

# ASP NEWS



Summer 2009

vol. 39(3)

## Message from the President

My year as ASP President has been quite busy with preparations for the three ASP topical symposia (Human Circadian Photobiology, Low-Level-Laser/Light Therapy, and Illumination of Internal Tissues) this year and with initial preparations for the ASP-2010 Meeting in Providence. With our Society's shift from annual to biennial general meetings, we are replacing this year's annual general meeting with topical symposia. This should certainly fill much of the void and at the same time provide some in-depth focused symposia in areas that are of particular interest. We hope that the topical symposia will appeal to scientists who tend to shun very broad-based meetings that cover a large diversity of subjects. We hope to invigorate the ASP, to attract new members, and to re-ignite the interest of former members who have strayed from our Society.



Thomas Jefferson University, site of the first ASP Topical Symposium (July 9-10, 2009).

## ASP Topical Symposia

**The Photobiology of Human Circadian, Neuroendocrine and Neurobehavioral Effects**, to be held at the Thomas Jefferson University, Philadelphia, PA on July 10, 2009. In addition, the implications of this topic to lighting designers and architects will take place on July 9. Individuals can sign up for both symposia.

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**The Science behind Low Level Light (Laser) Therapy (LLLT) - from molecular biology to cell and tissue level - what are the mechanisms of action?**, to be held at the University of Rochester for two full days on August 7-8, 2009.

**Light and Internal Tissues: Applications, Basic Science and Future Directions. Implications for Endoscopic and Other Medical Devices**, to be held on October 14, 2009 in Rockville, MD. The FDA will co-sponsor this symposium. A call for papers remains open until Aug 1, 2009.

If you have an interest in any of these symposia, please read the more detailed announcements at the end of this newsletter. The Philadelphia symposium is nearly sold out at this writing. The two other topical symposia have also generated widespread interest, so if you are interested please try to register early to assure a place. If these topical symposia are reasonably

successful, I am sure that we will schedule topical symposia in the future.

### ASP-2010, Providence RI

The tradition in ASP is that the two past-Presidents serve as co-chairs for the full meeting. This means that **Linda Ramball-Jones** and I shall co-chair the next full meeting of ASP, scheduled for June 12-16, 2010. The meeting will be held on the campus of Brown University. We have identified a number of sessions and session chairs, but seek proposals from others. If you are interested in organizing a scientific session in Providence, please contact **Linda Hardwick** at the ASP Business Office ([lhardwick@allenpress.com](mailto:lhardwick@allenpress.com)), Linda Ramball-Jones ([JonesL@cofc.edu](mailto:JonesL@cofc.edu)), or me ([david.sliney@att.net](mailto:david.sliney@att.net)).

-David Sliney

## Atmospheric Optics Crepuscular Rays



Sun rays, also called crepuscular rays, streaming through gaps in clouds are parallel columns of sunlit air separated by darker cloud shadowed regions. The rays appear to diverge because of perspective effects, like the parallel furrows of freshly ploughed fields or a road wide at your feet yet apparently narrowing with distance. Airborne dust, inorganic salts, organic aerosols, small water droplets and the air molecules themselves scatter the sunlight and make the rays visible.

-Les Cowley ([www.aoptics.co.uk](http://www.aoptics.co.uk))

## Letter from the Editor

*The internet is a series of tubes.* - Ted Stevens (fmr Senator, Alaska)

According to a recent article in *Wired Magazine*, the internet really is a series of tubes. YouTube began less than five years ago. Since then, there has been an explosion of internet video sites with TUBE in the name: origamitube, supernovatube, wikitubia, metatube, and many more.

Not all of these tubes are chocked full of mind-numbing drivel. For high school students, there is **science-tube.com**. This web site mainly features experiments that can be performed in a high school chemistry lab.

A really great video site is **dnatube.com**. This site has more than 2000 video-based educational materials that are generally geared toward college students. All videos are approved by an editorial group. Some of my favorite dnatube videos are the "Lac operon mechanism" and "Flu virus animation". As of yet, there are no photobiology videos.

Two other great video sites are: **academicearth.org**, which features lectures of leading scholars in science and other fields of academia, and **www.aibs.org/media-library**, which contains plenary lectures by eminent biologists that were recorded at AIBS Annual Meetings.

