daily by the ever-present small flower or fir twig in his lapel placed there by his wife. He joined ASPP in 1950 and served the Society as its president in 1963-1964, the only Nobel Laureate to serve as the Society's president. He received ASPP's Stephen Hales Prize in 1956 "for charting the path of carbon in photosynthesis." In 1971 he was elected president of the American Chemical Society. In addition to the Nobel Prize, he also held a National Medal of Science. He was a member of the National Academy of Sciences and a foreign member of the Royal Society.

Andrew Benson
Scripps Institute of Oceanography
La Jolla, California

Good men, dying (for Tom ap Rees)

[Editor's note: The following poem was written for Prof. Tom ap Rees, whose obituary appeared in the January/February issue of ASPP News, and was read at his memorial service. We reprint it here not just as a memorial to Prof. ap Rees, but also as a memorial to the many plant physiologists who have passed away during the past year.]

Good men, dying, leave a shocked
stillness
as though, plunging from a cliffpath,
they had simply vanished. The lark
that soared as they left sings on,
bracken still waves in the wind,
the hedgerows seem unmoved.

But good men, living, have left, on us,
on all things, indelible marks
as they passed. We are shot through
with the colour of their having been.
A phrase remains, a way of looking,
Some remembered gesture at table,
Some unlooked-for generous act,
Some insight which, at the time,
seemed modest enough, an item
in the conversation which flowed around it,
but which, like them, took root within us.

Good men, living, have leavened,
not in vain, the space around them.
What they changed cannot now be
unchanged,
in us or in anything.

R. Gerallt Jones
10 October 1996

Kenneth Vivian Thimann

A man of extraordinary breadth in science, Kenneth Vivian Thimann, who died January 15, 1997, encompassed the entire domain of plant physiology. He was born August 8, 1904, in Ashford, Kent, England. His 1924 B.Sc. was in chemistry at Imperial College, London, but he also discovered bacteriology there. That life-long fascination with metabolic relationships among "lower plants" culminated years later in his groundbreaking and insightful *The Life of Bacteria*. He continued to the Ph.D. in physical chemistry in 1928 studying contributions of constituent amino acids to the ionization of proteins, which led to a postdoctoral position at Caltech.

At Caltech, he met Hermann Dolk who had brought F. W. Went's pioneering studies of plant growth hormones, investigating auxin's involvement in gravitropism. Their close friendship ended with Dolk's accidental death but cemented Kenneth's interest in solving the secrets of tropisms in plants.

A graduate student, James Bonner, showed auxin production by Rhizopus was reduced on gelatin. As Thimann knew gelatin had no tryptophan, he suspected an indole was involved. He isolated indole acetic acid from the fungus cultures. Definitive identification of IAA in higher plants waited for his students using improved organic analysis in the 1950s.

Went arrived at Caltech to replace Dolk, whereupon Thimann joined him in investigating the initiation of rooting by auxin and proved the root-forming hormone was identical with IAA. Rooting of cuttings became a major practical use of auxin. Their partnership produced the classic history *Phytohormones*, still essential reading for work in that field.

Thimann and Folke Skoog showed that auxin completely replaces the effect of the shoot apical meristem in inhibiting outgrowth of lateral buds. Thus, it became clear that auxin is not just an elongation hormone, but could exert profound effects, either stimulatory or inhibitory on plant development.

In 1935, Thimann moved to Harvard. While at Harvard, WWII led him to join a U.S. Navy civilian group statistically optimizing patterns of depth charging submarines. Kenneth Thimann is considered a founder of the successful approach now known as Operations Research.

He was devoted to teaching. Graduate students, postdoctorals, and visiting faculty on leave were all drawn to learn how plants function. As modern concepts of biochemistry emerged, questions were revisited. A fundamental question in the production of energy by higher plants was whether the terminal oxidase in plants was the same as in other aerobes. Spectroscopy and studies with inhibitors proved it was cytochrome oxidase.

One of his early students at Harvard, Beatrice Sweeney, demonstrated rapid stimulation of protoplasmic streaming within minutes of adding auxin. This still stands as one of the earliest manifestations of auxin action. In general, responses to auxin increased up to an optimum concentration followed by inhibition at still higher concentrations. This demonstrated that plant growth and development could be controlled chemically by auxins and suggested a wealth of practical applications. The observation that applied auxins could kill dicotyledonous weeds selectively among monocotyledonous crops was a major advance in agriculture.

The advent of gas chromatography made possible the detection of volatile emissions from ripening fruits with sufficient sensitivity to detect ethylene. Stanley Burg's studies made it clear that ethylene is the universal fruit-ripening hormone and is broadly involved in stem growth and herbicide effectiveness.

Notable is that Kenneth Thimann never lost sight of his goal to understand how the entire plant functioned. He elaborated on this in *Hormone Action in the Whole Life of Plants*.

Kenneth was recruited by the new University of California, Santa Cruz, in 1965 to create a science college. He there led his students in elucidating the interactions between hormonal and environmental factors in senescence. The yellowing of detached oat leaves is an active process, accelerated by dark and retarded by light. Senescence begins with changes in membrane permeability and a burst of synthesis of proteases. To a remarkable degree, the rate of senescence depends on the same processes that regulate the opening and closing of stomata. Cytokinins and ABA emerged as major regulators. In light the ABA content of the leaf increases with water stress or N-deficiency; closing stomata and hastening senescence. Cytokinin exerts an opposing action driving down ABA; opening stomata and retarding senescence.

Dr. Thimann was president of ASPP in 1950, and five major national presidencies followed. The National Academy of Sciences elected him as did other honorary academies. Prestigious foreign appointments were to the Royal Society (London), Accademia Nazionale dei Lincei (Rome), and the Academie des Sciences (Paris). Major awards included ASPP's own Stephen Hales Prize in 1936 and the richly endowed Swiss Balzan Prize, intended for those in fields not eligible for the Nobel Prize, but of comparable stature.

He retired and continued his research at Santa Cruz in the Thimann Laboratories, renamed in his honor. After the death of his wife, Anne, he joined a community of senior scholars sponsored by Haverford College. From there he collaborated with his eldest daughter, Vivianne Nachmias, M.D., at the University of Pennsylvania Medical School. This led last year at age 91 to the final two of his more than three hundred publications.

Outside of the lab, Kenneth Thimann founded a botanical garden for flora appropriate to the Mediterranean climate of Santa Cruz which includes species native to Australia and South Africa. His family wishes that any gifts be designated for The Arboretum Associates in his memory and addressed to the UCSC Foundation, UC Santa Cruz, CA 95064.

Bruce B. Stowe
Mary Helen Goldsmith
Yale University

Ernest L. Spencer

ASPP headquarters was recently informed of the death of emeritus member Dr. Ernest L. Spencer, who resided in Brookfield, Vermont. While he was actively working, Dr. Spencer was employed at the Gulf Coast Experiment Station in Bradenton, Florida. Dr. Spencer joined ASPP in 1931, only seven years after the Society was created.

J. A. De Greef

Dr. J. A. De Greef, from the Biology Department of UIA in Wilrijk, Belgium, died on August 16, 1996. Dr. De Greef joined ASPP in 1968.

Reinhart Rusch

Dr. Reinhart Rusch, a resident of Berlin, Germany, and a member of ASPP since 1977, has recently died.

ASPP TRAVEL AWARD PROGRAM

Applications Due June 2

The Society has decided at the recommendation of the executive committee to support travel awards to students and faculty beginning their careers in plant sciences to the 1997 annual meeting in Vancouver, British Columbia. For this meeting, $25,000 has been allocated from the Society's resources to fund the program.

A unique and critical aspect of the travel award program being adopted by ASPP is the pairing of awardees with a mentor who has similar research interests. Mentors, who will not be eligible for travel grants, will counsel the awardee at the meeting and will help to establish networking opportunities at and beyond the meeting. The Society hopes that relationships thus formed will endure and that mentors will continue to participate actively with awardees as they pursue careers in plant science. The minority affairs committee along with the committee on the status of women in plant physiology will coordinate the processing of the applications and the identification of awardees.

Awards for the Vancouver meeting will be based upon the merit of the applications. Applications will be accepted from all undergraduate, graduate, and postdoctoral students and faculty beginning their careers in plant science. Underrepresented minorities are especially encouraged to apply.

Application forms for both travel grant applicants and persons volunteering to serve as mentors are included on the opposite page and are due at ASPP headquarters by June 2, 1997. Applicants will be notified of the decision of the committee by the middle of June, in time for registration at the preregistration rate. Questions about the travel award and mentoring program can be directed to Deborah Weiner, telephone 301-251-0560, ext. 18, e-mail dweiner@aspp.org.

Editor-in-Chief, THE PLANT CELL

The American Society of Plant Physiologists is seeking a plant scientist to assume the duties and responsibilities of editor-in-chief of the journal THE PLANT CELL effective July 1, 1998. The individual who takes the position must be able to make a five-year commitment to the journal.

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

To effect a smooth editorial transition, we plan to name a successor to the current editor-in-chief by the end of 1997. Individuals interested in either applying for the position or nominating a qualified individual are invited to do so in writing to the chair of the publications committee by June 1, 1997. Applicants should ascertain that their institutions will permit them to assume the duties and responsibilities of this position. Letters of nomination must indicate that the nominee is aware of and has approved his or her nomination. In both cases, the applicant or nominee must be prepared to begin the transition process no later than January 1998.

Applications and nominations will be evaluated by members of the publications committee, and the committee will recommend a candidate to the executive committee. It is planned that the publications committee will be able to make a recommendation at Plant Biology '97 in August in Vancouver, British Columbia, and that the executive committee will announce the name of the new editor-in-chief of THE PLANT CELL either at the meeting or shortly thereafter.

Submit letters of application or nominations for editor-in-chief of THE PLANT CELL by June 1, 1997, to Samuel I. Beale, Chair, ASPP Publications Committee, Division of Biology and Medicine, Brown University, Providence, RI 02912.

ASPP TRAVEL GRANT APPLICATION FORM, 1997

ASPP is offering a limited number of travel grants for students and faculty beginning their careers to attend Plant Biology '97 in Vancouver. Underrepresented minorities (African American, Hispanic, Native American, and Alaska Natives and Pacific Islanders) are especially encouraged to apply. Application deadline is June 2, 1997. Applicants will be notified of committee's decision by June 16, 1997. Successful applicants will be introduced to a mentor who will be a member of the Society.

DIRECTIONS: Complete this form and mail with the following:
- Brief curriculum vitae
- Advisor's letter of recommendation including level of funds available, if any, for applicant travel (students only)
- Current and pending support (faculty only)
- Any additional sheets required to answer questions posed below

Submit completed application and all attachments by June 2, 1997, to: Travel Grants, American Society of Plant Physiologists, 15501 Monona Drive, Rockville, MD 20855-2768, or fax to 301-309-9196. For more information, contact minority affairs committee staff liaison Deborah Weiner, telephone 301-251-0560, ext. 18, e-mail dweiner@aspp.org.

NAME: _____ CHECK ONE: STUDENT FACULTY

TELEPHONE: _____ FAX: _____ E-MAIL: _____

INSTITUTION: _____

STREET: _____

CITY: _____ STATE: _____ ZIP CODE: _____

ASPP MEMBER? YES NO

LIST PLANT SCIENCE ORGANIZATIONS IN WHICH YOU HOLD ACTIVE MEMBERSHIP:

ARE YOU APPLYING FOR ADDITIONAL FUNDS FROM OTHER ORGANIZATIONS? YES NO

IF YES, FROM WHOM AND FOR HOW MUCH?

Briefly describe your current research focus. (If you intend to present a paper or poster, you may submit your abstract in lieu of this paragraph.)

On a separate page, write an essay in which you explain why attending a plant science meeting is important to your career development.

The following groups qualify as underrepresented minorities:

African American • Hispanic • Native American • Alaska Native • Pacific Islander

Please circle the group to which you belong.

ASPP MENTORING PROGRAM APPLICATION FORM, 1997

The ASPP seeks volunteers from the plant science community for a mentoring program designed to strengthen the academic development and active participation of students and faculty beginning their careers in plant science. ASPP has initiated a travel award program with the objective to provide support for students and faculty beginning their careers, with particular outreach to underrepresented minorities. ASPP recognizes that to increase participation of young scientists in plant sciences, it will be more readily realized with the assistance of mentors. At the national meeting, a mentor can play an important role by familiarizing a travel awardee with the cutting edge research in his or her area. Introducing the awardee to other colleagues, or providing an opportunity for informal discussions on career development and advancement is an anticipated outcome of mentor-awardee interaction. It is our hope that mentor-awardee relationships will endure over time. With this aim in mind, ASPP requests that plant scientists who volunteer for this mentoring program be willing to commit time beyond the initial contact. The Society views the role of a mentor as being critical to the success of the travel award program. This is an exciting and significant opportunity for members of ASPP, and one that is endorsed and supported by the executive committee. (Please note that mentors are not eligible for travel awards)

DIRECTIONS: Complete this form and mail with a brief curriculum vitae. Mentors will be matched with students and faculty who have similar research interests. Submit application and curriculum vitae by June 2, 1997, to: Mentoring Program, American Society of Plant Physiologists, 15501 Monona Drive, Rockville, MD 20855-2768, or fax to 301-309-9196. Travel grant funds are not available to mentors. For more information, contact minority affairs committee staff liaison Deborah Weiner, telephone 301-251-0560, ext. 18, e-mail dweiner@aspp.org.

