



# NEWSLETTER

Published by the American Society for Photobiology /

1340 Old Chain Bridge Road, Suite 300 / McLean, Virginia 22101 / (703) 790-1745

Editor: Thomas P. Coohill, Depts. of Biology & Physics  
Western Kentucky University, Bowling Green, KY 42101 tel:(502)745-6005

No. 96 December 1985

ASP - Newsletter



Dr. Betsy M. Sutherland  
E.O. Lawrence Award Winner

Betsy M. Sutherland, a biochemist at Brookhaven National Laboratory and a member of ASP, is one of six scientists across the nation who have won a 1985 Ernest Orlando Lawrence Memorial Award for outstanding contributions in the field of atomic energy. Along with a citation, the awardees will each receive a medal and a \$10,000 prize.

Dr. Sutherland is the first woman to receive the prestigious Lawrence Award, which was established in 1959 to honor the memory of Dr. Ernest Orlando Lawrence, who invented the cyclotron, a circular atom smasher. He also founded two major laboratories at Berkeley and Livermore, California, that now bear his name.

The Lawrence Awards are given to U.S. citizens who are relatively early in their careers and have made recent meritorious contributions to the development, use or control of atomic energy. The work may be in any area of science related to atomic energy, including medicine and engineering.

Dr. Sutherland will receive her award on November 25 from Secretary of Energy John S. Herrington, in a special ceremony at the Department of Energy's Forrestal Building in Washington, D.C. Secretary Herrington announced the 1985 Lawrence Awards on October 9, in Washington.

Dr. Sutherland has achieved international distinction in areas of great interest to health and environmental research, through her studies of how ultraviolet radiation produces genetic damage in human cells and how human cells limit the biological consequences of such damage. In particular, she has pioneered a strategy now widely applied in the study of DNA repair function with DNA or cells containing damaged DNA. Her research provides an example to those who seek to extend studies begun in bacteria and their viruses to studies of human cellular response to chemical and physical insults.

Betsy M. Sutherland holds a B.S. in biology and an M.S. in cytochemistry, both from Emory University, and a Ph.D. in molecular biophysics from the University of Tennessee. Prior to coming to Brookhaven, she was an associate professor in the Department of Molecular Biology and Biochemistry at the University of California. She joined the staff of the Biology Department at Brookhaven Lab in 1977 and received tenure in 1980.

Dr. Sutherland is a resident of Wading River, Long Island, New York.

In addition to Dr. Sutherland, other recipients are: Anthony P. Malinauskas, Oak Ridge National Laboratory, Oak Ridge, TN; William H. Miller, University of California, Berkeley, CA; David R. Nygren, Lawrence Berkeley Laboratory, Berkeley, CA; Gordon C. Osbourn, Sandia National Laboratory, Albuquerque, N.M.; and Thomas A. Weaver, Lawrence Livermore National Laboratory, Livermore, CA.

## Course

Advanced Course in Inorganic Nitrogen Metabolism, Jarandilla De La Vera, Caceres, Spain, June 22-27, 1986.

## Tentative Program

- Sessions: Carbon and nitrogen metabolism in photosynthetic organisms.  
Nitrogen metabolism in fungi.  
Nitrification and denitrification.  
Enzymes involved in nitrogen metabolism.  
Metalloproteins.  
Ammonia assimilation.  
Regulation of inorganic nitrogen metabolism.  
Role of light.

For further information contact: Dr. P.J. Aparicio, Instituto de Biología Celular, Velazquez 144, 28006 Madrid, SPAIN.

## CONFERENCE REPORT

Japan-US Seminar on Ultraviolet Photobiology and Spectroscopy Using Synchrotron Radiation.  
Held at Brookhaven National Lab, Oct. 2-5, 1985. Sponsored by the Japan Society for the Promotion of Science and the National Science Foundation.

This conference, the first of its kind, was arranged by T. Ito and J. Sutherland to bring together those researchers, in photobiology and spectroscopy, who currently, or who are planning to, use synchrotron radiation (SR) as a source for their experimental work. This field is advancing rapidly now that facilities for such work are readily available in both Japan and the U.S.A. One purpose of the meeting was to emphasize the feasibility of current SR techniques and to point out that funding may be possible for scientists interested in projects that will make use of available SR facilities. In these facilities, synchrotron radiation is produced by high energy electrons when they accelerate (turn) in a fixed storage ring. Separate facilities may have either a storage ring that produces mostly ultraviolet (UV) photons, or a larger ring that produces X-rays, or both. The immediate advantages of SR (P. Snyder) are that it provides a well collimated, polarized, intense, continuum of available wavelengths for experimental use. Much of the biological work already begun with this source involves wavelengths in the vacuum ultraviolet (VUV - 100 nm to 200 nm).