Alas, I have also gone tubular. Simply go to our Photobiology Events page ([www.pol-us.net/meetings.html](http://www.pol-us.net/meetings.html)) and click on the screencast link near the top of this page. You will be taken to a brief YouTube screencast that explains how to use the interactive features of this web page.

Happy Surfing!

### ASP News

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**[www.photobiology.org](http://www.photobiology.org)**

#### Editor

Peter A. Ensminger  
256 Greenwood Place  
Syracuse, NY 13210

Tel: 315-478-6024

E-mail: [ensminger@twcnny.rr.com](mailto:ensminger@twcnny.rr.com)

## What's New in *Photochem Photobiol*?

### Measurement of Hole Transfer Rates

When a molecule loses an electron, the positive charge left behind is called a "hole". IUPAC defines hole transfer as a "charge migration process in which the majority carriers are positively charged".

In the May/June issue of *Photochem Photobiol*, **Hee-eun Song** and colleagues at Washington University, North Carolina State University, and University of California Riverside describe a new method to measure hole transfer rates between equivalent porphyrins in multiporphyrin architectures. This is the first time that there has been precise measurement of ground-state hole transfer rates. This paper provides valuable insights to electronic communication in multiporphyrin arrays and should facilitate the improvement of solar cells.

Song H, Taniguchi M, Kirmaier C, Bocian DF, Lindsey JS, Holten D (2009) Probing ground-state hole transfer between equivalent, electrochemically inaccessible states in multiporphyrin arrays using time-resolved optical spectroscopy. *Photochem Photobiol* 85:693-704.

### Retinal Proteins Conference

The March/April issue of *Photochemistry and Photobiology* was a special issue that features the proceedings of the 13th International Conference on Retinal Proteins. This meeting was in Barcelona, Spain on June 15-19, 2008. **Esteve Padrós** (3 publications in *Photochem Photobiol*) was the Chair of the Organizing Committee. This issue of *Photochem Photobiol* has 28 papers on various aspects of retinal proteins, including papers on the structure and function of G protein-coupled receptors, xanthorhodopsin, bacteriorhodopsin, and microbial rhodopsins. There were 42 lectures and 90 posters at the conference.

The First International Conference on Retinal Proteins was in 1982 in Munich, Germany and was organized by **Dieter Oesterhelt** (7 publications in *Photochem Photobiol*) of the Max Planck Institute of Biochemistry in Martinsried, Germany. The next conference will be in 2010.

-PAE (modified from ASP web site)

## Develop your Network



BioMedExperts ([www.biomedexperts.com](http://www.biomedexperts.com)) is a web site that enables professional scientists to expand their networks based on shared research interests. Registration is free. This tool was developed by Collexis, a developer of semantic search and knowledge-discovery software.

As of January of 2009, there were 80,000 registered users and profiles of more than 1.4 million scientists. My simple search for "photobiology" turned up 1294 scientists. Please send me an e-mail to let me know what you think of BioMedExperts.

-PAE ([ensmingr@twcnr.com](mailto:ensmingr@twcnr.com))

## ASP Election Results



### ASP President-Elect

**Tayyaba Hasan**

Harvard Medical School,  
Wellman Center for  
Photomedicine, USA

e-mail: [thasan@partners.org](mailto:thasan@partners.org)

### ASP Council

**David Kessel**

Wayne State University, USA

e-mail: [dhkessel@med.wayne.edu](mailto:dhkessel@med.wayne.edu)

**Antony Young**

King's College London, UK

e-mail: [antony.r.young@kcl.ac.uk](mailto:antony.r.young@kcl.ac.uk)

**Tad Sarna**

Jagiellonian University, POL

e-mail: [tsarna@mol.mol.uj.edu.pl](mailto:tsarna@mol.mol.uj.edu.pl)

## ASP Council (cont.)

Chikako Nishigori

Kobe University Graduate School of Medicine, JPN

e-mail: [chikako@med.kobe-u.ac.jp](mailto:chikako@med.kobe-u.ac.jp)