NAME: _____

POSITION: _____

TELEPHONE: _____ FAX: _____ E-MAIL: _____

INSTITUTION: _____

STREET: _____

CITY: _____ STATE: _____ ZIP CODE: _____

Please state your reasons for wanting to be a mentor in the travel grant program:

Please circle the group to which you belong:

African American • Hispanic • Native American • Pacific Islander • Caucasian • Asian • Other

Highlights from the ASPP Membership Survey

The first-ever extensive survey of the ASPP membership was conducted in the latter half of 1996. The purpose of the survey was to review satisfaction with current member services and to assist in planning for the future. The survey covered demographic information as well as questions concerning ASPP's current and future products and services. ASPP selected an independent association research consultant, Association Research, Inc. (ARI). ARI assisted with the design of the survey instrument, collection and tabulation of survey responses, and initial analysis and presentation of the survey information. All of the individual responses to the survey were kept confidential by ARI.

A total of 1,915 survey forms were mailed out to a random sample of ASPP members. ASPP received an excellent 50% response rate to the survey. This high response rate indicates a high level of commitment to the Society. The results were available in time for the meeting of the membership committee in December 1996 and the executive committee meeting in February 1997. The initial analysis and the data are now accessible for each functional area of ASPP to draw on when making decisions and recommendations for future directions. The data obtained from this survey will also serve as a baseline for further surveys in the future.

Who are ASPP members?

About 60% of the survey respondents work at research universities and over 17% are employed by the government. A smaller number, almost 7%, work for teaching colleges and the same number work for industry employers. All other types of employers, including students or postdoctoral associates, comprise approximately 10% of ASPP's membership.

ASPP members tend to be very experienced. Almost 22% had worked for over 30 years in the field, and approximately 24% had worked 20 to 29 years. Only one-fifth had worked for less than 10 years in the field. Consistent with this significant amount of experience, about 40% of the respondents were from 45 to 64 years of age. Almost one-third were from 36 to 44 years of age, and 21% were age 35 or under.

Why do members belong to ASPP?

Approximately one-third (33.6%) of the survey respondents indicated they belonged to ASPP for all of the following reasons: to attend programs and purchase publications, to support the organization, to network with others in the field, and to support what ASPP stands for. Somewhat less than one-third (29.8%) of the respondents said they belonged to attend some programs and purchase some publications.

Most (86.7%) of the respondents indicated that they strongly agreed or agreed that ASPP provides useful/relevant information. Almost as many (82.8%) of the respondents strongly agreed or agreed that ASPP facilitates dissemination of scientific information, and 78.6% strongly agreed or agreed that ASPP provides opportunities for publishing articles. ASPP also received high ratings for communicating effectively with members and for providing networking opportunities with colleagues.

Member satisfaction with publications and programs

The majority of members felt that THE PLANT CELL was a very important or important publication, and were very satisfied or satisfied with this journal. Members also rated *Plant Physiology* highly for importance and satisfaction. *ASPP News*, the ASPP annual meeting and the *ASPP Membership Directory* also received high ratings for importance and satisfaction.

Possible future services or products

Enhanced on-line services, textbook publishing, and electronic publishing were all considered to be a very important or important possible new service by a majority of the members. This meshes with a significant finding that over 92% of the members surveyed have Internet access.

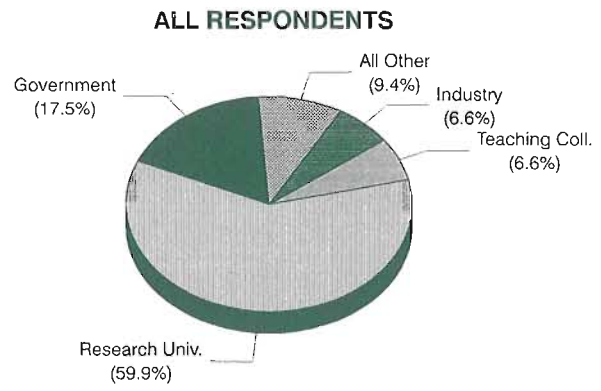
ASPP overall evaluation

Over three-fifths of the survey respondents were very satisfied or satisfied with their elected leaders, and about two-thirds gave one of the top two ratings to the headquarters professional staff. Just over two-thirds of the respondents gave one of the top two ratings to ASPP for its representation of the interests of the profession, and approximately 62% were very satisfied or satisfied with ASPP's representation of their own professional interests.

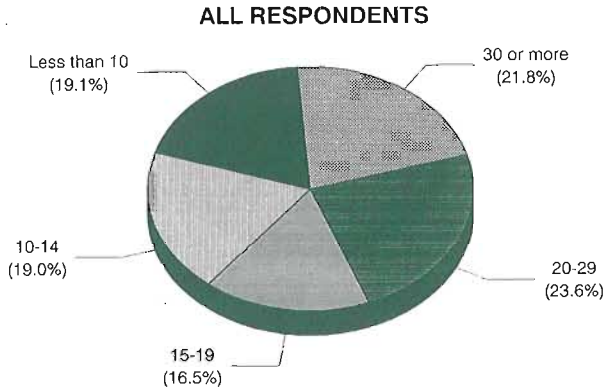
Where does ASPP go from here?

Again, we would like to thank all of the ASPP members who responded to the survey in such a timely fashion. The survey could not have been a success without this input. The data from the survey give a good picture of where ASPP is today, and what direction it should take in the near future. The information obtained from this survey will help guide ASPP well into the next century.

TYPE OF EMPLOYER



YEARS IN THE FIELD



PLANT BIOLOGY '97:
A VIEW FROM THE PACIFIC RIM

The quadrennial joint annual meetings of the
American Society of Plant Physiologists
and the
Canadian Society of Plant Physiologists
(Société Canadienne de Physiologie Végétale)

with the participation of the
Japanese Society of Plant Physiologists
and the
Australian Society of Plant Physiologists, Inc.

Vancouver, British Columbia
Saturday, August 2, through
Wednesday, August 6, 1997

Major Symposia

Plant Membrane Transport
Organizers: Donald Ort and Ronald Poole

Roots in Soil: Rewriting the Textbooks
Organizer: Margaret McCulley

Metabolic Engineering
Organizer: Chris Somerville

Early Events in Hormone Signal Transduction
Organizer: Julian Schroeder

Photoinhibition
Organizer: Barry Osmond

For more information, see our World Wide Web site
http://aspp.org
or contact
American Society of Plant Physiologists
Telephone 301-251-0560
Fax 301-279-2996
E-Mail aspp@aspp.org

ASPP TESTIFIES ON LINKS BETWEEN PLANT RESEARCH AND WORLD NEEDS BEFORE SENATE AGRICULTURE COMMITTEE

In testimony presented before the Senate Committee on Agriculture on March 13, ASPP committee on public affairs chair Lou Sherman linked plant research to: sustaining the world food supply; preserving national security; improving the environment; and providing some deterrent to energy price shocks.

Many people look at the exceptional productivity of the American farmer and mistakenly conclude that increases in research into crop production are unnecessary. However, despite good crop yields last year, wheat, corn, and soybean prices achieved high levels, partially because gains in crop production are not as high as needed. World population continues to grow and the improving economies and increasing affluence in many parts of Asia are putting increasing demand on food, Sherman noted.

Following are some additional comments from the testimony:

Agricultural Production and Food Availability/Scarcity

Although the world's population continues to increase, the same cannot be said for the area of useable cropland or the amount of fresh water per person. It will be more important than ever to learn about the impact of various stresses on crop growth so that marginal lands can be used effectively. Thus a better understanding of plant growth under drought stress and water stress will become increasingly important. In addition, it would be desirable to limit the reliance on fertilizers. Indeed, the use of fertilizer to improve productivity may also have peaked, and we need to determine better ways to improve crop yield. All of these areas currently are being studied by plant scientists, but the level of support is insufficient. An increase in funding available to the National Research Initiative Competitive Grants Program will enable us to enhance research in these areas and ultimately improve world food productivity. As the world grain carryover stocks fall below approximately 50 days of consumption, the possibility of minor production problems leading to great variations in prices and food availability increases. Thus we must look to research into improvements in crop productivity as important to our national security.

Biofuels

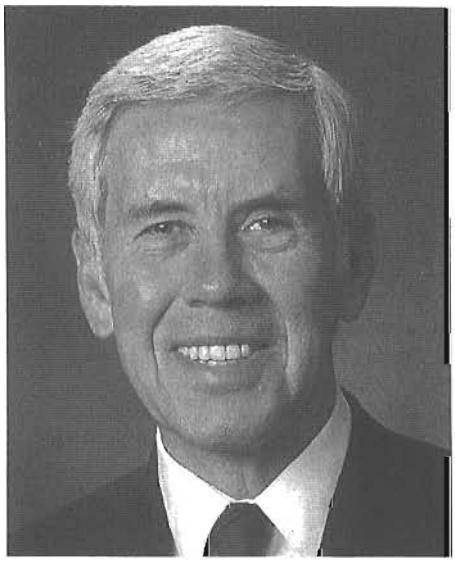
The use of agricultural materials to produce ethanol is important to help alleviate our chronic petroleum trade deficit, which was $47 billion in 1995. Thanks to NRI research, use of residues from rice, corn, and sugarcane to make ethanol is nearing commercial production.

Atmospheric Carbon Dioxide Levels

We are a long way from being able to make a major impact on the rise of atmospheric carbon dioxide. Plants and photosynthetic microorganisms play an important role in global carbon dioxide cycles and much more could be learned through appropriate fundamental research. The growth of crop plants under a variety of different carbon dioxide levels needs to be understood as does the impact of marine microorganisms as a buffer for carbon dioxide. Oceans represent 70 percent of the world surface, and we have very little knowledge as to how various microorganisms and plankton may help regulate global carbon dioxide levels. While enhanced photosynthesis and commensurate increases in crop production were the one anticipated bright spot associated with increased carbon dioxide levels, this benefit is often not realized. Plant scientists are exploring limitations on the entire process in hopes of harnessing the benefits of carbon dioxide enrichment for agriculture. Additional support will allow us to gain a better understanding of factors that impact on crop production and the environment.

Sustainable Agriculture and the Environment

Continued and enhanced support of USDA for basic research into plant genetics and plant growth will be a key to increased gains in crop production that the nation and the world will require. In addition to the gains in production this research will bring, it offers positive effects for the environment. "The success of sustainable agriculture depends fundamentally on making plants more efficient in converting sunlight, nutrients and water into food and fiber products. Conventional plant breeding now boosts



Sen. Richard Lugar (R-IN) chairs the Agriculture Committee now reviewing research title of Farm Bill. Proposed an additional $500 million for competitively awarded agricultural research during last Congress.

yields by roughly one percent annually. In the coming years, biotechnology can be expected to make breeding even more efficient," Plucknett and Winkelmann in a September 1995 *Scientific American* article noted. The authors termed these improved crops "power plants."

Model Systems

Research has shown a greater similarity in the genomes of different cereal crops than previously expected. Four cereal species—corn, wheat, sorghum and rice—contribute over 50 percent of world food production and these species differ tremendously in their abilities to grow under different agronomic circumstances of drought, heat, cold, and soil quality. However, recent studies have shown that these plants all contain essentially the same gene content, differing mainly in the particular alleles of these genes. Rice and sorghum can be used as model organisms to clone and understand genes from corn, wheat, and the other large genome cereals. An increase in the investment in plant genome research is vitally needed.

continued on page 14

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During the same hearing, testimony was presented by the National Science Foundation (NSF). Mary Clutter, assistant director for the Directorate for Biological Sciences and a member of ASPP, discussed the merit review process used by NSF. She also explained the relationship of NSF to the mission agencies.

In Fiscal Year 1996, NSF took final action on nearly 29,951 competitively reviewed proposals. Of these, 8,796 received awards. NSF received a total of 247,877 reviews to aid in making these decisions. The proposals are reviewed for: research performance competence; intrinsic merit of the research; utility or relevance; and the effect on the infrastructure of science and engineering.

Clutter cited the successful partnership between NSF, DOE, and USDA in the Collaborative Research in Plant Biology program, which supports the interdisciplinary training of plant biologists to meet the challenges posed by new scientific research and modes of education. This program also supports the networking of scientists working on all aspects of plant biology, and the development of partnerships in which they work together on common problems. "I am convinced that other interagency interactions of this type would be very productive and should be encouraged," Dr. Clutter said.