A review of the Japanese SR facilities (T. Namioka and K. Kobayashi) pointed out four major available sources, including the "Photon Factory" that can operate at a current of 150 ma, generate electrons with energies up to 2.5 GeV, and produce beam lifetimes of 15 hours. Also described were the various types of monochromators and spectrographs that are available, and their advantages for use with SR. One possible use is the construction of an X-ray microscope (R. Rosser) using the large X-ray storage ring at the National Synchrotron Light Source at Brookhaven. Since X-rays are absorbed less than electrons, thick, wet, and unstained samples may be used with resolutions, for biological purposes, that are somewhat comparable to an electron microscope, i.e. about 10 nm. A prototype microscope is already functioning using the lower energy UV storage ring. Another use of SR is in the measurement of circular dichroic (CD) ratios of important molecules (C. Bustamante, W.C. Johnson, P. Snyder, E. Stevens, and J. Sutherland). Some interesting data, already generated, includes the result that Z-DNA has a different CD absorption in the VUV than either A or B DNA (J. Sutherland), along with interesting CD parameters for proteins (W.C. Johnson) and polysaccharides (E. Stevens). A theoretical analysis of highly excited states of biological molecules is aided by SR which is a good "mapping tool" for molecules (P. Callis). Time resolved fluorescence spectroscopy also is promoted by SR since SR pulsing frequencies are in the megahertz range with sub-nanosecond pulse widths (L. Brand, W. Laws, and A. Ross). Emphasis was placed on the fact that SR (especially in the VUV) provides a bridge between the more heavily researched areas of far-UV (wavelengths of 200 nm to 300 nm) and X-rays (M. Inokuti, E. Arakawa, and G. Kantor). Thus SR provides access to the middle of the absorption range of most molecules.

Among the biological experiments reported were such important results as: an action spectrum (AS) for single strand breaks or base damage in dry (K. Hieda) or wet (K. Takakura) DNA, an ESR study of DNA bases (M. Kuwabara), the inactivation of ATP by VUV (A. Ito), an AS for the inactivation of T<sub>1</sub> and OX174 bacteriophages (H. Maezawa), an AS for the effect of VUV on Bacillus spores (N. Munakata), and action spectra for the inactivation of yeast cells in either the dry (K. Hieda) or wet (A. Ito) state. G. Kantor suggested the use of "growth arrested" mammalian cells for SR experiments, while H. Maezawa and T. Coohill pointed to advantages of using viruses. A new gel electrophoresis technique that uses small amounts of non-radioactive DNA was summarized by B. Sutherland. In addition, photoacoustic spectroscopy (T. Inagaki) can provide another method for analyzing biological material.

Japanese investigators (T. Ito, et al.) have constructed a humid (100% relative humidity) chamber for the irradiation of biological materials in a "wet" state. Water itself absorbs heavily in the VUV and undergoes photolysis (A. Minegishi). But, for short path lengths, water vapor is essentially transparent to VUV. Using this "moist" chamber, K. Shinohara has been able to expose mammalian cells to VUV radiation. Calculations show (T. Ito, T. Inagaki, and T. Coohill) that such large cells are essentially opaque at all VUV wavelengths, except for a limited region near the cell membrane. The inactivations resulting from exposure to radiation of wavelength shorter than 190 nm are thus most likely due to membrane damage.

The meeting was closed with some remarks by R. Setlow, who reminded the participants of pioneering work in the VUV from as early as the 1950's. A second seminar, to be held in Japan, is planned in two years. Or to phrase it as our Japanese co-hosts did "Mota ai masho" (see you again).

THE FOLLOWING IS PROVIDED FOR YOUR INFORMATION AND MAY HELP YOU IN ANSWERING THE FOLLOWING QUESTIONS  
ASP FUTURE MEETINGS

1986 - June 22-26 - Los Angeles, California  
1987 - June 21 - 25 - Bal Harbour, Florida  
1988 - March 13 - 18 - The Bro<sup>a</sup>dmoor, Colorado Springs, Colorado  
1989 - Boston, Massachusetts Area - Date TBA - Tent. 1st week July  
1990 - Tentative - Vancouver, British Columbia, Canada

---

ASP MEMBERSHIP QUESTIONNAIRE ON FUTURE ANNUAL MEETINGS  
Please return by January 30, 1986 to be tabulated

