

Message From the President



Greetings! I hope the summer has been a productive, yet restful, one for all. An uneventful passing of the gavel took place at the July 9th summer Council meeting in a small, sun-filled room at the George Washington Inn and Conference Center. Several were present to witness the exchange and a few others experienced the “excitement”

via teleconference. I would truly like to thank **Frances Noonan** for all of her hard work during the past year and for her continued help as I transition into my role as President.

This is an exciting time for the ASP. We are in the first cycle of our biennial meeting format, allowing ASP members to attend the European Society for Photobiology (ESP) Congress in an “unopposed” summer. Frances Noonan and **Tom Moore** are in the process of finalizing a terrific scientific program for our 2006 ASP Meeting in beautiful Rio Grande, Puerto Rico. ESP members will be offered the ASP member registration rate, so I hope to see many of our international friends next summer. The future provides a unique opportunity to work as an international photobiology community, putting together strong scientific programs without stretching any of our resources (i.e. members) too thin.

John Simon has been doing a phenomenal job as Editor of *Photochemistry and Photobiology*. He has expanded the Editorial Board to include representation from scientists working in a number of new areas and has expanded international representation. This Editorial Board has kept the quality of the manuscripts high with rapid turn-around time. On average, authors wait only one month from the time their manuscript is received by the Editorial Office to get their first decision. A number of new Symposia-in-Print (SIP) and Invited Reviews are scheduled in the next year, including an

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SIP from the Reactive Intermediates in Photochemistry Symposium that honors the 60th birthday of **Tito Scaiano**, past Editor of *Photochemistry and Photobiology*. More than 30 papers have been confirmed for this issue! The bimonthly format of the journal has kept it financially sound while allowing it to continue to print a high volume of first-class and diverse papers.

Finally, keep your eyes opened for the new Associate Member web site that is being developed by the Mentoring Committee and Newsletter Editor/Webmaster, **Peter Ensminger**. I would like to thank our Associate Council Member, **Jennifer Dashnau**, for her energy and enthusiasm to make this happen. This will truly be a great resource for Associate Members. Please encourage your students, post-docs, and friends to become new Associate Members. For only \$40 per year, our young photobiologists can enjoy the benefits of networking, developing job-search skills, and attending our meeting and Mentoring Lunch. The ASP maintains its commitment to future photobiologists by providing

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travel awards to help Associate Members attend both ASP and ESP Meetings. I would like to thank Peter for continuing to do a wonderful job with the ASP web site, highlighting recently published work from our members and, most recently, adding a “Photobiology for Kids” section.

Later in this Newsletter, you’ll find an article by ASP Treasurer **John Streicher** outlining the financial challenges that all Societies, including ASP, are facing. John has done a tremendous job in finding solutions to these challenges. I’d like to thank him for his wise decisions to keep our financial position strong.

The summer Council meeting officially ended **Lanie Hill**’s 5 years of service as ASP Secretary. Her timeliness in getting our meeting minutes circulated and posted, as well as attention to detail in all aspects of Council business, has been critical to ASP’s growth and progress. On behalf of all ASP members, I’d like to thank Lanie, as well as retiring Council members, for all of their service.

As my term as President begins, I’d like to welcome incoming Secretary **Faith Strickland**, President-Elect **Steve Ullrich**, and incoming Council members. Incoming and returning Council members have already been busy at work. Last, but not least, I would like to sincerely recognize and thank Executive Secretariat, **Linda Hardwick**, and the staff at Allen Marketing and Management for all of the behind-the-scenes work that keeps us cheerfully functioning. I look forward to working with everyone in the coming year ... I’ll see you in Puerto Rico!

Lisa Kelly
ASP President



Contributors to Urbach Award

The ASP would like to thank **AGI-Dermatics** and **Charles Rivers Laboratories** for their generous contributions to the “Urbach Memorial Endowment for Student Travel”. Their contributions helped to support the attendance of seven associate members at the *11th Congress of the European Society for Photobiology* (Sept 3-8, 2005, Aix-les-Bains, France). We look forward to continued support in the coming years.