## ESP-2009 Congress

Wroclaw, Poland

September 5-10, 2009



Wroclaw City Hall

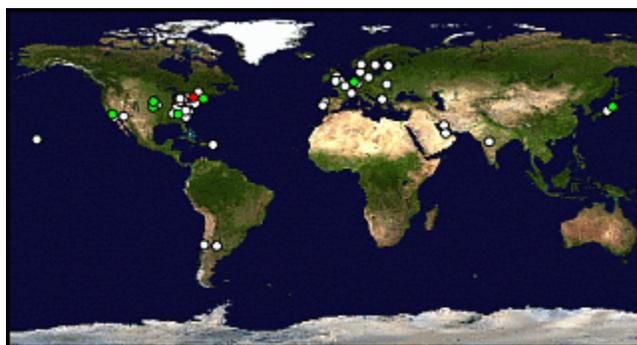
On behalf of the ESP Executive Committee and the Congress Organizing committee, I cordially invite you to attend the 13th Congress of the European Society for Photobiology. The Congress will be an important forum for dissemination of new knowledge in most photobiological fields of research, for scientific discussions and for planning of your future research.

The 13th Congress will be held September 5-10, 2009 in Wroclaw, in the south-west of Poland. The city is easily accessible by plane, train and car. Wroclaw is a picturesque and enchanting city with a substantial cultural and academic heritage. The Congress centre is located close to the beautiful and lively town square with a lot of restaurants and other activities.

We are pleased to inform you that the Congress will be organized in conjunction with the 2nd Conference of the European Platform for Photodynamic Medicine (EPPM). As a participant at the ESP Congress, you will have free access to the EPPM conference. This collaboration will broaden the number of topics covered, especially within clinical PDT and photodiagnosis.

I look forward to seeing you in Wroclaw!

-Kristian Berg, ESP President



## ASP Homepage Usage Stats

Recent visitors to the ASP homepage ([www.photobiology.org](http://www.photobiology.org)), recorded on June 20, 2009 at 12:27 AM EST. Red: most recent visitor; Green: most recent 10 visitors; White: most recent 100 visitors.

**Dates:** March 24-June 19, 2009 (90 days)

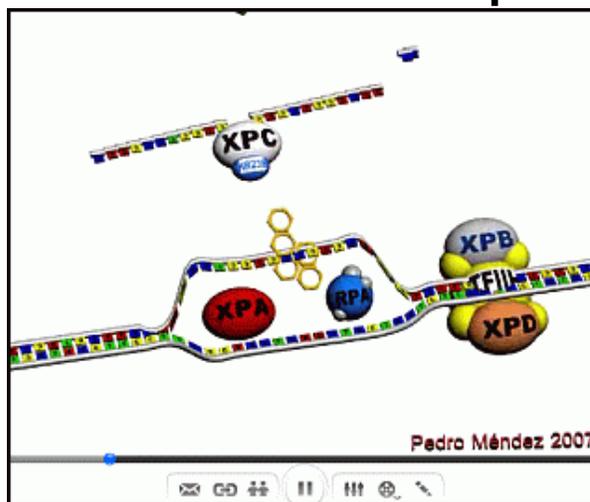
**Total page views:** 4,478

**Average page views per day:** 50

## Photochem Photobiol Alerts

ASP members can subscribe to e-mail alerts or RSS feeds of *Photochemistry and Photobiology*. First, go to the journal homepage, [aspjournal.com](http://aspjournal.com). Then, on the right side of this page, click on "Sign up for e-alerts" or "Sign up for RSS feed". You will need to create or enter a login name and a password. Voila!

## Nucleotide excision repair



Screenshot of the video, "DNA Repair" from [www.dnatube.com](http://www.dnatube.com)

# Photobiology Events

**Map/Timeline/Table:** [www.pol-us.net/meetings.html](http://www.pol-us.net/meetings.html)

## June 18-23, 2009

15th International Congress on Photobiology  
Duesseldorf (Germany)  
Web site: [www.iuf.uni-duesseldorf.de/ICP2009](http://www.iuf.uni-duesseldorf.de/ICP2009)

## June 28-July 3, 2009

GRC: Photosynthesis  
Smithfield, RI (USA)  
Web site: [www.grc.org/meetings.aspx](http://www.grc.org/meetings.aspx)