Senate Agriculture Committee Chairman Richard Lugar (R-IN) is examining the way research is supported at other agencies and comparing it to the research conducted at USDA. Chairman Lugar also distributed questions concerning agricultural research to the science community as part of his review of the Research Title of the Farm Bill which needs to be reauthorized this year. (See related story for ASPP's responses to these questions.)

ASPP Urges Support for NRI and ARS to Senate Agriculture Committee

The American Society of Plant Physiologists requested increased support for the National Research Initiative Competitive Grants Program (NRICGP) and Agricultural Research Service in responses submitted March 14 to questions from Senate Committee on Agriculture, Nutrition and Forestry Chair Richard Lugar (R-IN). The responses were prepared for the committee review of current agricultural research programs supported by the Department of Agriculture considered for reauthorization this year in the research title of the Farm Bill.

ASPP committee on public affairs chair Lou Sherman pointed out that the current system should not undergo dramatic revision, but that future investment by the federal government in agricultural research, extension and education should be based on the following four principles:

1. The research should be of value to more than one state.
2. The research portfolio should include an increase in research based on competitive grants, i.e., invest money on the best science.
3. The research should be in the public domain. As one example, it could be published in refereed scientific journals.
4. There should be recognition that a reversal of the reduction in number of ARS scientists is needed to adequately meet substantial demands of Americans and much of the world for high quality, safe and affordable food.

ASPP noted that the number of scientists in the Agricultural Research Service has dropped from approximately 2,500 more than ten years ago to about 1,800 at present. This is a precariously low number and a very careful analysis of manpower needs should be made.

With these principles in mind, the comments offered a number of recommendations, including the following:

- The National Research Initiative (NRI) should be funded at the $500 million per year level. Use of a portion of commodity price supports to fund this research, particularly when market prices are high, would provide farmers with the safety net of research-generated production increases they will need to compete as transition payments are completed. The model developed by Chairman Lugar in proposing the Agricultural Competitiveness Initiative should be used to provide this support.
- Increased funding should be provided to support ARS research.
- A training grant program should be established to encourage young people to consider agricultural research for their careers. The lack of such training grants has been a severe deterrent to developing appropriate manpower in the agricultural research system.

  Competitive challenge grants to create teachers and teaching teams should be established to enable those interested in agricultural research, education and extension to develop innovative teaching materials and to work with teachers at the K-12 and university levels.

  A competitive equipment program should be established to insure that agricultural research and education scientists have access to state-of-the-art equipment.

ASPP said increased support for the NRI will provide the knowledge necessary to assure the evolution of farming towards systems that enhance the environment and natural resource base upon which agriculture depends while also assuring safe, high-quality products from plants and animals. At the current funding level of less than $100 million, the NRI is able to fund only about 20% of all proposals, when more than 50%

are worthy of funding. Moreover, proposals are funded for an average of two-and-one-half years, when three to four years is more optimal, and the average funding per year is only about $50,000, when $75-80,000 per year can be justified. Equally important, the total program has been limited to only certain areas with no programs in place for many deserving areas of agricultural science and engineering.

In response to a question on basic research, ASPP pointed out that basic research can be done purely for the sake of providing a greater fundamental understanding of natural phenomena, or it can be done with a particular problem, need, opportunity, or benefit in mind. Either way, applications are forthcoming. For example, the discovery of how the crown-gall pathogen produces disease on susceptible plants was done for the sake of understanding a natural phenomenon, possibly with clues to human tumors and cancers. However, once it was revealed that the pathogen produces galls by inserting its own genes into the plant's DNA, the applications in agriculture were obvious; this basic discovery opened the field of genetic engineering for plants. At the same time, one of the most basic contributions to genetics this century, the discovery of the gene-for-gene relationship to explain the genetics of plant-pathogen interactions, was made by ARS scientist H. H. Flor while conducting research aimed at a practical solution to the problem of rust on flax in the North Central states. Both approaches to basic research are important as part of the total mix of research programs supported by the federal government.

ASPP also testified before the Senate Committee on Agriculture in its review of issues in preparation for reauthorizing the Research Title of the Farm Bill. (See related story.)

IN LETTER TO *NATURE*, ASPP CALLS FOR BASING DECISIONS ON SCIENCE BEFORE LABELING OF "NOVEL FOODS"

The labeling of novel foods, including genetically modified foods, would occur in Europe under an agreement reached after years of negotiations by a joint committee of the European Parliament and the Council of Ministers, which represents the 15 member states, *Nature* reported in its December 12, 1996 issue. The compromise was welcomed by both the European Consumers' Association and the Confederation of EU Food and Drink Industries. The agreement was described as a "second-best solution" by a member of the Parliament's Green group.

ASPP President Don Ort wrote a letter published in *Nature* on January 23, 1997, which suggested basing safety-related conclusions on the best scientific findings before deciding on an action such as labeling. Following is the letter that Ort wrote:

Sir: Your News story "Europe agrees a compromise on food labels" (Nature 384,502-503;1996) noted that consumer, food industry and environmental groups have weighed in with opinions on the newly proposed compromise concerning labeling of genetically modified foods in Europe. Conspicuously absent from the article was any mention of views from within the science community concerning an issue that has fundamental scientific components.

Although disclosure of the contents of food is an important issue, the potential categorization of food into genetically modified and non-modified groups warrants more discussion.

For example, triticale, a polyploid plant containing full copies of both rye and wheat genomes was developed 60 years ago and is presently grown on more than a million hectares in Canada, Mexico and eastern Europe. Modern plums contain chromosomes from cherry plums and blackthorn. Russian wheat has genes from both rye and wild wheat grass and French plant breeders have introduced fungal eyespot disease resistance genes from goat grass into French domestic wheats. This is a sampling of a much longer list which illustrates that many present day crops used to produce food for humans have for years contained foreign genes, and could arguably be considered novel foods, without the application of recombinant DNA technology.

While newer transformation technologies clearly expand the range of foreign genes that can be introduced into crops, the public debate centers principally on food safety issues. The perceived novelty of "foreign" genes in foods may be responsible, at least in part, for concerns about safety for human consumption and for the environment.

Clearly, the inter-specific genetic modification of foods is not inherently new. Those writing regulations which relate to a scientific determination of safety of foods should give significant weight to input from the scientific community in addition to concerns of other interests. The more the focus is kept on safety of the product for humans and the environment with decisions made based on the most sound scientific findings, rather than on novelty, the better the result should be for consumers and the environment.

Donald R. Ort
President,
American Society of Plant Physiologists
USDA/Agricultural Research Service
and University of Illinois
Urbana, Illinois
e-mail donald_ort@qms.1.life.uiuc.edu

FUND FOR RURAL AMERICA TO DRAW THOUSANDS OF PROPOSALS

Includes Research on Phytonutrients

Fund for Rural America, the new competitive grants program within the Department of Agriculture, is expected to attract thousands of proposals this year with one estimate as high as 4,000.

Department officials cited the high interest in the program as an indication that there is an obvious need for such a multidisciplinary research, education, and extension program. Standard project grant applications must be received by the Department on or before April 28, 1997. The Request for Proposals (RFP) has been posted on the ASPP internet home page. ASPP campus contacts were alerted the day of the January 29 publication in the Federal Register.

Program application materials can still be obtained by contacting the USDA at 202-401-5048 or by sending a message with your name, mailing address (not e-mail), and phone number to psb@reeusda.gov and stating that you want a copy of the application materials for the Fiscal Year 1997 Fund Program.

Although the high number of proposals indicates broad interest in the program, one of the effects will be a low approval rate for awards. The Department expects to award nearly $33.5 million as grants to meritorious applicants under the January 29 RFP. A subsequent RFP for Fund for Rural America (FRA) Centers will provide not more than $7.6 million of Fiscal Year 1997 funds.

Two of the eight purposes of the program under the statute and RFP directly related to plant science are: develop new crops, new crop uses, and new agricultural applications of biotechnology; and preserve plant and animal germplasm. Plant research could also contribute to the remaining six purposes: increase international competitiveness, efficiency and farm profitability; reduce economic and health risks; conserve and enhance natural resources; increase economic opportunities in farming and rural communities; and expand locally owned, value-added processing.

The RFP groups the eight purposes into three themes: international competitiveness, efficiency and farm profitability; environmental stewardship; and rural community enhancement.

The Fund for Rural America will complement the Department's existing portfolio of fundamental and applied research, extension, and higher education programs. The program allows, for the first time, the integration of research, education, and extension activities for joint funding. Successful application and adoption of research findings requires explicit coordination with education and extension activities.

Nearly $10 million in research, education, and extension funds will be made available for three Secretary initiatives including on research, education and extension to identify and utilize phytonutrients with cancer prevention potential in the design of functional foods for disease prevention. Current research on cancer and diet linkages has led to the identification of more than 600 plant-derived chemicals (phytochemicals or phytonutrients) along with non-nutrient plant components with cancer-prevention potential. These include anti-oxidants such as beta carotene and vitamins E and C. Further research is needed to understand the independent and interactive effects of phytonutrients and to identify additional protective components.

The RFP notes that genetic engineering techniques make it possible to transfer, enhance, or suppress specific genes from one plant species to another for the development of "functional foods." Functional foods refers to any modified food or food ingredient with the potential to provide a health benefit and to prevent diseases. Congress called for greater research efforts to develop new varieties of fruits and vegetables for the prevention of diet-related diseases in the Farm Bill last year although funding was not appropriated at that time. ASPP and the American Cancer Society had discussed research in this area with USDA staff writing the RFP.

Committee on Public Affairs Visits Hill, Executive Branch Offices

Members of the ASPP committee on public affairs met with nearly 25 offices of Congress and the executive branch on March 10 to discuss opportunities offered by plant research in the areas of food, fiber, and energy production and in environmental remediation.

DOE Office of Energy Research director Martha Krebs explained her support for the Division of Energy Biosciences in an afternoon meeting in her office with several members of the Committee. She pointed out that the science community has been active in its support for this plant and microbial research program within DOE.

Patricia Dehmer, DOE Office of Basic Energy Sciences associate director, had a morning meeting with members of the committee and discussed problems research programs face in the current budget environment. She commended the members of the committee for their efforts in support of the program. Greg Dilworth, acting director of the Division of Energy Biosciences, participated in this meeting.

Committee chair Lou Sherman met with his Congressman, Edward Pease (R-IN), and his staff as well as staff of Senator Dan Coats (R-IN). Lou also participated in meetings with Drs. Krebs, Dehmer, and Dilworth and appropriations staff with jurisdiction over DOE. These included staffs of House Appropriations Committee on Water and Development Chair Joe McDade (R-PA) and Senate Appropriations Committee on Energy and Water Development ranking Democrat Harry Reid (D-NV). Lou also testified before

Sen. Lauch Faircloth (R-NC) serves on Appropriations Committee with jurisdiction over all federal spending for research and education.

his Senator Richard Lugar (R-IN) later that week in testimony before the Senate Committee on Agriculture, Nutrition and Forestry, which Lugar chairs. (See related story.)

Mary Helen Goldsmith discussed the need for support of plant research with her Congresswoman Rosa DeLauro's (D-CT) appropriations committee staff. DeLauro is a member of the House Appropriations Subcommittee on Agriculture, which makes the first determination on spending for agricultural research. Mary Helen also met with Sen. Joseph Lieberman's (D-CT) legislative aide who is coordinating work with the new bipartisan Science & Technology Caucus which includes Senaors Lieberman, Bill Frist (R-TN), Jay Rockefeller (D-WV), and Pete Domenici (R-NM). Among the topics she discussed were the environmental benefits plant research can offer. Mary Helen also met with Senator Chris Dodd's (D-CT) staff to discuss support for plant research and participated in the meeting with Drs. Dehmer and Dilworth.

ASPP president-elect Ken Keegstra met with Appropriations Committee staff in the House and Senate with jurisdiction over DOE and with Drs. Krebs, Dehmer, and Dilworth. Keegstra's visits included staff of Congressman Joe Knollenberg (R-MI), who is a senior member of the House Appropriations Subcommittee on Energy and Water Development with jurisdiction over the Division of Energy Biosciences, and staff of Subcommittee chair McDade. These meetings led to the ASPP supplying follow-up information for these offices in preparation for their hearing. Keegstra also met with science staff of Congressman Vern Ehlers (R-MI). Ehlers was recently appointed vice-chairman of the House Science Committee and selected by the Speaker and Chair to head up long range planning on science and technology. Keegstra also met with staff of Senator Reid, Congresswoman Debbie Stabenow (D-MI), Sen. Spencer Abraham (R-MI), and Drs. Krebs, Dehmer, and Dilworth.

Jim Cook visited with his Congressman George Nethercutt's (R-WA) office, who, like DeLauro, is a member of the House Appropriations Subcommittee on Agriculture. Jim also spoke with USDA Acting Under Secretary for Research Education and Economics Cathy Woteki.