Letter From the Editor

Alien Invasion

Sometimes our professional lives intersect with our extracurricular activities. Several weeks ago, while riding my bicycle on a rural road near Lake Ontario, I saw a group of remarkable herbs that were more than ten feet high. Based on the inflorescences, these plants were clearly in the parsley family (Apiaceae), but I had never seen such a large herb from this family.

After I got home and did some research, I identified the plant as giant hogweed (*Heracleum mantegazzianum*). This plant was not listed in my old taxonomy books because it is an alien imported from the Caucasus region and has only recently become established in upstate New York. It is currently on the federal noxious weed list because, like many other plants from the parsley family, it produces abundant furanocoumarins that can be ‘injected’ into the skin by its thick and abundant hairs. Skin contact followed by exposure to UV radiation can cause photodermatitis. Contact with the eyes can lead to temporary blindness.



Luckily, I did not touch the plant or take a sample home for identification. An education in botany and photobiology has certain rewards! You can find out more about giant hogweed by visiting the Giant Alien web site: <www.flec.kvl.dk/giant-alien/html/menu.asp>.

A researcher removing giant hogweed from a field in Finland. Photo from www.jyvaskyla.fi/japa/ukonputki.htm

ASP News

Published quarterly by the American Society for
Photobiology
www.photobiology.org

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ASP Budget

Adapting to a Changing Financial Environment

The economic realities confronting the ASP and other scientific societies have changed significantly in recent years. Traditional revenue sources have diminished, while operating costs have risen with inflation. Historically, *Photochem Photobiol* has been a source of significant net profit for the ASP. Those profits supplemented other functions of our Society. The trend toward electronic publishing has had a net negative effect on institutional subscriptions to professional journals – *Photochem Photobiol* being no exception.

Spiraling yearly budget deficits during most of the last ten years prompted the Council to scrutinize the financial implications of every activity. This resolute engagement of our financial challenges will make the ASP a stronger organization. In examining ASP's current and potential future sources of revenue, your Council recently enacted several measures, including:

- Endorsement of the marketing of limited advertising space in our journal and newsletter
- Approval of modest price increases for institutional subscriptions and membership dues
- Support for the creation of the “ASP Society Endowment” and the “Urbach Memorial Endowment for Student Travel”

On the expense side of our ledger, the Council has approved a budget for 2006 that demonstrates a commitment to fiscal discipline. Among the successes:

- The *Photochem Photobiol* editorial office budget is flat
- The secretariat budget has declined from 2005
- The budget for the 2006 ASP meeting in Puerto Rico plans for a profit

As a result of these and other factors, including the favorable performance of our investments, the financial position of ASP strengthened modestly during 2005.

Endowment Update

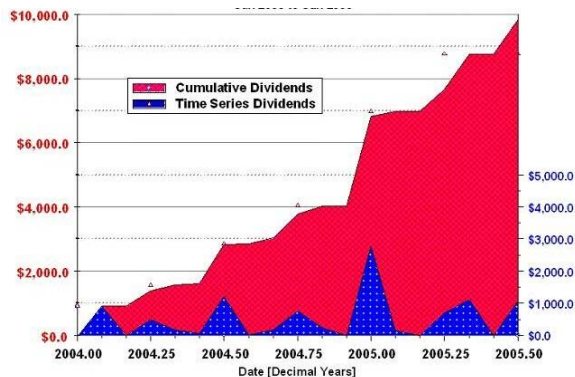
In 2003, in recognition of the decline of ASP's traditional sources of revenue, the Council endorsed

creation of the ASP Society Endowment to support our operational expenses in the future. In January of 2004, the endowment was established. Setting aside \$350,000 from our saved assets, we created a diversified investment portfolio with dual objectives of capital appreciation and current income from dividends. As of July 31, 2005, the Society Endowment was worth \$442,867, for a 19-month appreciation of +26 % on the initial investment. This compares favorably with an 11 % gain in the Standard and Poor's 500 index during the same period. Equally important is the dividend payout. Cumulatively, the Society Endowment has paid \$10,000 into our operations account since inception (see graph).

During FY06, total interest and dividend income is projected to cover approximately 3% of our operating expenses. No additional funds from our operating reserves will be transferred to the Society Endowment. Hence Society Endowment growth - and the corresponding growth of dividends that support ASP operations - will hinge upon investment performance as well as member donations. As the financial health of the ASP requires stability of revenue, increasing dividends will supplement declines in our traditional revenue sources. Member donations will help us reach our goal of a \$1 million Endowment. Contributions to the Endowment will be invested, not spent - so your gift will help sustain ASP in future years. Our business web site makes it easy to contribute to the Society Endowment. Contributions may be tax deductible.