## July 5-10, 2009

GRC: Photochemistry  
Smithfield, RI (USA)  
Web site: [www.grc.org/meetings.aspx](http://www.grc.org/meetings.aspx)

## July 8-10, 2009

Plant ROS-2009: Society for Free Radical Research Intl.  
Helsinki (Finland)  
Web site: [pog2009.org/](http://pog2009.org/)

## July 9-10, 2009

**ASP Topical Symposium:** Photobiology of Human  
Circadian, Neuroendocrine, and Neurobehavioral Effects  
Jefferson University  
Philadelphia, PA (USA)  
Web site: [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

## July 18-22, 2009

ASPB-2009 (American Society for Plant Biology)  
Honolulu, HI (USA)  
Web site: [aspb.org/meetings/pb-2009/](http://aspb.org/meetings/pb-2009/)

## July 19-24, 2009

Topical Problems of Biophotonics  
Nizhny Novgorod – Samara (Russia)  
Web site: [www.biophotonics.sci-nnov.ru](http://www.biophotonics.sci-nnov.ru)

## July 19-24, 2009

GRC: Chronobiology  
Newport, RI (USA)  
Web site: [www.grc.org/meetings.aspx](http://www.grc.org/meetings.aspx)

## July 19-24, 2009

24<sup>th</sup> International Conference on Photochemistry (ICP-2009)  
Toledo (Spain)  
Web site: [www.icp09-toledo.com](http://www.icp09-toledo.com)

## July 26-31, 2009

ICTPPO 2009: International Conference on Tetrapyrrole  
Photoreceptors in Photosynthetic Organisms  
Asilomar Conference Center  
Pacific Grove, CA (USA)  
Web site: [www.conferences.ucdavis.edu/ICTPPO](http://www.conferences.ucdavis.edu/ICTPPO)

## Aug 7-8, 2009

**ASP Topical Symposium:**  
The Science Behind LLT. From Molecular Biology to Cell  
and Tissue Level. What are the Mechanisms of Action?  
University of Rochester  
Rochester, NY (USA)

Web site: [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

## Aug 16-21, 2009

GRC: Laser Diagnostics in Combustion  
Waterville Valley, NH (USA)  
Web site: [www.grc.org/meetings.aspx](http://www.grc.org/meetings.aspx)

## Sept 5-10, 2009

2009 ESP Congress  
Wroclaw (Poland)  
Web site: [www.esp-photobiology.it/2009congress](http://www.esp-photobiology.it/2009congress)

## Sept 21-22, 2009

JEP 2009: Putting light to work in the environment:  
Materials and methods for air and water purification  
Bordeaux (France)  
Web site: [jep2009site.teamresa.biz](http://jep2009site.teamresa.biz)

## Oct 16, 2009

**ASP Topical Symposium:** Light and Internal Tissues.  
Applications, Basic Science, and Future Directions  
Crown Plaza Hotel  
Rockville, MD (USA)  
Web site: [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

## Dec 1-4, 2009

Scientific Meeting of the Mutagenesis and Experimental  
Pathology Society of Australasia (MEPSA)  
Sydney NSW, Australia  
Web site: [www.pathology.usyd.edu.au/sfrra2009.htm](http://www.pathology.usyd.edu.au/sfrra2009.htm)

## June 12-16, 2010

**ASP-2010:** 35th Meeting of the American Society for  
Photobiology  
Brown University  
Providence, RI (USA)

## Jun 13-16, 2010

6th European meeting on Solar Chemistry and  
Photocatalysis: Environmental Applications (SPEA6)  
Prague (Czech Republic)  
Web site: [www.spea6.com](http://www.spea6.com)

## Jul 30-Aug 5, 2010

Plant Biology 2010: American Society of Plant Biologists  
Montreal QC (Canada)  
Web site: [aspb.org/meetings/pb-2010](http://aspb.org/meetings/pb-2010)

## Aug 15-20, 2010

7th International Conference on Photo-Excited Processes  
and Applications (ICPEPA7)  
Copenhagen (Denmark)  
Web site: [icpepa7.com](http://icpepa7.com)