1. Do you plan to attend the June 22-26, 1986 Los Angeles Annual Meeting?  
 Yes  
 No
2. Have you/will you submit an abstract for the 1986 Annual Meeting?  
 Yes  
 No
3. Typically, ASP Annual Meetings are scheduled during the second half of June. For you this is:  
 Preferable  
 Not Good  
 Doesn't matter  
If not good, what time period do you suggest instead? \_\_\_\_\_
4. If ASP Annual Meetings were to be held periodically during the first half of July, how would this fit into your schedule?  
 Prefer  
 Don't Prefer  
 Impossible  
 Don't Care
5. Typically, every fourth year (when the AIP Congress is held in the summer) the ASP Annual Meeting is conducted in the February/March time frame. In your opinion this is:  
 Good (and should be continued)  
 Not good (In these years ASP Annual Meetings should still be held during second half of June)  
 Indifferent
6. ASP Annual Meetings have been held in the following locations. Please check those locations to which you would like to see the ASP return:  
 Sarasota, FL (1973)  
 University of British Columbia, Vancouver (1974/1982)  
 Louisville, KY (1975)  
 Denver, CO (1976)  
 San Juan, Puerto Rico (1977)  
 University of Vermont, Burlington (1978)  
 Asilomar Conference Grounds, Pacific Grove, CA (1979)  
 Colorado Springs, CO (1980)  
 Williamsburg, VA (1981)  
 University of Wisconsin, Madison (1983)  
 Philadelphia, PA (1984)  
 New Orleans, LA (1985)

List NEW sites/destinations at which you wish ASP to meet:

---

---

---

8. ASP has a history of rotating between hotel sites (75%) and campus sites (25%) (in each case there are inherent and opposing fiscal advantages/disadvantages to Society versus members -- Overall, HOTELS are less expensive than campuses for Society/more expensive for Members who stay in single rooms). In this regard, please indicate your preference (please check only one):

- Always prefer campus sites whenever a good arrangement is available, OR
- Always prefer hotels whenever a good arrangement is available, OR
- If rooms at comparable rates are available, prefer city environment to university campus, OR
- I like the variation and would like to see ASP continue this rotation, OR
- No opinion

9. There has been a growing conflict between having too many concurrent sessions versus extending the length of the Annual Meeting. Please indicate your preference (check only one):

- Continue 4 day meeting even if it means no free afternoon and more concurrent sessions, OR
- There should never be more than three concurrent sessions and the ASP Annual Meeting should go beyond four days to meet such criteria if warranted by the number of abstracts. In this instance, should there also be a free afternoon?
  - Yes
  - No

10. The availability of technical/scientific tours (especially photobiological in nature) in the proximity of the Annual Meeting site is, to me:

- Important
- Not important
- No opinion

11. I consider that a free afternoon (i.e. no sessions) at an ASP Annual Meeting is:

- Important
- Not important
- No opinion

12. Evening sessions at ASP Annual Meetings are:

- Acceptable
- Unacceptable
- Acceptable, but not preferable
- No opinion

13. ASP Annual Meetings would be well-served by having a commercial exhibition program.

- Agree
- Disagree
- No opinion

14. Except for 1977 and 1984, the ASP's Annual Meeting has been held by itself. It is best that future ASP Annual Meetings NOT be held in conjunction with any other group's Annual Meeting.

- Agree
- Disagree
- Favor occasional tandem meetings with 1 day overlap in ASP Meeting time frame
- Favor occasional tandem meetings with 1 day overlap even if it means moving meeting to different month
- No opinion

15. Please list other scientific annual meetings that you attend on a regular basis:

<u>Organization</u>	<u>Month</u>
_____	_____
_____	_____
_____	_____
_____	_____

16. Have you (yes/no):

- \_\_\_\_\_ A. Attended a National Meeting of the ASP in the last two years?
- \_\_\_\_\_ B. Presented an Oral paper?
- \_\_\_\_\_ C. Presented a poster?
- \_\_\_\_\_ D. Attended a School Lecture?