Beth Gantt was joined by Bob Rabson in meeting with staff of Senator Paul Sarbanes (D-MD) and Science Committee staff of Congresswoman Connie Morella (R-MD). Morella is a senior member of the Science Committee, which has authorizing jurisdiction over NSF and DOE. Beth and Bob provided Morella's committee staff with information on plant research supported by NSF and DOE. Bob and Alan Darvill joined in the meetings held March 10 in support of plant research along with members of the Committee. Beth participated in meetings with DOE officials.

Jim Siedow met with staff of his Congressman Bob Etheridge's (D-NC) office. Etheridge's office also expressed an interest in conducting a visit to Duke University. Etheridge is a new member of Congress and a member of committees with authorizing jurisdiction over NSF, DOE, and USDA-supported research. Siedow also testified before the House Appropriations Subcommittee on Agriculture the previous week. (See story in next issue of ASPP News.) Jim also met with agriculture legislative staff of Sen. Lauch Faircloth (R-NC) and with executive branch and appropriations staff concerning DOE.

Alan Darvill met with House Appropriations Subcommittee on Energy and Water Development ranking Democrat Vic Fazio's (D-CA) staff; with McDade's and Reid's staff; and with his Congressman John Linder's (R-GA) staff, who he is inviting out to his research facility. Bill Lucas, ASPP public affairs campus contact for the University of California, Davis, is maintaining constituent contact with Fazio's office, whose district includes the university.

Committee members provided handouts of examples of leading plant research supported by USDA, NSF, and DOE for the offices they met with and extended invitations for the staff and members to visit their labs. ASPP executive director Ken Beam and public affairs director Brian Hyps joined in some of the meetings held March 10. The public affairs office assisted with coordination of some of the visits. The committee on public affairs held its general meeting at ASPP headquarters on March 9.

If you would like more information on visiting your Congressional office or on inviting your member of Congress to visit your lab, you can discuss this with members of the committee on public affairs and also contact Brian Hyps at 301-251-0560 or at bhyps@aspp.org.

Sen. Spencer Abraham (R-MI) serves on Budget Committee and science subcommittee with jurisdiction over NSF and NASA research.

Rep. Joseph Knollenberg (R-MI) serves on subcommittees with jurisdiction over spending for energy research and agricultural research.

Sen. Joseph Lieberman (D-CT) serves on four-member bipartisan science and technology caucus.

ASPP Education Forum

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

Study Looks at Retention of Undergraduates in the Sciences

A new book is available on the subject of the retention of students in the undergraduate science curriculum. Elaine Seymour and Nancy Hewitt have written "Talking about Leaving: Why Undergraduates Leave the Sciences" (1997, Westview Press, 1-800-386-5656, hard cover, $49.95, an academic discount may be applicable, ISBN 0-8133-8926-72). The study is based on interviews with hundreds of students and is a thought-provoking analysis of our current situation. (Submitted by Susan Singer, Carleton College.)

Plant Physiology Laboratory Manuals to be on Display at Vancouver Meeting

One of the largest tasks facing plant physiology instructors is the selection (and successful completion) of meaningful laboratory exercises. Towards that end, many of us have put together manuals containing selected and modified exercises gleaned from a variety of sources or developed anew. A display of plant physiology laboratory manuals is being put together for the Education Booth at Plant Biology '97 in Vancouver. All persons who have developed a manual or compilation of exercises are asked to send one display copy to Bob Wise at the above address (syllabus would be helpful as well). Please clearly indicate the instructor and home institution, and provide the name and address of a contact person should booth attendees have further questions. The materials will be on display at the booth throughout the meeting.

Plant-type Web Sites

The growth of the World Wide Web is hard to keep track of. Nonetheless, here are some plant-related sites that contain significant information as well as links to other botanical and/or physiological sites. Of course, don't forget the ASPP site at http://aspp.org.

- Federation of European Biochemical Societies http://ubeclu.unibe.ch/mci/febs/index.html
- Internet Directory for Botany http://www.helsinki.fi/kmus/botmenu.html
- Rice Genome Research Programme http://www.staff.or.jp/
- Nottingham Arabidopsis Stock Centre http://nasc.nott.ac.uk/
- Plant Science Education Network http://nasc.nott.ac.uk:8100/home.html
- Max Planck Institutes http://www.rzg.mpg.de/mpi.html
- European Molecular Biology Laboratory http://www.embl-heidelberg.de/
- John Innes Centre http://www.uea.ac.uk/nrp/jic/
- USDA Agricultural Genome Information Server http://probe.nalusda.gov:8000/index.html

Beginners Guide to Surviving Undergraduate Teaching

Gordon Uno (Univ. of Oklahoma) has written a book entitled "Handbook on Teaching Undergraduate Science Courses: A Survival Training Manual." The 170-page book is written for the beginning college instructor, although the subjects covered have wide applicability to instructors teaching at any upper level. The fourteen chapters deal with such issues as surviving your first year, course organization, student assessment, and the role of educational technology in biology teaching. The manual is available for the cost of shipping and handling of $5.00. Information on obtaining a copy can be received from Dr. Uno at unobotany@ou.edu (405-325-6281) or by visiting the web site at http://www.ou.edu/cas/botany-micro/faculty/uno-book.html.

ASPP Represented at National NSTA Meeting

Some 2,000 members of the National Science Teachers Association (NSTA) convened in San Francisco in December 1996 for the annual NSTA meeting. ASPP was invited to present laboratory exercises and resources pertaining to plant biology. Hector Flores (University of Pennsylvania) and Tom Warne (University of Tennessee) put together presentations on several educational projects that have been developed in their labs. In addition, Peggy Lemaux and Bob Buchanan (both UC Berkeley) demonstrated exercises developed by Dina Mandoli (University of Washington) who had coordinated the workshop but was unable to attend. The NSTA attendees were enthusiastic about the presentations and the materials that were distributed. Many good ideas were collected by the ASPP members that will be used in future outreach projects.

E on Education Foundation Supports the Coalition for Education in the Life Sciences:

The E on Education Foundation has awarded a two-year, $145,000 grant to the Coalition for Education in the Life Sciences (CELS). CELS is a national coalition of professional societies in the biological sciences that have joined together in an effort to improve undergraduate education in the life sciences. The mission of CELS is to bring the expertise and resources of the life sciences professional societies to bear upon critical issues relating to life science undergraduate education in the United States. ASPP is a founding member of CELS. Funding will support formal alliances among professional societies to: (1) inspire improvements in undergraduate education; (2) promote coherence and collaborations, and (3) enter the dialogue with other national initiatives about the critical components of biology to which all students should be introduced during their undergraduate years. For more information, visit the CELS web site at http://www.wisc.edu/cels. The site has links to ten professional scientific societies. (Submitted by Louise Liao, CELS Program Director, UW Madison.)

Don't Miss the Boat.....

Sign up today for the Plant Biology '97 Alaskan Cruise!... There is still time and cabins are available!

Join your colleagues from Australia, Canada, France, Germany, Israel, Italy, Japan and the United States who have already signed up!

Plant Biology '97 attendees and their guests can enjoy a spectacular 7-day pre-conference **Alaska Inside-Passage cruise** round-trip from Vancouver. Special discounted rates have been negotiated with **Holland America Line** for the **Saturday, July 26, 1997** sailing of the **Nieuw Amsterdam**. The ship will arrive back in Vancouver early on **Saturday, August 2, 1997**, allowing ample time before the opening afternoon session of ***Plant Biology '97***. A tax-deductible portion of each cruise-fare will be donated to the **ASPP Education Foundation**. Join your colleagues for the vacation and learning opportunity of a lifetime!

"As a biologist, I found the Alaskan cruise particularly rewarding. Not only was there an ecologist on board to present interesting observations/stories about the ecosystem in Alaska, but we also studied the native flora and fauna. For example, we observed whales, bald eagles, sea lions, salmon, and exotic plants in their natural setting. Although we took the trip for our vacation, it was also an educational experience."
David Ho, Plant Biology '97 Program Committee, Washington University

"Take this opportunity to join your colleagues cruising Alaskan waters and at the same time make a contribution to ASPP's Education Foundation."
Donald Ort, ASPP President, USDA/ARS, University of Illinois

Key Features of cruising the Alaskan waters on the Nieuw Amsterdam include:

- 7 nights accommodations - Tipping not required policy
- 3 full gourmet meals daily; midnight buffet; lido buffet; 24-hour room service
- Fully-equipped Spa/fitness center: 2 swimming pools, whirlpool, sauna & massage
- Wide range of sightseeing and shore excursions available
- Opportunities to explore Alaskan ecosystem with plant biology colleagues
- Interesting port/ecology lectures, live entertainment, casino, movies and more
- Special cocktail party for ***Plant Biology '97*** attendees & Captain's cocktail party
- ***Plant Biology '97*** Special Edition Photo Album

Nieuw Amsterdam 7-day Alaska Inside Passage Cruise Itinerary: *Ship's Registry: Netherlands Antilles.*

	Day	Port	Arrive	Depart
July 26	1	Vancouver		5:00 pm
July 27	2	Cruising the Inside Passage		
July 28	3	Juneau	2:00 pm	11:00 pm
July 29	4	Skagway	7:00 am	8:00 pm
July 30	5	Glacier Bay Cruising		
July 31	6	Ketchikan	10:00 am	6:00 pm
Aug. 1	7	Cruising the Inside Passage		
Aug. 2	8	Vancouver	8:00 am	

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Plant Biology '97 Alaska Cruise Registration Form

Saturday, July 26 to Saturday, August 2, 1997

(Fax or mail for convenient registration)

Name (1st passenger): _____

Name (2nd passenger): _____

Address: _____

_____

_____

Phone: _____ **Fax:** _____ **E-mail:** _____

Cabin Preference: 1st choice ___ 2nd choice ___ Smoking Pref.: [ ] Yes [ ] No

Dining Pref. & Table Size: [ ] Small [ ] Large; Main Seating [ ] 2nd Seating [ ]

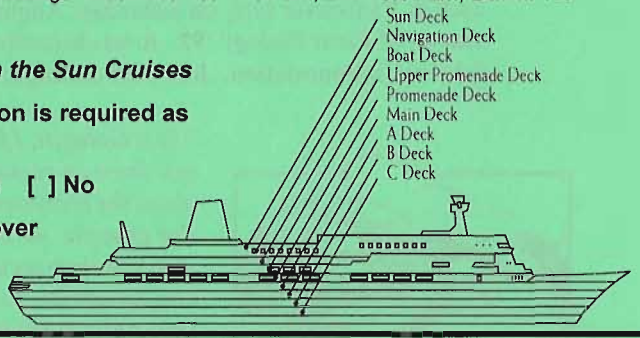
(Dining requests are on a first-come, first-serve basis. Requests for special diets or seating with a specific party, contact Islands in the Sun Cruises. Efforts will be made to honor all requests, subject to availability. Seatings: Breakfast: 1st - 7:30 am; 2nd - 8:30 am; Lunch: 1st - Noon; 2nd - 1:30 pm; Dinner: 1st - 6:00 pm; 2nd - 8:00 pm.)

- **Payment by credit card or a check made payable to *Islands in the Sun Cruises***
- **For best cabin/dining selection a deposit of US$ 350 per person is required as soon as possible. Final payment is due by May 1, 1997.**
- **Optional Cancellation Insurance (US $89 per person): [ ] Yes [ ] No**

[ ] American Express [ ] Visa [ ] Mastercard [ ] Discover

Acct # _____ **Exp. Date:** _____

Signature: _____



Category	*Cabin/Location*	*Regular Rate (US $)*	*Plant Biology '97 Rate* (US $)*
L	Inside Standard/C Deck	1,932.00	1,684.24
K	Inside Standard/B Deck	1,999.00	1,739.18
J	Inside Large/C or B Deck	2,065.00	1,793.30
I	Inside Large/A Deck	2,132.00	1,848.24
H	Inside Large/A or Main Deck	2,199.00	1,903.18
G	Outside Standard/C Deck	2,199.00	1,903.18
FF	Outside Large/B or C Deck	2,332.00	2,012.24
F	Outside Large/B or C Deck	2,439.00	2,099.98
EE	Outside Large/A or B Deck	2,532.00	2,176.24
E	Outside Large/A or B Deck	2,665.00	2,285.30
D	Outside Large/A or Main Deck	2,799.00	2,395.18
C	Outside Deluxe/Prom. or Boat Deck	3,132.00	2,668.24
B	Outside Deluxe/Boat, Nav. or Sun Deck	3,265.00	2,777.30
A	Outside Deluxe/Boat or Nav. Deck	3,732.00	3,160.24

Rates are per person based on 2 people sharing a cabin, and are subject to a port tax of US$ 149 per person. *The Plant Biology* '97 rates also include a US $100 per person tax-deductible donation to the ASPP Education Foundation. **Rates are subject to change and availability**. Information and rates for cabin share, single supplement or 3rd & 4th passenger rates are available upon request. Optional cancellation insurance, which can only be selected at booking, is available for US$ 89 per person. Airfare is not included in prices, but may be booked on your own or with ***Islands in the Sun Cruises***. ***After 2/28/97**

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BUMPING ALONG

by Lawrence Bogorad
Maria Moors Cabot Professor of Biology, emeritus, Harvard University

We bump into some Turning Points in scientific research by chance; we bring ourselves to others. Here are two: one of each type.