ASP Endowment Fund web site: <https://timssnet.allenpress.com/ECOMAPHO/timssnet/donations/donations.cfm>

John Streicher
ASP Treasurer



Dividend Income from ASP Society Endowment (Jan 2004 to June 2005).

Research by ASP members

Role of Calcium in Photosynthesis

In the first step of oxygenic photosynthesis, Photosystem-II (PS-II) oxidizes water in four sequential reactions. The electrons are eventually passed to plastoquinone. Calcium plays an important role in water oxidation. Strontium can replace calcium, but strontium-based PS-II oxidizes water at a slower rate. In a recent issue of *Biophysical Journal* (vol 89: 393-401), ASP member **Bridgette Barry** (Georgia Institute of Technology) and colleagues report their study of the role of calcium in water-limited PS-II. They show that strontium substitution or $^{18}\text{OH}_2$ exchange leads to conformational changes that interfere with two steps of the water oxidation process.

Model for Photoinhibition of Photosynthesis

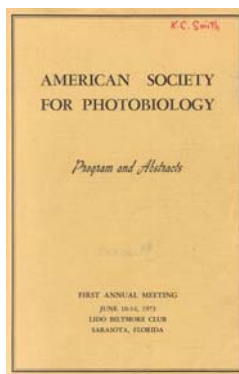
Photoinhibition is defined as the decrease in photosynthesis under excessive levels of light. This is primarily due to inactivation of photosystem-II (PS-II). In the recent issue of *Biochemistry* (44: 8494-8499), ASP member **Masakatsu Watanabe** (National Institute for Basic Biology, Okazaki) and colleagues propose a two-step model for photoinhibition. According to this model, blue and UV radiation first inactivates the oxygen-evolving complex. In the second step, light absorbed by chlorophyll inactivates the PS-II reaction center. This model was supported by experiments with monochromatic light performed at the Okazaki Large Spectrograph.

The Future of Photodynamic Therapy

Photodynamic therapy (PDT) involves administration of a photosensitive drug and radiation of the appropriate wavelength to destroy cancerous or other harmful cells. In a recent issue of *Expert Opinion in Emerging Drugs* (7: 321-34), ASP member **Stuart Marcus** (Dusa Pharmaceuticals) and W.R. McIntyre review recent advances in PDT. In 1995, the FDA first approved PDT for treatment of esophageal cancer. Since then, the FDA has approved PDT for treatment of early and late-stage lung cancer, actinic keratoses, and age-related macular degeneration. Clinicians are currently investigating the potential of PDT for treatment of many additional conditions, such as prostate cancer, psoriasis, and acne.

(reprinted with modification from the ASP web site)

Remember when ...



Program and Abstracts from the first ASP meeting (1973).

Photos of ASP meetings from 1973 (the first ASP meeting) to 1996 are now posted on the ASP website at www.pol-us.net/ASP_Home/asp_history.html. See your friends, colleagues and PhD advisor in their younger

years. See yourself in some outdated clothing styles. View the beautiful meeting sites - Vancouver, Colorado Springs, Quebec City, and many more.

Coming soon: What was hot in photobiology in 1973? Kendric Smith's 1973 Meeting Program and Abstract booklet is being scanned and will be posted soon.

Irene Kochevar
ASP Historian

ASP Homepage Usage Statistics

Visits to the ASP homepage, www.photobiology.org, are being monitored by bravenet.com. A "page view" (or "hit") is recorded every time there is a visit to the homepage. A "unique visit" is recorded every time a visitor has not viewed the homepage in the previous 24 hours. Visits by the webmaster (PAE) were excluded from all statistics.

Counter Dates: May 31, 2005-August 17, 2005 (79 days).