## Sept 24-26, 2010

Fifth Latin-American Congress on Photobiology and  
Photomedicine  
Santa Cruz (Bolivia)  
Web site: [www.allenpress.com/pdf/AnnouncementLatin-AmericanCongress1.pdf](http://www.allenpress.com/pdf/AnnouncementLatin-AmericanCongress1.pdf)

# Lighting, Architecture and Human Health Workshop



Date: July 9, 2009  
Time: 8:30am-5:00pm  
Thomas Jefferson University  
Room: Hamilton 505  
11th & Locust Street  
Philadelphia, PA  
E-mail: lhardwick@allenpress.com

Light has multiple effects on human physiology, psychology, metabolism, behavior and appropriate exposure to light and dark is intrinsically linked to good health. Recently, a new photoreceptor system has been discovered in the human retina (and other mammals) that mediates a wide range of effects of light in the human body and is most sensitive to short-wavelength (blue) light. Lighting design has focused on the visual effects of light but with this recent discovery, an opportunity now exists to begin incorporating our new scientific knowledge of the 'non-visual' effects of light into architectural design in order to optimize human health in the built environment. Proper attention to these non-visual effects may allow us to improve alertness, performance, sleep, metabolic and hormonal rhythms and mood.

This workshop will focus on how lighting design may start to incorporate the newly discovered 'non-visual' photoreceptor system for health and well-being. It is aimed at the lighting design and architectural community to present the basic concepts and potential applications of non-visual photoreception.

While you are there, plan to attend the Scientific Symposium on the following day to hear the latest research on the non-visual effects of light from leading world experts Separate registration applies.

## Topics Include:

- Introduction to melanopsin and the new photoreceptor system
- Review of non-visual effects of lights in humans
- Incorporating non-visual effects of light into lighting design tools
- Potential applications of non-visual light affects in real-world environments
- Daylighting and schools
- Use of new LED technology to enhance the non-visual effects of light

## Speakers Include:

- Marilyn Anderson, MIT
- Craig Bernecker, The Lighting Education Institute
- George Brainard, Thomas Jefferson University
- John Eberhard, Academy of Neuroscience for Architecture
- Samer Hattar, John Hopkins University
- Lisa Heschong, Heschong Mahone Group, Inc
- Steve Lockley, Harvard Medical School
- Fred Maxik, Lighting Science Group Corporation
- Dave Sliney, ASP President

**Online Registration for Architecture Workshop:** [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

**Registration Rate :** \$100.00 (CEUs pending, Space is limited)

At the **Scientific Symposium** on July 10, world experts will present the latest research on the non-visual effects of light. Separate registration applies.

**Day Two Registration Rate :** \$50.00 (Students/Fellows: \$20.00)

# Photobiology of Human Circadian, Neuroendocrine and Neurobehavioral Effects of Light



Date: July 10, 2009  
Time: 8:30am-5:00pm  
Thomas Jefferson University  
Room: Hamilton 505  
11th & Locust Street  
Philadelphia, PA  
E-mail: lhardwick@allenpress.com

One of the most exciting and active fields of photobiological research in this decade has centered on the recent discovery of a new retinal photoreceptive cell—the non-visual photosensitive ganglion cell in the mammalian retina. It is now generally accepted that the photopigment (chromophore) in these neural cells is melanopsin, which is most sensitive to short-wavelength (blue) light. Studies have centered on determining the action spectrum, the temporal and spatial characteristics of this photoreception system and how the changing diurnal light input mediates a wide range of effects of light in the human body. This topical symposium will review the rapidly changing state of knowledge in this area and explore areas for further research. Current research has important physiological implications for better understanding sleep and mood disorders, jet-lag, visual performance, sleep, metabolic and hormonal rhythms. The ASP is delighted to organize this program that includes scientists who have pioneered many key studies on each aspect of this field.

## Topics Include:

- Electrophysiology of circadian photoreception
- Role of melanopsin in sleep regulation
- Neuroendocrine responses to light in humans
- Circadian photoreception and ocular aging
- Circadian photoreception and ocular health in mammals
- Circadian photoreception and ocular health in humans

## Speakers Include:

- David Berson, Brown University
- George Brainard, Thomas Jefferson University
- Howard Cooper, INSERM
- Michael DellaVecchia, Wills Eye Institute
- Samer Hattar, John Hopkins University
- Steve Lockley, Harvard Medical School
- Martin Mainster, University of Kansas Medical Centre
- Dave Sliney, ASP President
- Gianluca Tosini, Morehouse School of Medicine

**Online Registration for Human Circadian Symposium:** [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

**Registration Rate:** \$50.00 (Students/Fellows: \$20.00)

You may also want to attend the **Lighting, Architecture and Human Health Workshop** on July 9, 2009. Separate registration applies.