I was a second year postdoctoral fellow studying chlorophyll biosynthesis with Sam Granick at what was then the Rockefeller Institute for Medical Research when I came upon my favorite uninvited Turning Point. During my first year there, I isolated *Chlorella* mutants that had lesions in chlorophyll biosynthesis and identified the porphyrins they accumulated. Early in the second year of my fellowship, the monopyrrole porphobilinogen (PBG) was isolated from the urine of porphyria patients and was crystallized by Cookson and Rimington in London. PBG seemed to be a reasonable candidate for the precursor of tetrapyrroles. So, we set about becoming enzymologists with the objective of testing PBG as a substrate for porphyrin biosynthesis.

First, we collected fresh urine of patients at various New York hospitals who were suffering from acute porphyria—a hereditary disease in which PBG accumulates and is excreted. Then we isolated and crystallized PBG from the urine. Following published procedures, we started by adding mercuric acetate powder to four- to ten-liter containers of urine; we centrifuged out the precipitate that formed and passed hydrogen sulfide through a slurry of mercury precipitate to liberate the PBG. After centrifuging out the black precipitate and taking a few more steps, we crystallized the PBG. In all, this is not the sort of procedure that would be entered into in an open lab these days.

We knew how to grow *Chlorella* and thought the cells might be a reasonable source of enzymes. We collected cells, froze and thawed them a few times, spun out the solid material, and used the supernatant as a source of enzyme. (Our incubation mixtures also included rat liver mitochondria and ATP—magical substances for 1950s enzymologists.) To our delight, porphyrins formed after PBG was incubated with our *Chlorella* extracts, etc. Our analyses showed not only that there were porphyrins with various numbers of carboxyl side chains (enzymes were at work to make serial decarboxylation products of the eight carboxyl porphyrin formed by condensing four molecules of PBG) but also that a substantial amount of Proto (protoporphyrin) had been made—lots of then unknown enzymes at work. Good!

PBG has one acetic and one propionic acid side chain. The four possible isomeric tetrapyrroles that can be produced on paper from four molecules of PBG are designated Uro (uroporphyrins) I, II, III, and IV. The biologically important Proto isomer IX, the precursor of cytochromes, catalase, heme, and chlorophylls, is a derivative of Uro III. That our very crude extracts could make Proto IX made us very happy—the enzymatic reactions looked like real biology. But we had needed to do an inactivated enzyme control incubation. We had looked around the lab for some easy way to inactivate enzymes and decided that we could do this by simply incubating aliquots of our extracts in the 55° C oven we had operating for another purpose. At that time, proteins were generally thought to be very heat labile, and 55°C seemed pretty hot—we couldn't live at that temperature for an hour so how could a naked protein? To our surprise, treating the extract in this way had no effect on the rate at which the PBG was consumed, but when we analyzed the products made with a heated extract we found that porphyrins of the Uro III-Proto IX types were not produced but instead all the products were related to Uro I! Uro I accumulates in certain porphyria diseases, e.g. congenital porphyria, in humans. It is decarboxylated but only to Copro (coproporphyrin) I. Both Uro I and Copro I accumulate to make trouble for the patient. We realized immediately that our crude *Chlorella* extracts contained at least two functionally related enzymes: one that consumed PBG to make a product that could become Uro I and a second enzyme, which somehow acted on the product of the first reaction or acted with the first enzyme to produce Uro III and its derivatives. By simple heating we had converted *Chlorella* extracts from behaving like normal humans to extracts that acted like humans with congenital porphyria (1)! (The boiled control we prepared for the next experiment didn't do anything to PBG so we were satisfied that we had become real enzymologists.)

The relatively heat-stable enzyme was subsequently prepared from spinach leaves and designated PBG deaminase (2); the second enzyme, which we later isolated from wheat germ, is Uro III cosynthase (3). By having a 55° C oven available by chance and being quite naive about the stability of proteins, we had stumbled into the discovery that there were at least two enzymes involved in making the tetrapyrrolic precursor of porphyrins of the Uro III type and also found the basis for congenital porphyria. There was a certain pleasure in having an extract of *Chlorella* reveal the basis of a human disease.

Laurens Mets—then a beginning graduate student—and I started toward a Turning Point of the "deliberate" type when we set out to locate a gene for "any chloroplast protein." At the time it was clear that chloroplasts contain DNA and the prevailing view was that chloroplasts were genetically autonomous.

Erythromycin resistance in *E. coli* had been traced to a single protein on the 50S ribosomal subunit and erythromycin-resistant strains of *Chlamydomonas* had been identified by Sager and Ramanis (4). From all of this it seemed reasonable that erythromycin-resistant *Chlamydomonas* mutants might have one or more altered chloroplast ribosomal proteins. We proposed to isolate resistant mutants, to determine by transmission genetics whether the resistance gene was nuclear or organellar, and to use gel electrophoresis to identify an altered ribosomal protein—if there was one.

We isolated erythromycin-resistant mutants and found that any one of three different genetic loci (maybe more) could mutate to produce resistance. Two of the genes were inherited in a normal Mendelian manner—most likely nuclear genes—and the third in a uniparental manner, presumably a chloroplast gene. Each of the two nuclear mutations resulted in a modification of a different ribosomal protein (5, 6). So, chloroplasts were not autonomous genetically but depended on a very complex cytoplasmic medium including ribosomal proteins encoded by nuclear genes. Thus, well before the first chloroplast chromosome had been characterized physically, it was clear that genes for elements of multimeric components, such as ribosomes, can be

continued on page 22

continued from page 21

dispersed in the nuclear and plastid genomes. Soon afterwards, Wildman and his colleagues showed that the large subunit of ribulose bisphosphate carboxylase is transmitted in a non-Mendelian manner in tobacco (a chloroplast gene?) but that the small subunit is encoded in a nuclear gene (7, 8). So, if the chloroplast started a new life in a nucleated cell as an endosymbiont, its genes and gene products were in the same compartment initially but now they are separated!

For us, this was a Turning Point in thinking about how eukaryotic genomes originated and evolved. One could imagine that genes could become dispersed by transfers from the plastid-endosymbiont genome to the nuclear genome. Or, apparent dispersal could be by protein and gene substitution: an organelle gene mutates to make its protein useless for the organelle ribosome, for example, but the ribosome is rescued if another protein in the cell, e.g., one encoded by a nuclear gene, substitutes even poorly initially (9), etc. For those of us engaged in experimental science, where we work to obtain data that will support or destroy our favorite hypotheses, it is a heady experience to be able to imagine, in an unfettered way, what has been happening during three and a half billion years or so of evolution of genomes and the shifting of genes over at least the last two billion years or so.

Both of these Turning Points, and happily many more, help drown out the memories of having come to Turning Points where we foolishly, at first, followed arrows pointed away from the truth.

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Lawrence Bogorad, born in Tashkent in the U.S.S.R. in 1929, earned his bachelor's degree in botany in 1942 and his doctorate in plant physiology in 1949 from the University of Chicago. He did postdoctoral work at The Rockefeller Institute in New York and at the Karolinska Institute in Stockholm, before returning to serve on the botany faculty at the University of Chicago from 1953 until 1967. Dr. Bogorad is at present Maria Moors Cabot Professor of Biology, emeritus, at Harvard University. He has been at Harvard since 1967. In a long history of service to science, Dr. Bogorad served ASPP as president in 1968-1969, he was president of the Society for Developmental Biology in 1982-1984, and he was president of the American Association for the Advancement of Science in 1986-1987. He has served on the editorial boards of several journals, including *Plant Physiology*. Bogorad is a member of the National Academy of Sciences, and in 1982 won ASPP's Stephen Hales Prize for "his pioneering research characterizing the chloroplast genome." Dr. Bogorad's extensive and distinguished career as a researcher continues. He is currently actively involved in studying chloroplast gene expression in *Chlamydomonas* and gene expression control for C4 photosynthesis in maize.

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

1997: Vancouver, British Columbia, Canada
Saturday, August 2, through
Wednesday, August 6

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

1999: Washington, D.C.
Saturday, July 24, through
Wednesday, July 28

1997

APRIL

April 14-19
9th International Congress on Isozymes, Genes, and Gene Families
San Antonio, Texas
Contact: Ms. Daphne Wright, Congress Liaison, Southwest Foundation for Biomedical Research, P.O. Box 28147, San Antonio, TX 78228-0147; fax 210-670-3337, e-mail isozyme@darwin.sfbr.org.

April 16-19
Sixteenth Annual Missouri Symposium
Signs and Roadways: Protein Traffic and the Cytoskeleton
University of Missouri, Columbia
Contact: IPG Symposium - 1997, Attn: Registration, University of Missouri-Columbia, 117 Schweitzer Hall, Columbia, MO 65211; telephone 573-882-7796, fax 573-882-5635, e-mail Whitney Keller at whitney_j._keller@muccmail.missouri.edu.

April 18-19
Annual Meeting
Northeast Section-ASPP
Cornell University, Ithaca, New York
Contact: Philip D. Reid, Smith College, Department of Biological Sciences, Northampton, MA 01063-0001; telephone 413-585-3818, fax 413-585-3786, e-mail - preid@science.smith.edu.

MAY

May 4-9
International Conference on Nitrogen Assimilation: Molecular and Genetic Aspects
Tampa, Florida
Contact: Nitrogen Assimilation Meeting, University of South Florida, College of Medicine, Department of Biochemistry and Molecular Biology, 12901 Bruce B. Downs Boulevard, Tampa, FL 33612; telephone 813-974-3393, fax 813-974 5798, e-mail acannons@com1.med.usf.edu.

May 13-17
The Third National ISU Model Bioethics Institute Workshop
Michigan State University, East Lansing
For more information contact: Dr. Gary Comstock, 402 Catt Hall, Iowa State University, Ames, IA, 50011-1306; telephone 515-294-0054, e-mail comstock@iastate.edu.

May 20-27
Short Course: Microinjection Techniques in Cell Biology
Marine Biological Laboratory
Woods Hole, Massachusetts
Application deadline March 11, 1997. 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, World Wide Web site http://www.mbl.edu.

May 20-30
Eighth NATO Advanced Study Institute Course: Cellular Integration of Signaling Pathways in Plant Development
Maratea, Italy
Organizers:; Robert Last, Boyce Thompson Institute at Cornell, Ithaca, New York, USA; Fiorella Lo Schiavo, University of Padova, Padova, Italy, Giorgio Morelli, National Institute of Nutrition, Rome, Italy, Natasha Raikhel, Michigan State University, East Lansing, Michigan, USA. For more information contact: Fiorella Lo Schiavo, fax 39 49 8276280, e-mail pmb@civ.bio.unipd.it.

May 22-24
Radical Biology: An International Symposium in Root Biology
The Pennsylvania State University
University Park
Contact: Dr. Hector E. Flores, The Pennsylvania State University, 315 Wartik Laboratory, University Park, PA 16802; telephone 814-865-2955, fax 814-863-7217, e-mail hector_flores@agcs.psu.edu or visit our web site at http://www.cas.psu.edu/docs/cashome/confshort/des95.html.

May 25-30
5th International Symposium on Grapevine Physiology ISHS OIV
Jerusalem, Israel
Organizer: Ben Ami Bravdo, Faculty of Agriculture, Rehovot, POB12, Israel, 76100, telephone 972 89471094, fax 972 89468263, e-mail bravdo@agri.huji.ac.il.

May 27-June 1
The Plant Workshop: Leaves
La Colle-sur-Loup, Nice, France
Organisers are: Cathie Martin, Sarah Hake, and Roland Douce. For full information and program please contact: Leaves, IFAB Communications, Department of Biology, University of York, PO Box 373, York YO1 5YW, UK; telephone 44 (0) 1 904 432940, fax 44 (0) 1 904 433029, e-mail biocomms@york.ac.uk. Web site: http://www.york.ac.uk/depts/biol/web/symposia/leaves.htm.

JUNE

June 1-3
The 9th Annual Meeting of the National Agricultural Biotechnology Council (NABC): Resource Management in Challenged Environments
University of Saskatchewan
Saskatoon, Saskatchewan, Canada
Contact: NABC, 419 Boyce Thompson Institute,

Tower Road, Ithaca, New York 14853; telephone 607-254-4856, e-mail NABC@cornell.edu.

June 2-5
RNA Isolation and Analysis Course
Rutgers University
New Brunswick, New Jersey
Contact: Dr. Gina-lee Toaldo, Office of Continuing Professional Education, Rutgers University-Cook College, P.O. Box 231, New Brunswick, NJ 08903-0231; telephone 908-932-9271.

June 8-13
1997 Gordon Conference on
Plant Cell Genetics and Development
New England College
Henniker, New Hampshire
Contact: Dr. Carlyle B. Storm, Gordon Research Center-URI, P.O. Box 984, West Kingston, RI 02892-0984; telephone 401-783-4011, fax 401-783-7644, e-mail grc@grcmail.grc.uri.edu.