17. What other national or international meetings have you attended in the last two years?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

18. Indicate the importance of the activities at the present meetings by filling in a number from 1 to 5 (1 = very important; 5 = unimportant):

- A. Minisymposia (small symposia on a very limited topic)
- B. Orally-presented papers (Platform Talks)
- C. Posters
- D. Symposia (emphasizing specific research topic areas)
- E. Symposia ("cutting edge")
- F. Schools

19. Indicate the importance of the Annual Meeting to you by filling in a number from 1 to 5 opposite the following activities (1 = very important; 5 = unimportant):

- A. Learning about new advances in photobiology
- B. Learning about new advances in related highly active fields such as engineering of new light sources, methodology, instrumentation and applications of photobiology
- C. Opportunity to update teaching knowledge
- D. Opportunity for students and postdoctorals to present papers, be seen, find jobs, etc.
- E. Opportunity to see colleagues in your field
- F. Opportunity to seriously discuss research in your specialized field with people of similar interests

20. ASP Annual Meetings have varied regarding scheduled social activities. Please provide a succinct comment on each of the following possibilities:

- A. Formal Banquet In-House: \_\_\_\_\_
- B. Organized "Night Out" - Included in Registration Fee: \_\_\_\_\_
- C. Organized "Night Out" - Optional: \_\_\_\_\_
- D. Organized "Free Afternoon" Activity - Included in Registration Fee: \_\_\_\_\_
- E. Organized "Free Afternoon" Activity - Optional: \_\_\_\_\_

21. Additional comments or suggestions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Submitted by (optional): \_\_\_\_\_

PLEASE FOLD THIS COMPLETED QUESTIONNAIRE,  
AFFIX POSTAGE AND RETURN TO:

American Society for Photobiology  
1340 Old Chain Bridge Road  
Suite 300  
McLean, VA 22101

---

---

---

**AMERICAN SOCIETY FOR PHOTOBIOLOGY**

**1340 Old Chain Bridge Road**

**Suite 300**

**McLean, VA 22101**

### Positions Available

Postdoctoral Fellow/Research Associate (with potential for further advancement), to perform research on dye-mediated photolysis of tumor cells and its application in autologous bone marrow transplantation (see Proc. Natl. Acad. Sci. USA 81: 7584-7587 (1984). Ph.D. or equivalent degree required; background in photobiology, cell biology, membrane biochemistry and/or bone marrow transplantation desirable. Available immediately. Salary commensurate with qualifications and experience. Send resume with the names and addresses of three references to Dr. Fritz Sieber, Midwest Children's Cancer Center, Department of Pediatrics, Medical College of Wisconsin, 1700 West Wisconsin Avenue, Milwaukee, WI 53233. An Equal Opportunity Employer.

Postdoctoral Position Available: A postdoctoral position is available to study the chemical mechanisms of the mutagenic and cytotoxic effects of singlet molecular oxygen, hydrogen peroxide, superoxide and hydroxyl radicals. Experiments will range from chemical kinetics to bacterial mutagenesis assays. Individuals with a Ph.D. degree in chemistry and an interest in developing skills in molecular biology are encouraged to apply. To apply send a CV and three professional references to: Dr. Robert Midden, Division of Environmental Chemistry, Johns Hopkins University COEH, 3100 Wyman Park Drive, Baltimore, MD 21211 or call Dr. Midden at (301) 338-3735 for more information.

A postdoctoral research position is available immediately for work aimed at the identification of the catalytic site of the ATP synthase complex of Rhodospirillum rubrum by exploring the properties of its isolated reconstitutively active beta subunit. Please respond to Dr. Zippora Gromet-Elhanan, Department of Biochemistry, The Weizmann Institute of Science, Rehovot 76100, Israel.

Program Director, Asst. Program Director - NSF. The Division of Cellular Biosciences is seeking qualified applicants for Program Director and Assistant Program Director positions which periodically become available. These positions are usually filled on a one- or two-year rotational basis. The programs with rotational opportunities are: Cell Biology - includes research directed toward understanding the mechanisms underlying the growth, division, and functions of prokaryotic and eukaryotic cells. Cellular Physiology - includes areas of cellular function related to plant or animal hormones, immunobiology, or muscle physiology. Developmental Biology - focuses on the basic mechanisms underlying development throughout the life span of animals, plants, and microorganisms. Regulatory Biology - includes those areas of tissue, organ, and organismal physiology and endocrinology that explain the initiation, integration, and regulation of animal functions. Eukaryotic Genetics - includes studies on the organization, function, evolution, recombination, regulation of expression and transmission of heritable information in all eukaryotic organisms.

NASA Postdoctoral Research Associate. An excellent opportunity is available to study the physiological mechanism of mechanical stress dwarfing of plant growth on a project funded by the NASA Space Biology Program. The appointee, who should have a Ph.D. in plant physiology or a related specialty in a plant science field, will investigate the physiological basis for rapid cessation of plant cell enlargement resulting from periodic seismic or vibrational stress. Facilities available to determine whether growth inhibition involves turgor relaxation, cell wall tightening, and/or calcium redistribution will include a micro-pressure probe, an Instron universal testing device, and an X-ray microanalyzer (ion probe). Position-sensing transducers and chemical inhibitors of biochemical and physiological processes also will be used. The salary will be \$18,000 for the first year, with a possibility of continuation. Applicants should send their resume or curriculum vitae, reprints of pertinent articles, (copies of) transcripts, names of at least 3 references, and any other materials you think will strengthen your candidacy to Dr. Cary A. Mitchell, Department of Horticulture, Purdue University, W. Lafayette, IN 47907, (317) 494-1347. Applications will be accepted until a suitable candidate is found. Purdue University is an equal opportunity/affirmative action employer.