Total page views: 2211 (avg of 28.0 per day)

- Avg of 34.4 on each weekday
- Avg of 11.5 on each weekend day

Total unique visits: 1543 (avg of 19.5 per day)

- Avg of 24.0 on each weekday
- Avg of 8.00 on each weekend day



Christopher Spencer Foote (1935-2005)



In June this year, photobiology lost a resolute colleague with the departure of Chris Foote to Valhalla. The thesaurus that accompanies my version of MS Word lists the adjectives “determined”, “staunch”, “steadfast”, “tenacious”, and “persevering” among the synonyms of “resolute”. In

the pursuit of his science, Chris was all these and more. His connection to the science of photobiology resulted from an abiding interest in the mechanism of light-induced oxidations of organic compounds. This all started with two sequential communications to the editor of the *Journal of the American Chemical Society (JACS)* published in 1964 (co-authored with his then graduate student **Sol Wexler**). In the first of these, they reported that the oxidation of several olefins (including 1,3-cyclohexadiene, 2,5-dimethylfuran, and 2,3-dimethylbutene-2) by the hypochlorite/hydrogen peroxide reacting mixture (known to be an *in situ* generator of an excited singlet state of O₂) produced oxidized products that were consistent with the intermediacy of singlet molecular oxygen as the primary oxidant. Moreover the products generated in these dark processes were in all cases identical to those found in the dye-sensitized photo-oxidations of the same olefins. In the second of these 1964 papers, Foote and Wexler argued from a reading of the literature (and without any data of their own) that because of this product similarity, the dye-photosensitized autoxidations of olefins and dienes also proceeded via the intermediacy of singlet oxygen. This was suggested by **Kautsky** some three decades earlier and since disregarded.

As an interesting aside, an article that immediately follows the brace from Foote, is a publication by **E.J. Corey** and **W.C. Taylor**, entitled “A Study of the Peroxidation of Organic Compounds by Externally Generated Singlet Oxygen Molecules”. These authors passed the output of a silent discharge on flowing O₂ gas (a singlet oxygen source) into solutions of anthracene and substituted anthracenes showing them to be cleanly converted into their 9,10 endoperoxides. From the footnotes in these papers, it

is apparent that Foote and Corey were aware of each other’s activity. It is clear today that Corey’s activity in the singlet oxygen arena has been only a very minor fraction of his phenomenal scientific output. Is it beyond the bounds of reason to imagine that perhaps Corey stepped aside to leave the field to Foote, the erstwhile PhD student of his Harvard colleague, **R.B. Woodward**?

Thus at the ripe old age of 29 Chris cast his stone, the ripples from which are still evident and from which it can be argued that the photobiology sub-discipline of photodynamic action (or photosensitization) was put on a molecular scale. Moreover, these papers launched Chris on the road to becoming the person to whom we have all turned (at least metaphorically) when the subject of singlet oxygen came up in some beer hall or other.

The title of his next publication “Singlet oxygen. III. Product selectivity”, co-authored with Wexler and **Ando**, and published in *Tetrahedron Letters* in 1965 hinted that the first two publications were now considered to be parts I and II of a developing series. Confirmation of this came with the publication in *JACS* (1968) of “Chemistry of Singlet Oxygen. IV. Oxidations with Hypochlorite-Hydrogen Peroxide” co-authored with Wexler, Ando and **Higgins**. Thus establishing the fact that at this point Chris perceived that the “Chemistry of Singlet Oxygen” was an enterprise that would occupy his attention for some time into the future. Eventually the series went through #53, published in 1989. But in fact this is not the totality of it because his bibliographic listing shows many other papers on this subject published in other journals, so he confined the series designation to his publications in *JACS*. In spite of this flood of activity in the singlet oxygen arena, there was still something left for others to work on and several careers have been established in other aspects of the singlet oxygen world. Such was the influence of Chris’s early papers.

In 1968 in *Accounts of Chemical Research*, Chris Foote published a review entitled “Photosensitized Oxygenations and the Role of Singlet Oxygen”. In this he pulled together his work and that of others and, as one would anticipate from his training in physical organic chemistry, discussed the mechanistic aspects at some length. The review concluded with a segment headed “Biological Implications” wherein he essentially predicted that the dye-photosensitized oxidative destruction (photodynamic action) of

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biological molecules and materials, an effect then known for decades, proceeds via the intermediary of singlet oxygen. Thus Chris was instrumental in providing a molecular basis for photodynamic action. Needless to say from these beginnings the molecular view of this area of photobiology has grown enormously, encompassing much of what we now know as photomedicine.