June 9-13
Separation and Characterization of
Glycoprotein Oligosaccharides
Complex Carbohydrate Research Center
The University of Georgia, Athens
Contact: Roberta Merkle, CCRC, 220 Riverbend Rd., University of Georgia, Athens, GA 30602-4712; telephone 706-542-4402, fax 706-542-4412, e-mail rmerkle@uga.cc.uga.edu.

June 14-18
1997 Congress on in Vitro Biology:
Cellular Mechanisms
Washington, D.C.
Contact: Tiffany McMillan, telephone 410-992-0946, fax 410-992-0949, e-mail shillitor@am.abru.cg.com, World Wide Web http://webtutor.tamu.edu/student9/cong1997.htm.

June 16-20
Structural Analysis of Oligosaccharides
Complex Carbohydrate Research Center
The University of Georgia, Athens
Contact: Roberta Merkle, CCRC, 220 Riverbend Rd., University of Georgia, Athens, GA 30602-4712; telephone 706-542-4402, fax 706-542-4412, e-mail rmerkle@uga.cc.uga.edu.

June 18-19
19th Southern Forest Tree Physiology Workshop
College Station, Texas
Contact: Ron Newton, telephone 409-845-8279, or Liz McGee, Texas A & M University, Hort/Forest Science Building, Room 305, College Station , Texas 77843-2135; telephone 409-845-5043, fax 409-845-6049, e-mail e-mcgee@tamu.edu.

June 23-27
Mass Spectrometry and MS/MS Analysis of
Glycoconjugates
Complex Carbohydrate Research Center
The University of Georgia, Athens
Contact: Roberta Merkle, CCRC, 220 Riverbend Rd., University of Georgia, Athens, GA 30602-4712; telephone 706-542-4402, fax 706-542-4412, e-mail rmerkle@uga.cc.uga.edu.

June 25-28
Fourth Annual "Teaching Research Ethics"
Workshop
Indiana University, Bloomington
For information and a registration form contact: Kenneth D. Pimple, Ph.D. "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, http://www.indiana.edu/~poynter/index.html.

June 25-29
8th International Arabidopsis Meeting
Madison, Wisconsin
Contact: Arabidopsis, e-mail arabidopsis@biochem.wisc.edu, fax 608 262-3453.

JULY

July 2-5
The Plant Secretory System:
Mechanisms, Pathways and Applications in
Biotechnology
The University of York, UK
For full information, programme and speaker information please contact the Secretariat: Plant Secretory System, IFAB Communications, Department of Biology, University of York, PO Box 373, York YO1 5YW, UK; telephone 44 (0)1 904 432940, fax 44 (0)1 904 433029, e-mail biocomms@york.ac.uk. Web site: http://www.york.ac.uk/depts/biol/web/symposia/plantss.htm.

July 12-18
'97 Seventh International Controlled
Atmosphere Research Conference
Davis, California
For information contact: Ms. Pamela Moyer, Department of Pomology, University of California, Davis 95616; telephone 916-752-6941, fax 916-752-8502, e-mail pvmoyer@ucdavis.edu.

July 12-18
European Symposium on
Photomorphogenesis (ESOP)
University of Leicester, Leicester, UK
Organizer: Harry Smith, Secretary: Carol Webster. To receive second circular contact: Carol Webster, Department of Botany, University of Leciester, Leicester, LE1 7RH, UK; telephone +44-116-252-3381, fax +44-116-252-2791, e-mail cw17@le.ac.uk.

July 14-18
NMR of Carbohydrates
Complex Carbohydrate Research Center
The University of Georgia, Athens
Contact: Roberta Merkle, CCRC, 220 Riverbend Rd., University of Georgia, Athens, GA 30602-4712; telephone 706-542-4402, fax 706-542-4412, e-mail rmerkle@uga.cc.uga.edu.

July 20-25
International Symposium on Iron
Nutrition and Interactions in Plants
Universität Hohenheim, Stuttgart, Germany
For information, contact: Dr. Volker Römheld, Institut für Pflanzenernährung, Universität Hohenheim, D 70593, Stuttgart, Germany; telephone +49 711 459 3714, fax +49 711 459 3295.

July 20-August 1
Summer Course: Plant Biochemistry 1997
Washington State University, Pullman
For information and an application form, contact Ms. Karen Maertens, PBRTC, Institute of Biological Chemistry, 285 Clark Hall, P.O. Box 646340, Washington State University, Pullman, WA 99164-6340; telephone 509-335-5496, fax 509-335-7643, e-mail maertens@wsu.edu. Application deadline April 15, 1997.

July 27-30
1997 American Agricultural Economics
Association (AAEA)
Annual Meeting
Toronto, Ontario, Canada
Registration information will be available on the AAEA Website at http://www.aaea.org or by e-mailing bamcman@iastate.edu.

AUGUST

August 2-6
Plant Biology '97
A View from the Pacific Rim
Vancouver, BC. Canada
The quadrennial combined annual meetings of the American Society of Plant Physiologists and The Canadian Society of Plant Physiologists. Contact: Susan Chambers, 15501 Monona Drive, Rockville, MD 20855; telephone 301-251-0560 ext. 11, fax 301-279-2996, e-mail chambers@aspp.org or on the World Wide Web see URL http://aspp.org.

August 8-12
PGRSA '97
The 24th Annual Meeting of the
Plant Growth Regulation Society of America
Atlanta, Georgia
Contact Dr. Joyce Latimer, Department of Horticulture, Georgia Experiment Station, Griffin, GA 30223-1797; telephone 770-228-7398, fax 770-412-4764, e-mail jlatime@gaes.griffin.peachnet.edu.

August 10-14
International Biometals Symposium
University of Calgary, Alberta, Canada
For information see the IBS home page at http://sandburg.unm.edu, or contact: International Biometals Symposium, the University of Calgary, Conference Management Services, Attention: Ms. Susan Austen, Olympic Volunteer Centre, 1833 Crowchild Tr. NW, Calgary, Alberta T2M 4S7, Canada; telephone 403-220-6229, fax 403-284-4184, e-mail sausten@acs.ucalgary.ca.

August 10-14
Gordon Research Conference:
Epigenetic Effects on Gene Expression
Plymouth, New Hampshire
Steve Henikoff and Marjori Matzke, co-chairs. Contact: Gordon Research Conferences, University of Rhode Island, P.O. Box 984, West Kingston, RI 02892-0984; telephone 401-783-7644, fax 401-783-4011, e-mail grc@grcmail.uri.edu.

August 12-16
Joint Meeting of the IUFRO Working Parties S.04-07 and S.04-06
Somatic Cell Genetics and Molecular Genetics of Trees
Quebec City, Canada
Organizers: Pierre J. Charest and Armand Seguin. For more information contact: Pierre J. Charest, Science Branch, Canadian Forest Service, 580 Booth Street, 7th floor, Ontario, Canada, K1A 0E4; telephone 613-947-9011, fax 613-947-9090, e-mail pcharest@am.ncr.forestry.ca.

August 13-15
Symposium on Seed Biology and Technology: Applications and Advances
National Seed Storage Laboratory
Fort Collins, Colorado
For information contact: http://www.ars-grin.gov/ars/NoPlains/FtCollins/SEEDBIO/ or Eric E. Roos, USDA National Seed Storage Laboratory, 1111 South Mason St., Fort Collins, CO 80521-4500, e-mail: eroos@lamar.colostate.edu, telephone 970-495-3205, fax 970-221-1427; or Greg Welbaum, Department of Horticulture, Saunders Hall, Virginia Tech Blacksburg, VA 24061-0327, telephone 540-231-5801, fax 540-231-3083.

August 25-29
5th International Congress on Amino Acids
Chalkidiki, Greece
Contact: Bijay K. Singh, American Cyanamid Company, P.O. Box 400, Princeton, NJ 08543-0400; telephone 609-716-2066, fax 609-275-5216, e-mail singhb@pt.cyanamid.com or Maria Liakopoulou-Kyriakides, Department of Chemical Engineering, Aristotle University of Thessaloniki, 54006 Thessaloniki, Greece; telephone 3031 99 6193, e-mail markyr@verginia.eng.auth.gr.

SEPTEMBER

September 7-11
International Symposium on Boron in Soils and Plants
Chiang Mai, Thailand
Contact: Dr. B. Rerlkasem, Multiple Cropping Center, Chiang Mai University, Chiang Mai, Thailand 50200; fax 66-53-210000. Please request the 2nd circular.

September 15-17
Third International Conference on Oxygen, Free radicals and Environmental Stress in Plants
Pisa, Italy
Contact: Flavia Navari-Izzo, e-mail fnavari@mailserver.agr.unipi.it; Riccardo Izzo, e-mail ricizzo@mailserver.agr.unipi.it; Mike Frank Quartacci, e-mail mfquart@mailserver.agr.unipi.it; Cristina Sgherri, e-mail csgherri@mailserver.agr.unipi.it. Istituto di Chimica agraria, Via S. Michele degli Scalzi, 2 56124 Pisa Italy; telephone +39 50 571557 or 571558, fax +39 50 598614.

September 21-27
5th International Congress
International Society for Plant Molecular Biology
The Republic of Singapore
Organizers: Nam-Hai Chua, Rockefeller University, and Robert Haselkorn, University of Chicago. Contact: Congress Secretary, ISPMB, Department of Biochemistry & Molecular Biology, University of Georgia, Athens, GA 30602-7229; fax 1 706 542 2090, e-mail ldure@uga.cc.uga.edu.

September 29-October 3
International Symposium on Biotechnology of Tropical and Subtropical Species
Brisbane, Australia
Conference convenor: Dr. Rod Drew, fax 61 7 32863094, e-mail drewra@dpi.qld.gov.au. For more information or to receive announcements contact: Organizers Australia, PO Box 1237, Milton Q4064, Australia; fax 617 33671471, e-mail oa@bnec.design.net.au.

OCTOBER

October 25-28
Workshop on the Biochemistry of Plant Phytate and Phytases
Copenhagen, Denmark
Contact: Soren K. Rasmussen, Riso National Laboratory, Mil-301, P.O. Box 49. Dk-4000 Roskilde, Denmark; fax 45 46 32 33 83, e-mail soren.rasmussen@riscoe.dk.

October 26-31
Symposium on Soil Acidity and the Rhizophere
American Society of Agronomy Meeting
Anaheim, California
Contact : Nancy Cavallaro, Texas Tech University, Department of Civil Engineering, Mail Stop 41023, Lubbock, TX 79409-5000; telephone 806-742-3481, ext. 226, fax 806-742-3488, e-mail ncavallaro@coe2.coe.ttu.edu or wrcav@ttacs1.ttu.edu.

NOVEMBER

November 22-25
IUFRO Symposium: Innovations in Forest Tree Seed & Nursery Technology
Raipur, India
For information contact: Dr. S. C. Naithani, Organization Secretary-IUFRO Symposium '97, SOS In Life Sciences, Pt. Ravishankar Shukla University, Raipur - 492 010, India; telephone 91 0771 26031, fax 91 0771 534283, e-mail rsinf@shankti.ncst.ernet.in.

1998

APRIL

April 6-8 1998
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 27-May 2, 1998
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.

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, MD, operates a placement service in which are kept active two files of résumés of individuals who are seeking employment. Employers are urged to survey the résumé files for those seeking permanent positions and those seeking postdoctoral or similar positions. The files cost $25 each and may be ordered from Ms. 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 is charged for all academic/government/industry permanent positions and for all positions, regardless of rank, posted by private companies. 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.)
- **Fellowships, Traineeships, Graduate Assistantships, and etc.**: Announcements of programs and fellowships or traineeships 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 full length in one issue of ASPP News; the second time they will include location, contact name and address, and 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)

Assistant/Associate Professor
University of Wisconsin, Madison
(Received 01/14)

A 12-month tenure-track position (about 60% extension, 40% instruction) is available. This is the lead position of an interdisciplinary effort among scientists in the Department of Horticulture, University of Wisconsin, Madison. Extension responsibilities: The incumbent will provide statewide leadership in extension programs serving Wisconsin's woody industries. Emphasis will be on environmentally responsible management in the urban landscape. Reliance on and coordination among faculty in the allied departments of soils, plant pathology, entomology, etc., is required to achieve the goals of this position. Clientele includes: county extension faculty, landscape and institutional managers, woody ornamental growers, arborists, private landscape contractors, municipal forest managers, and homeowners. Instruction responsibilities: Teaching will include introductory and advanced courses in woody plant ecology in managed landscapes. Qualifications: Applicants must have completed a Ph.D. in plant sciences and have experience in the ecology and use of woody plant materials. Date available: Applications received by May 15, 1997, will be consideration. Salary: Competitive and commensurate with training and experience. Application: Applicants should send their curriculum vitae, a statement of professional goals, transcripts, and three letters of recommendation to: Dr. Dennis P. Stimart, Search Committee Chair, Department of Horticulture, 1575 Linden Drive, Madison, WI 53706-1590; e-mail dstimart@facstaff.wisc.edu.