**Day One Registration Rate:** \$100.00

# The Science Behind LLLT: From Molecular Biology to the Cell and Tissue Level



Date: August 7-8, 2009  
Time: 8:00am-5:00pm  
University of Rochester  
Goergen Building  
Rochester, NY  
E-mail: lhardwick@allenpress.com

**Organizing Committee:** Ray Lanzafame, Juanita Anders, Michael Hamblin, David Sliney, Margaret Wong-Riley, James Zavislan

Over the past 40 years there have been many seemingly extraordinary claims of successful treatments of a wide range of diseases, dysfunctions and injuries through the use of “low-level” laser (or light) therapy (LLLT). Many different terms have been used - from LLLT to “biostimulation,” “photobiomodulation,” and other terms. Claims ranging from wound healing, analgesia, reduction of inflammation and nerve regeneration have been seriously questioned by the scientific community and met with great skepticism by much of the medical community. Since irradiances are below levels that produce any significant increase in tissue temperature, it is generally agreed that if these photobiological treatments are real, then they are photochemical rather than photothermal in nature. Although there are now FDA-cleared LLLT treatments and growing acceptance from some quarters, the scientific acceptance has been routinely set back by poorly designed, less-than-rigorous experimental and clinical studies. Clearly presented photobiological dosimetry and recognition of fundamental methodology in the field of photobiology have frequently been lacking. The aim of this ASP symposium is to explore the scientific evidence for the photobiological mechanisms behind LLLT—from molecular biology to cell and tissue level, and to review those clinical results that appear to be well founded. Ample time has been planned for discussion after each review of the key scientific questions from action spectra to temporal and spatial factors that appear to influence outcome.

#### **Speakers include:**

- Juanita Anders
- Margaret Wong-Riley
- Stuart Bisland
- Thomas Coohill
- James Carroll
- Istvan Stadler
- Tomas Hode

#### **Titles include:**

- Acute Light Exposure
- UV-A Corneal Collagen
- Skin and Wound Studies
- Basics of Photobiology
- Dosimetry and the Natural Environment
- Production of Reactive Oxygen Species
- UV Interaction with DNA & Cellular Repair

**Online Registration for LLLT Symposium:** [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)

The **American Society for Photobiology**, and Co-sponsor,  
The **Food and Drug Administration** are proud to present a  
topical symposium:

## **Light and Internal Tissues: Applications, Basic Science and Future Directions**



Friday, October 16, 2009  
Crowne Plaza Hotel  
Room: Remington III  
3 Research Court  
Rockville, MD



**Call for Papers!!**  
**Deadline: August 1, 2009**

### **Symposium Topics:**

- Internal light applications in therapeutic and diagnostic medicine
- Medical devices as optical sources
- FDA concerns – risk assessment
- What do we know from dermatological studies?
- Fetal exposures
- Neonatal/Pediatric exposures
- Tissue optics and Biological Effects
- Optical properties of tissues (epidermis vs internal epithelial tissues)
- Action spectra: Wavelength vs chemical/biological endpoints from UVC to IR
- Thermal effects
- Skin: The most studied tissue with respect to light exposure
- Respiratory epithelium
- Hamster pouch
- Engineered human tissue models
- Experimental biology: applications (RPT, laser therapy, etc.)
- Risk assessment
- Photosensitizers

Papers should be no more than 200 words, submitted in word doc only, 12pt with Times font. You may **submit directly to:** [lhardwick@allenpress.com](mailto:lhardwick@allenpress.com).

Posters will be accepted and should be no larger than 4x8 in size.

**Details will be online as they become available at:** [www.pol-us.net/ASP\\_Home/asp\\_meet.html](http://www.pol-us.net/ASP_Home/asp_meet.html)