Early in 1991 a "Research Letter" appeared in the *Journal of Physical Chemistry* which opened with the sentence "The recent isolation and purification of the intriguing spherical all-carbon molecule, C₆₀, in high yields is an astonishing accomplishment." What followed was an account of the photophysical properties of buckminster fullerene. This article concluded with, "C₆₀ is a potent generator of singlet oxygen [and this] suggests a strong potential for photodynamic damage to biological systems." Thus Foote became an early entrant into the intriguing photoscience of bucky balls, with special interest in their relevance to photodynamic processes. His last paper in this area was published in 2001, and his last of all "Lens α -crystallin and hypericin: A photophysical mechanism explains observed lens damage" published in *Photochemistry and Photobiology* in 2004. Chris's career is delineated by the publication of 295 research papers and reviews and one PhD dissertation.

Through the 1970s and 1980s Chris became increasingly involved with the affairs of the ASP, culminating in 1988 when he became the 17th president. This author was a council member in those days and recalls that one of Foote's objectives at the time was to bring the recently-constituted ESP into ownership of *Photochemistry and Photobiology*, an objective that has been attempted several times since, to no avail.

Chris Foote was blessed with a strong dose of humanity; he was an interesting conversationalist, a lover of good food, good beers and good wines and a devotee of symphonic and operatic music. He had a warm baritone voice and this author recalls a momentous occasion at a NATO ASI in Kingston, Ontario when we joined together in a late night rendering of Leporello's Catalogue aria (*Madamina, il catalogo e questo...*) from *Don Giovanni*. It was always a great pleasure to meet Chris at some congress or other, having the opportunity of exploring together shared interests. He was serious about science but regarded life more of a comedy than a tragedy. As she does with all of us, Chris,

Mother Nature gave you a body that would eventually falter, but the aliquot of spirit that she invested in you and that you have refined lives on for the betterment of humanity.

Those interested will find a photograph of Chris, smiling hugely in typical fashion on the ASP web site http://www.kumc.edu/POL/ASP_Home/asp-presidents.pdf. Also **William Jenks** has published a list of photographs of Chris (some from last year) and group members on his web site at <http://www.public.iastate.edu/~wsjenks>

Mike Rodgers

Madhukar Anant Pathak (1927-2005)



On Saturday June 18, Madukar Anant Pathak, a charter member of the ASP, passed away. Dr. Pathak was a resident of Belmont, MA, a senior scientist in the Dermatology Department at the Massachusetts General Hospital, and held a senior academic position at Harvard Medical School until becoming Emeritus in 1995.

In 1927, Madhukar Pathak was born in Baroda, India, an important cultural center in the western state of Gujarat. He reportedly came to this country in 1956 with a mere \$18 and a suitcase. He received a M.S. and Ph.D. from the University of Oregon Medical School. In 1960 he accepted a position as a Research Fellow in the laboratory of Dr. **Thomas B. Fitzpatrick** at the Massachusetts General Hospital. This highly productive collaboration lasted throughout his career.

Dr Pathak contributed to the development of the first commercial sunscreen in the mid-1960's. He also helped to develop the first classification of skin types, based on a person's tendency to develop sunburn, and contributed to development of the "sun protection factor" (SPF), a classification system used for sun screens. Dr. Pathak's research produced a basic understanding of the chemistry and photochemistry of psoralens with DNA, which underlies a treatment currently used for psoriasis and other skin diseases. He was especially interested in melanin photobiology, both basic and clinical. His lab was the first to demonstrate light-induced formation of free radicals in

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skin melanin. He was also committed to the development of treatments for vitiligo, a disorder of skin melanization, and conducted clinical trials in India over many years.

Dr. Pathak helped to establish the well-known “Skin Cancer Foundation”, www.skincancer.org. The Skin Cancer Foundation provides basic information on the prevention, detection, and treatment of skin cancers.

Dr Pathak has 144 publications listed in PubMed, several of which are from *Photochemistry and Photobiology*. He also published in many of the most prestigious medical journals, including *New England Journal of Medicine*, *Journal of the American Medi-*

cal Association, and *Journal of Investigative Dermatology*. Dr. Pathak was co-editor of numerous photobiology books, most recently *Sunscreens: Development, Evaluation, and Regulatory Aspects*, published in 1996.