Assistant Professor
The University of Florida, Apopka
(Received 02/28)

The University of Florida's Central Florida Research and Education Center is seeking qualified candidates for a 12-month tenure-accruing 80% research and 20% extension position. The successful candidate will conduct basic and applied research on environmental and cultural factors influencing production and postharvest quality of ornamental crops, with a major emphasis on foliage and other plants used indoors. A primary goal will be to review, develop, and study the effects of management practices on plant growth and quality and on the environment. The appointee will be expected to compete successfully for extramural funding and publish his/her research in national and international refereed journals. Candidates must hold a Ph.D. in a plant science with training in floriculture, plant nutrition, plant physiology, or related field. Research and greenhouse experience is highly desirable. Demonstrated ability in both oral and written communications is essential. Applicants should submit a letter of application including a statement of interests and career goals, curriculum vitae, transcripts, and three letters of recommendation before June 1, 1997, to: Dr. Robert H. Stamps, UF/IFAS/CFREC, 2807 Binion Road, Apopka, FL 32703-8504; telephone 407-884-2034, fax 352-392-9359, e-mail rhs@icon.apk.ufl.edu. The University of Florida is an AA/EA/EEO employer.

Assistant Professor
University of Minnesota, St. Paul
(Received 02/28)

A tenure-track, 12-month research/teaching position is available July 1, 1997, to: develop crop molecular genetics research program emphasizing wheat/barley; contribute to undergraduate/graduate education, and outreach activities in plant biotechnology. Minimum qualifications: Ph.D. in genetics, molecular biology, plant breeding, or related field; communication skills and teaching ability. Desired qualifications include postdoctoral, experience in contemporary crop molecular genetics research, collaborative research and teaching/education. Send résumé, transcripts, a 1-2 page statement of personal interests/goals relating to position's research and educational responsibilities, and have three letters of reference sent by May 1, 1997, to; Dr. David Somers, Department. of Agronomy & Plant Genetics, 1991 Buford Circle; University of Minnesota, St. Paul, MN 55108; telephone 612-625-5769, e-mail somersgbiosci.umn.edu. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and

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Jobs with early application deadlines are listed on the Web site, but might not appear in *ASPP News*.

minorities. For more information on this position and the Department of Agronomy and Plant Genetics visit our web page at http://www.agro.agri.umn.edu/job_openings/index.htm.

Assistant Program Director
CSREES/USDA, Washington, D.C.
(Received 03/13)
The National Research Initiative Competitive Grants Program of the U.S. Department of Agriculture seeks a qualified scientist to serve as assistant program director for competitive grants administration in the area of general plant biology, or related plant science disciplines such as genetics, biochemistry, photosynthesis, growth and development, pathology, weed biology, entomology, nematology, or biocontrol. Candidates must have an advanced degree with major study in at least one of the areas listed above or a closely related field. It is preferable that the candidate have a Ph.D. or equivalent specialized experience. This is a competitive vacancy, open to all United States citizens. Closing date is April 16, 1997. For information on the position, contact: Dr. Ed Kaleikau, Division Director, National Research Initiative Competitive Grants Program, CSREES/USDA, STOP 2241, 1400 Independence Avenue S.W., Washington D.C. 20250-2241; telephone 202-401-1901, e-mail ekaleikau@reeusda.gov. For information on application procedures/forms, contact the Human Resources Division, telephone 301-344-3960. USDA is an equal opportunity employer.

POSTDOCTORAL POSITIONS

Postdoctoral Research Associate
USDA-ARS, Beltsville, Maryland
(Received 01/16)
A two-year position is available immediately to define water- and nitrogen-use efficiency of crops and competing species in sustainable cropping systems. Research will focus on reduced-tillage systems featuring various cover crops and living mulches in long-term sustainable agriculture research plots at Beltsville. Ph.D. in agronomy, ecology, weed science, plant physiology, or sustainable agriculture with background in the ecophysiology of multi-species plant interactionsis desired. Skill in use of automated data collection systems. Contact: James D. Anderson, USDA ARS, Bldg. 264 Room 104, Beltsville, MD 20705; telephone 301-504-6537, e-mail janderso@asrr.arsusda.gov. USDA is an equal opportunity employer.

Postdoctoral Position
Carnegie Institution of Washington
Stanford, California
(Received 01/23)
A postdoctoral position is available as of April 1, 1997, to study the insertion of chloroplast-encoded proteins into the thylakoid membrane using biochemical approaches. We are employing an assay where we synthesize specific proteins in chloroplast lysates and reconstitute the targeting of ribosome-nascent chain complexes to the thylakoid membrane. Using this ribosome-dependent assay, we seek to determine the factor and energetic requirements for targeting and insertion of specific membrane proteins. Applicants should have experience in protein and nucleic acid biochemistry. Interested applicants should send a current curriculum vitae and have three letters of reference sent to: Neil E. Hoffman, Department of Plant Biology, Carnegie Institution, 290 Panama Street, Stanford, CA 94305; telephone 415-325-1521, fax 415-325-6857, e-mail hoffman@andrew.stanford.edu.

Postdoctoral Research Associate
South Dakota State University, Brookings
(Received 01/29)
A postdoctoral position is available on soybean transformation and regeneration. Required: Ph.D in plant biology or related area, research experience in plant tissue culture and plant molecular biology, effective oral and written communications skills, and interpersonal relations skills. Preferred: Experience in plant transformation and regeneration, in vitro culture of soybean and other legumes, and analysis of transgenic plants. Closing date: April 22, 1997. Contact: Dr. C.D. Carter, Plant Science Department, NPB 247 Box 2140C, SDSU, Brookings SD 57007-2141; telephone 605-688-5536, fax 605-688-4452, e-mail carterc@mg.sdstate.edu. AA/EEO employer/ADA reasonable accommodations 605-688-6361 (TT/Voice 605-688-4394).

Postdoctoral Position
University of Minnesota,
USDA Potato Research Worksite
East Grand Forks
(Received 01/31)
A Ph.D candidate is sought to utilize biochemical/molecular approaches to study the allelic differences, expression patterns, and physico-chemical and catalytic properties of isoforms of UDP-glucose pyrophosphorylase as they relate to cold-sweetening resistance in potatoes (Plant Physiol 113, Feb. 1997; J. Plant Phyiol 147:644, 1996; Plant Physiol 101:1073, 1993.) Candidates should have experience in protein purification/characterization and molecular biology techniques. Experience in the expression/purification of proteins in/from bacterial systems would be in the candidates favor. Funds are available for three years (starting time flexible - spring, 1997.) Send curriculum vitae and names of three references to: Dr. Joe Sowokinos, P.O. Box 113, East Grand Forks, MN 56721; telephone 218-773-2473, fax 701-795-8348, e-mail sowok001@maroon.tc.umn.edu. The University of Minnesota is an equal opportunity educator and employer.

Research Positions
University of Minnesota, St. Paul
(Received 01/31)
The Department of Horticultural Science at the University of Minnesota receives and evaluates applications from candidates for temporary part- and full-time research positions continuously. Positions become available throughout the year, and are not continually available. Open temporary positions may be obtainable by persons holding an earned doctorate degree with applicable research training and/or experience; degree must be in hand at time of appointment. Submit a letter of interest and résumé to: Dr. Gary M. Garnder, Head, Department of Horticultural Science, University of Minnesota, 305 Alderman Hall, St. Paul, MN 55108. Filing deadline is December 31, 1997. The University of Minnesota is an equal opportunity educator and employer.

Postdoctoral Position
Calgene, Inc., Davis, California
(Received 02/04)
A postdoctoral position is immediately available for isolation of genes encoding membrane-associated enzymes involved in lipid synthesis. Experience in protein purification as well as molecular techniques is desirable. This position is for a minimum of two years with the possibility of extension. Publications of results is highly encouraged. Calgene is proud to offer competitive wages and a comprehensive benefits package. For immediate consideration, send your letter of interest, curriculum vitae, and names of three references to Calgene, Inc., 1920 Fifth St., Davis, CA 95616, Attn: Human Resources, or fax it to 916-753-1510. Find out more at http://www.calgene.com. EOE M/F/D/V.

Postdoctoral Positions
Kwangju Institute of Scicence Technology
Kwangju, Korea
(Received 02/05)
The Kumho Life & Environmental Science Laboratory has postdoctoral openings in plant signaling, phytohormones and phytoremediation. Positions available at $28,000-$30,000/yr plus rent-free apartment and utilities and meal subsidies, moving expenses up to $5,000, and economy airfares for the candidate and his/her spouse. The postdoctoral fellowship is renewable after first two years dependent upon progress. Candidates without regard to nationality are welcome to apply. Send curriculum vitae and arrange to send three letters of reference to: Kumho Life & Environmental Science Laboratory, 572 Ssang-Am-Dong, Kwangju 506-712, Korea; fax 82-62-953-5085, e-mail, pssong@unlinfo.unl.edu.

Postdoctoral Position
Waksman Institute, Rutgers University
Piscataway, New Jersey
(Received 02/07)
A postdoctoral position is available to study genomic organization in maize. Research will focus on the use of the transposon Ac as a tool to search for genes in a defined region of the genome and to identify their function. Experience in molecular biology essential; prior experience with handling, cloning, and analysis of large DNA highly desirable. Interested individuals should send a curriculum vitae and the names and addresses of three references to: Dr. Hugo K. Dooner, Waksman Institute, Rutgers University, Piscataway, NJ 08855; fax 908-445-5735, e-mail dooner@mbcl.rutgers.edu.

Research Associate
Fort Valley State University, Fort Valley, Georgia
(Received 02/10)
The Fort Valley State University School of Agriculture, Home Economics, and Allied Programs, has a non-tenure track research associate position available. Responsibilities: Establish tissue culture procedures and protocols using explants to develop a regeneration system for sweetpotato; develop gene transfer system and develop transgenic plants using biolistic gun; characterization of transgenic plants; help determine DNA sequence and construct vectors. Qualifications: Ph.D. in plant science with proven expertise and success in plant regeneration and transformation; practical knowledge of molecular biology techniques. Application procedure: Send a letter of application; a current résumé; copies of graduate and undergraduate transcripts; and the names, addresses, and telephone numbers of at least three professional references to: Search Committee, c/o Sarwan Dhir, Agriculture Research Station, Post Office Box 5744, Fort Valley State University, Fort Valley, Georgia 31030-3298; 912-825-6344, fax 912-825-6376, e-mail dhirs0@mail.fvsc.peachnet.edu. Review of applications will begin on March 1, 1997. Applications will be received until position is filled. Salary is commensurate with training and experience. The beginning date is April 1, 1997 or later.

Postdoctoral Researcher
Louisiana State University, Baton Rouge
(Received 02/13)
A postdoctoral position is anticipated for investigating membrane lipid biosynthesis in *Chlamydomonas reinhardtii*. Studies will include defining pathways and compartmentalization of synthesis and extending this to examine regulation of membrane lipid synthesis during the cell cycle. A Ph.D. or equivalent degree is required. Experience in plant biochemistry/molecular biology is preferred. The application deadline is March 31, 1997, or until a candidate is selected. Please send a letter of interest, curriculum vitae, and a list of at least three references with address, phone number, and e-mail address to: Dr. Thomas S. Moore, Jr., Department of Plant Biology, Life Sciences Building Room 502, Louisiana State University, Baton Rouge, LA 70803-1705; telephone 504-388-8557, fax 504-388-8459, e-mail btmoor@unix1.sncc.lsu.edu. LSU is an equal opportunity/affirmative action employee.

Postdoctoral Position
Ohio State University, Columbus
(Received 02/13)
A joint postdoctoral position will become available June 1, 1997, to work on the time resolved resonance Raman spectroscopy of recombinant photosystem II reaction center particles (from *Chlamydomonas reinhardtii*). The candidate will work jointly in the laboratories of Dr. Richard Sayre in the Departments of Biochemistry and Plant Biology and Dr. Terry Gustafson in the Department of Chemistry at Ohio State University. A competitive salary will be offered with full health benefits. More information on the research programs of Drs. Sayre and Gustafson can be obtained from departmental web pages at: http://www.biosci.ohio-state.edu/ and at: http://www.chemistry.ohio-state.edu/. Please send a résumé and the names, e-mail addresses, and phone numbers of three referees.

Postdoctoral Research Associate
USDA/ARS/SRRC, New Orleans, Louisiana
(Received 02/14)
A postdoctoral research associate position is available immediately for a recent Ph.D. to work on the project "Alterations in cotton fiber structure because of shrinkage, mercerization and laundering". The candidate should have experience in optical and electron microscopy as applied to fibers and x-ray diffraction to study changes in fiber structure and morphology due to commercial practices. Knowledge of structure of plant cell walls and cellulose polymorphism will be important in this work. Send résumé to Drs. Al French or K. Rajasekaran, USDA/ARS/SRRC, Cotton Fiber Quality, 1100 Robert E. Lee Blvd., New Orleans, LA 70124; telephone 504-286-4482, e-mail krajah@nola.srrc.usda.gov. USDA-ARS is an equal opportunity employer.