Plant Biochemist - PGR Lead Follow-Up. A person with training and experience in plant biochemistry is desired to conduct research on the biochemical characterization of areas of active chemistry within the Plant Growth Regulator Group of the Plant Physiology department, and secondarily to initiate exploratory programs relevant to the PGR effort. It is expected that some part of this person's time will be spent on the mode of action of chemical hybridizing agents. Candidates should have a Ph.D. degree in plant science. Through a combination of graduate research and postdoctoral or work experience, the individual should be broadly based in plant biochemistry, knowledgeable in plant physiology, and able to communicate with organic chemists. Although specialization in hormone biochemistry, membrane biochemistry, or intermediary plant metabolism is desired, the paramount consideration is an individual with excellent scientific credentials, with proven self-starting and problem-solving capabilities. The person will be expected to interact well with interdisciplinary groups, and to communicate effectively both verbally and in writing. Interested applicants should

reply in confidence to: Manager, Employee Relations, Shell Development Company, P.O. Box 4248, Modesto, CA 95352.

Agricultural Biotechnology. Shell Development Company, located in Modesto, California, is currently seeking scientists with significant records of achievement and an interest in applying their skills in the area of agronomic research. Those positions are available for outstanding Ph.D. level scientists with training in the following areas: Molecular Biology of Higher Plants. The position requires a molecular biologist with experience in the study of structure and regulation of plant nuclear genes. Plant Somatic Cell Genetics. The plant geneticists in this position will have expertise in plant cells and tissue culture and regeneration of important crop species. The selected individuals will join an Agricultural Biotechnology Department newly established to complement a strong team of innovative scientists with a record of technical accomplishment and commercial success in agricultural research. Shell Development Company's location in Modesto, California offers an outstanding research environment, a reasonable cost of living, and competitive salaries and benefits. Interested applicants should send a resume, in confidence, to: Manager, Employee Relations, Shell Development Company, Biological Sciences Research Center, P.O. Box 4248, Modesto, CA 95352. Applicants should be a US Citizen or have a permanent resident visa. An Equal Opportunity Employer M/F.

Plant Cell Biologist. We are seeking resumes from candidates to work in our Biological Research group located in Richmond, California. The candidate would collaborate with plant molecular biologists on the development of transformation systems in plants. Candidates must possess a Ph.D. or equivalent in some area of plant cell biology, and preferably two years' postdoctoral training. Specific experience in plant cell transformation and plant tissue culture is desirable. Stauffer Chemical Company offers a competitive salary and fringe benefits package in addition to an attractive San Francisco Bay area location. Qualified applicants are invited to send resumes to K.D. MacLaren, Stauffer Chemical Company, 1200 S. 47th St., Richmond, CA 94804. Stauffer Chemical Company is an Equal Opportunity Employer M/F.

Postdoctoral Positions in Plant Physiology/Biochemistry. Two positions are available for research related to the regulation of photosynthetic carbohydrate metabolism. Research will focus on the enzyme sucrose phosphate synthase and the regulatory metabolite fructose 2,6-bisphosphate. Applicants should have a strong background in photosynthesis and enzyme purification. For one position, previous experience with immunological techniques is essential. Send resume, relevant reprints/preprints, and names of three references to: Steven C. Huber, Plant Science Research, N.C. State University, 3127 Ligon Road, Raleigh, NC 27607. N.C. State University is an equal opportunity-affirmative action employer.

Postdoctoral position available immediately to develop methods for the detection of UVA-induced psoralen photoadducts in DNA under in vivo conditions. Projects include development of monoclonal antibodies, ELISA and immunofluorescence. Send C.V. and the names of 3 references to Dr. R.M. Santella, Inst. of Cancer Research, Columbia U., 701 W. 168th St., NY, NY 10032. Affirmative Action Employer.

## AMERICAN SOCIETY FOR PHOTOBIOLOGY

340 Old Chain Bridge Road, Suite 300  
McLean, Virginia 22101

Non-Profit Org.  
U. S. POSTAGE  
**PAID**  
Bethesda, Md.  
Permit No. 45126