Aside from his seminal contributions to photobiology, particularly photomedicine, at scientific meetings Dr. Pathak was always to be found at the center of discussion. While strongly defending his views, he respectfully listened to the arguments of others. In this manner he invariably enriched the science and those around him with new ideas and directions. These collegial discussions and his counsel will be sorely missed

-PAE

ASP Officers and Councilors

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Secretary	Faith Strickland (4)	‘05-‘08	FSTRICK1@hfhs.org
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Newsletter editor	Peter A. Ensminger (2)	‘05-‘06	ensmingr@twcny.rr.com

Upcoming Events

August 27 - September 1, 2005

2005 IUPB and EBSA Joint Meeting
Montpellier, France
Web site: www.iupab.org/

September 3-8, 2005

11th European Society for Photobiology Congress
Aix-les-Bains, France
Web site: www.esp-photobiology.it

September 6-10, 2005

6th World Congress on Melanoma
Vancouver Convention and Exhibition Center
Vancouver, Canada
Web site: www.worldmelanoma.com

September 18-22, 2005

XIXth International Pigment Cell Conference
Hyatt Regency Reston
Reston, VA
Web site: www.palladianpartners.com/IPCC05/

September 19-29, 2005

NATO Advanced Study Institute
Photon-Based Nanoscience & Technology
Auberge Estrimont, Orford, QC, Canada
Contact: Dr. Stoyan Tanev
NATO ASI Scientific Secretary
Tel: (613) 254-9880 ext. 228
Fax: (613) 254-9881
E-mail: Stoyan.Tanev@vitesse.ca
Web site: www.vitesse.ca

October 31 - November 3, 2005

24th International Congress on Applications of Lasers and Electro-Optics
Hyatt Regency, Miami
Miami, FL
Web site: www.icaleo.org

November 10-12, 2005

Laser Florence 2005

Florence, Italy
Web site: www.laserflorence.org/

November 23-25, 2005

Annual Meeting of the Biophysical Society of Japan
Sapporo Convention Center
Sapporo, Japan
Web site: www.biophys.jp/annual-meeting/index.html

January 21-26, 2006

BIOS 2006 (Photonics West)
E-mail: spie@spie.org
Web site: spie.org/app/conferences/index.cfm

February 18-26, 2006

Biophysical Society Annual Meeting
The Grand America Hotel
Salt Lake City, UT
Web site: www.biophysics.org/meetings/2006/

March 2, 2006

The Photomedicine Society
Annual Meeting
San Francisco, CA
E-mail: photomed@utsouthwestern.edu
Web site: www.photomedicine.org

March 3-7, 2006

American Academy of Dermatology Annual Meeting
The Moscone Center
San Francisco, CA
Web site: www.aad.org/professionals/MeetingsEvents/64annualintro.htm

March 24-25, 2006

6th Meeting of the European Society for Photodynamic Therapy (Euro-PDT Meeting)
Bern, Switzerland
Web site: <http://www.euro-pdt.com/meetings.html>

April 2-7, 2006

21st IUPAC Symposium of Photochemistry

Kyoto, Japan
Contact: Masahiro Irie
Department of Chemistry and Biochemistry
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Fukuoka, Japan
Tel.: +81 92 642 3556
Fax: +81 92 642 3568
E-mail: irie@cstf.kyushu-u.ac.jp
Web site: www.pac.ne.jp/photoiupac2006

July 8-12, 2006

33rd ASP Meeting
San Juan, Puerto Rico

August 5-9, 2006

Plant Biology 2006
American Society for Plant Biology
Boston, MA
E-mail: info@aspb.org
Web site: www.aspb.org/meetings/pb-2006/pb06flyer.pdf

July 7-11, 2007

Plant Biology 2007
American Society for Plant Biology
Chicago, IL

July 23-27, 2007

Photosynthesis 2007
Society for Experimental Biology
Glasgow, Scotland
Web site: www.sebiology.org/Meetings/pageview.asp?S=2&mid=84

June 18-23, 2009

15th International Congress on Photobiology
Duesseldorf, Germany.