Postdoctoral Position
Queen's University, Kingston, Ontario, Canada
(Received 02/14)
A postdoctoral position is available to study the biochemical and physiological aspects of the metabolic interactions of carbon and nitrogen in green algae and vascular plants. Current emphasis is on the identification and characterization of the key enzymes in carbon metabolism involved in this interaction. Research involves protein biochemistry including purification and protein chemistry, metabolite determinations, and measurement of physiological parameters including gas exchange, nutrient uptake, and metabolic fluxes. Send cover letter outlining your research interests and experience, curriculum vitae, reprints and the names, addresses, and telephone numbers of three to five references to: Dr. David H. Turpin, Department of Biology, Queen's University, Kingston, Ontario K7L 3N6, Canada or turpind@post.queensu.ca.

Postdoctoral Fellowship
Waksman Institute, Rutgers University
Piscataway, New Jersey
(Received 02/19)
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 signaling pathway (PNAS, 1996, 93:14972, Plant J., 1996, 10:1089; JBC, 1996, 271:28492; MPMI, 1997, 10:69). Applicants should have research experience in genetics, molecular biology, and/or biochemistry. Send a curriculum vitae and a cover letter detailing experience and have three letters of recommendation sent to: Daniel Klessig, Waksman Institute, Rutgers University, P. O. Box 759, Piscataway, N. J. 08855. Rutgers University is an equal opportunity/affirmative action employer.

Postdoctoral Position
University of Nevada, Reno
(Received 02/21)
A position is available to explore molecular genetic approach to dissect carotenoid synthesis and function in plants in Arabidopsis and marigold flowers. Multiple mutations defining key biosynthetic steps have been identified and characterized (Plant Cell 8:1627-1639; 8:1613-1626) and cDNAs for all steps of the pathway are available. These tools are being used to modify flux through the pathway and the accumulation of specific carotenoids to address biosynthetic, regulatory and functional questions. Previous molecular and/or biochemical experience is desirable, prior experience with carotenoids is not necessary. Position available immediately. Contact Dean DellaPenna, e-mail della_d@med.unr.edu.

Postdoctoral Position
University of Nevada, Reno
(Received 02/21)
A position is available spring 1997 to study tocopherol synthesis and function in plants. The tocopherol biosynthetic pathway is being dissected in Arabidopsis and multiple mutations defining key biosynthetic steps have been identified and characterized (See Plant Cell 7:2139-2149). cDNAs for one locus have been cloned and are being functionally studied. This position is to pursue isolation/functional analysis of a second locus, pds2 (encoding a prenyl/phytyl transferase), by functional complementation in bacterial systems and a separate transposon tagging-based approach in Arabidopsis. Previous experience in molecular techniques, genetics or functional complementation would be helpful. Contact Dean DellaPenna, e-mail della_d@med.unr.edu.

Assistant Specialist
The Plant Gene Expression Center
University of California, Berkeley
(Received 02/26)
A position is available to investigate the action of plant disease resistance genes. The objective of this work will be to isolate R genes and to determine the relationship between genomic organization and gene expression. Experience in genomics and molecular biology is essential. Demonstrated experience in large insert library construction is preferred. Send curriculum vitae and names of three referees, by April 30, 1997, to: Dr. Barbara Baker, Plant Gene Expression Center, 800 Buchanan Street, Albany, CA , 94710; fax 510-559-5678. The University of California is an equal opportunity/affirmative action employer.

Postdoctoral Position
Michigan Technological University, Houghton
(Received 02/27)
The project is for recombinant expression of lignin-specific O-methyltransferases in E. coli and Pichia with work on purification, properties and site-directed mutagenesis. The project is funded by USDA. The position is available now and will last until the end of the summer, 1997, with possible extension if renewal grant is funded. Contact: Professor Wilbur H. (Bill) Campbell, Department of Biological Sciences, Michigan

Technological University, Houghton MI 49931; telephone 906-487-2214, fax 906-487-3167, e-mail wcampbel@mtu.edu.

Postdoctoral Research Associate
USDA-ARS Western Wheat Quality Lab
Pullman, Washington
(Received 02/27)
Plants objectives are to identify and characterize molecular and biochemical components of wheat endosperm relating to color/discoloration of Asian noodle products. Salary for this GS-11/12 position ($37,507 - $58,442) will be based on qualifications and experience. Contact Dr. Craig F. Morris, Wheat Quality Lab, Box 646394, E-202 FSHN East, WSU, Pullman, WA 99164-6394; or e-mail wwql@unicorn.it.wsu.edu. A résumé, or curriculum vitae, with references, is acceptable for application. The position will remain open until filled. Candidates will be considered as applications are received. ARS is an equal opportunity employer.

Postdoctoral Positions
McGill University, Montreal, Quebec, Canada
(Received 03/04)
Two postdoctoral positions are available immediately to investigate the role of MITEs (miniature inverted-repeat transposable elements) and other transposable elements in plant gene/genome evolution, to characterize the mechanism of MITE mobility, or to develop novel plant genome mapping and gene isolation protocols using MITEs. Candidates must be highly motivated and have a strong background in molecular biology/genetics. Expertise in genome mapping or computational biology is desirable but not a prerequisite. Please send curriculum vitae and the names of three referees to: Dr. Thomas E. Bureau, McGill University, Department of Biology, 1205 Dr. Penfield Avenue, Montreal, Quebec H3A 1B1 Canada; e-mail thomas_bureau@maclan.mcgill.ca.

Postdoctoral Position
University of British Columbia
Vancouver, Canada
(Received 03/05)
We are looking for highly motivated individual interested in developing Arabidopsis as a system for manipulating seed fatty acid metabolism by genetic engineering to create industrially interesting oil profiles. Expertise in gene isolation, computer-aided databank handling, and preparation of plasmid constructs are essential. Experience in the area of plant lipid metabolism and production of transgenic plants is highly desirable. Salary will be commensurate with experience (between $28,000 and $35,000).To apply, send a curriculum vitae, a statement outlining research interests, and the names three referees to Ljerka Kunst, Department of Botany, University of British Columbia, Vancouver, B.C. V6T 1Z4, Canada; fax 604-822-6089, e-mail kunst@unixg.ubc.ca.

Postdoctoral Position
University of Queensland, Brisbane, Australia
(Received 03/10)
A postdoctoral position is available in July 1997 to study tissue culture, transformation, and regeneration of mango. We are interested in optimizing mango transformation for several economically important mango varieties in Southeast Asia. The project also includes papaya transformation. This is an international project with universities in the Philippines and Malaysia and will probably involve short trips to those countries. Candidates must have experience in tissue culture/transformation of non-standard plants. Please send cover letter describing research experience, curriculum vitae, and list of three references with addresses, phone numbers, and e-mail to: Dr. Jimmy Botella, Plant Genetic Engineering Laboratory, Department of Botany, University of Queensland, Brisbane Qld-4072, Australia; e-mail j.botella@botany.uq.edu.au.

Postdoctoral Position
University of Queensland, Brisbane, Australia
(Received 03/10)
A postdoctoral position will be available in July 1997 to study molecular biology of ripening in mango and papaya. This is an international project that includes other universities in Philippines and Malaysia and will probably involve short trips to those countries. Candidates must have experience in plant molecular biology. Please send cover letter describing research experience, curriculum vitae, and list of three references with addresses, phone numbers, and e-mail to: Dr. Jimmy Botella, Plant Genetic Engineering Laboratory, Department of Botany, University of Queensland, Brisbane Qld-4072, Australia; e-mail j.botella@botany.uq.edu.au.

Postdoctoral Position
University of Montreal, Quebec, Canada
(Received 03/10)
A postdoctoral research position is available immediately to study gene regulation and signal transduction during the defense response to pathogens. Current emphasis is on the characterization of a transcription factor (Plant Cell 7:589-598) and a protein kinase (Plant Cell 9, No. 4 [1997] involved in the regulation of the potato PR10a gene. Applicants should have research experience in molecular biology and/or biochemistry. Send cover letter outlining your research interests and experience, curriculum vitae, reprints and the names, e-mail addresses, and telephone numbers of three references to: Dr. Normand Brisson, Department of Biochemistry, University of Montreal, PO Box 6128, Station A, Montreal, Que. H3C 3J7, Canada; e-mail: brisson@bch.umontreal.ca.

FELLOWSHIPS, TRAINEESHIPS, GRADUATE ASSISTANTSHIPS, AND ETC.

Graduate Assistantship
University of Calgary, Alberta, Canada
(Received 03/13)
A graduate research assistantship is available in the Department of Biological Sciences at the University of Calgary beginning September 1997. Prospective students must apply and be accepted into the Graduate Studies Program. Ph.D. students interested in the biochemistry and molecular biology of alkaloid biosynthesis are preferred, but outstanding students without a M.Sc. are encouraged to apply. Students may work on a variety of topics related to protein purification, gene identification, gene regulation, genetic engineering, and subcellular protein targeting. One project concerns the dissection of promoters from alkaloid biosynthetic genes in opium poppy, with the aim of isolating and characterizing cis-acting elements and trans-acting factors involved in their regulation. Another project involves the purification of a key alkaloid biosynthetic enzyme and the cloning of the corresponding cDNA. The successful candidate should have excellent grades and a strong course and/or research background in biochemistry and molecular biology. For further information contact Dr. Peter Facchini, Department of Biological Sciences, University of Calgary, Calgary, Alberta, T2N 1N4, Canada; telephone 403-220-7651, fax 403-289-9311, e-mail pfacchin@acs.ucalgary.ca.

Graduate Research Assistantship
West Virginia University, Morgantown
(Received 03/07)
Graduate research assistantship available fall 1997 to work toward Ph.D. degree. Successful candidate is expected to conduct research on the physiological/molecular mechanism(s) of cold acclimation and/or freezing injury in plants. Students with degrees in plant-related disciplines (horticulture, botany, biology) and interest/experience in physiology, biochemistry, and molecular biology are encouraged to apply. Prior experience of work on plant stress (low temperature or water stress) is a plus. Tuition waived; stipend is $11,040. Submit letter of application, résumé, college transcripts, GRE scores, and letters of three references to: Dr. Rajeev Arora, Division of Plant and Soil Sciences, P.O. Box 6108, West Virginia University, Morgantown, WV 26506-6108; telephone 304-293-6023, fax 304-293-2960, e-mail rarora@wvu.edu or contact the Division office at 304-293-4817.

Graduate Scholarship
University of Western Sydney
Richmond, Australia
(Repeat)
Contact: Associate Professor Jann Conroy, School of Horticulture, University of Western Sydney, Locked Bag 1, P. O. Richmond NSW 2753, Australia; fax 61 45 701314, e-mail jp.conroy@uws.edu.au. (Details January/February 1997.)

Graduate Assistantships
Oregon State University, Corvallis
(Repeat)
For information or an application form, contact: Steve Strauss, Department of Forest Science, Oregon State University, Corvallis, OR 97331-7501; phone 541-737-6578, fax 541 737 1393, e-mail strauss@fsl.orst.edu. (Details January/February 1997.)

Undergraduate Research Internships in Plant Molecular & Cellular Biology
University of Florida, Gainesville
(Repeat)
For information, send your name and address to pmcb@gnv.ifas.ufl.edu; or to PMCB Program, P.O. Box 110690 University of Florida, Gainesville, FL 32611. (Details January/February 1997.)

NCSU-NSCORT Graduate Research Fellowships in Gravitational Biology
North Carolina State University, Raleigh
(Repeat)
For information contact: Dr. Christopher Brown, Associate Director NCSU-NSCORT, Department of Botany, Box 7612, North Carolina State University, Raleigh, NC 27695-7612; telephone 919-515-2727, fax 919-515-3436, internet christopher_brown@ncsu.edu. Please access the NSCORT website at http://www2.ncsu.edu/ncsu/cals/nscort. NCSU is an equal opportunity employer. (Details January/February 1997.)

NSF'S NEW HOME PAGE UP AND RUNNING

On January 24, the National Science Foundation (NSF) introduced a newly designed home page that provides easier access, better visuals, and more wide ranging options to reach NSF programs and information.

The NSF web site provides a link to a new on-line document system, a "special notices" feature, and a "help" button which leads to an overview of the site.

The home page has a new "gateway" or "front door" design more pleasing to the eye, and new organization and staff directories inside.

A new facet of the home page is a section on cross-cutting (interdisciplinary) programs.

Also new is a site that improves access for the blind and visually impaired (which works well with Lynx, a text-only browser).

The site is now up and running, and will continue to change over time as comments and suggestions are received.

What: The NSF home page

Where: http://nsf.gov

Why: To make NSF's information easier to locate and better serve the public on NSF organizations and programs

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	Jody Carlson / ext. 17 jcarlson@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
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