

ASP NEWS



Summer 2012

vol. 41(3)

Message from ASP President

Tayyaba Hasan passed the gavel to me at the ASP business meeting in Montreal, and I am honored and humbled to serve as president of our society. I hope that you will contact me about ASP issues that are important to you. I will definitely keep you well informed about ASP operations.



Beth Gaillard (L) at a poster session during the recent ASP meeting in Montreal.

I would like to congratulate Tayyaba and David Mitchell for putting together a successful meeting in Montreal. I personally enjoyed the program and

heard many positive comments from people in attendance. At the Council meeting before the scientific program, we welcomed the new council members (Dave Sliney, Kim Samkoe, Edward Maytin, and Alec Greer) and thanked the retiring members (Chikako Nishigori, David Kessel, Tad Sarna, Nihal Ahmad, and Ulysses Sallum) for their contributions to the society. The ASP is very fortunate that Don Forbes and John Streicher continue to serve as secretary and treasurer, respectively. I am looking forward to working with them and with our new president-elect, Keith Cengel.

Theresa Busch organized a wonderful mentoring lunch at the meeting that was very well attended. Nancy Oleinick gave a very interesting talk about her career path in photobiology and led a lively discussion afterwards. Also at the luncheon, Imran Rizvi was elected to a two year term as

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Associate Councilor. In addition, seven associate members (Virginia Albarracin, Brittani Bungart, Shannon Gallagher-Colombo, Rojenia Jones, Aimee Marko, Sindhu Nair, and Mai Thao) agreed to serve on an *ad hoc* committee that is advisory to me. They have already provided me with helpful input about our website and our pages at Facebook and LinkedIn.

If you haven't had a chance to visit the new web site at www.photobiology.org, please take the time to do so. The website committee will be updating and adding content, so check back often. Also, please consider submitting one of your own photos for our homepage, as described in an e-mail from July 31. We are always interested in feedback from you regarding our website, and our pages at Facebook and LinkedIn.

Information about all of the ASP committees is also listed on our web site. Please consider getting more involved in ASP by volunteering for a committee, submitting your next manuscript to *Photochem Photobiol*, and encouraging colleagues to join or renew their membership in

ASP.

I look forward to hearing from you and seeing you at the 2014 meeting in Chicago or San Diego.

-Beth Gaillard, ASP President

Swiss Patent Clerks



Welcome reception at ASP-2012

Letter from the Editor

We hope that you all enjoyed the recent ASP meeting in Montreal. The attendance was excellent and the meeting was a great success. Kudos to **Tayyaba Hasan**, **David Mitchell** and **Linda Hardwick** for their great job. We have some photos of this meeting and of all ASP meetings since 2002 posted on the web at www.bit.ly/ASP-photos. Please feel free to send



Montreal from Mont Royal

me your own photos for inclusion. One of my favorite extracurricular activities was walking to the top of Mont Royal (left).

Our colleagues in the ESP will have a meeting in the beautiful city of Liege, Belgium from August 31 to September 4 in 2013 and the 6th Asia and Oceania Conference on Photobiology will be in Sydney Australia from November 10 to 13 in 2013. If you are able to attend either of these meetings, please consider writing an article for our newsletter. Photos would also be great.

The next ASP meeting will be in the summer of 2014 and will be in either Chicago or San Diego. If you have any opinions about the location or anything else about this upcoming meeting, please feel free to share them with our Council or by contributing an article to the newsletter.

ASP News

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

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Where are all the Plant Biologists?



As you may know, I was not at the recent ASP meeting in Montreal. I am also sadly aware that plant biologists are not prominent in ASP. The problem has always been that the ASP has marginalized the

area of plant photobiology. This is a real shame, because plant research has recently uncovered an entirely new protein photochemistry (the LOV domain), has described and begun to characterize the first UV-B photoreceptor, studies perhaps 14 photoreceptors in five different families, and is contributing to the exciting new field of optogenetics.

I well recall one time some years ago when ASP courageously scheduled two plant biology symposia: One was on some aspect of photosynthesis and the other was on phytochromes. These were brilliantly scheduled to be simultaneous! As a consequence, audiences at both were miniscule. Some really top photomedicine people began to play a major role in the society, and they evidently had little information on or interest in plant systems.

With the advent of a Gordon Conference on photoreceptors and their signal-transduction pathways in 2000, there began a predictable series of international meetings every two years that merged all of the various diverse photoreceptor fields – plant, animal, fungal, bacterial, optogenetic, and more – and closed an extremely important gap. In addition, the plant photoreceptor community had and continues to have its own meetings world-wide at two-year intervals, and these fill another important gap.

Given the lowly position of plant photoreceptors in ASP, it is not surprising that plant biologists are staying away. I looked at the program for the Montreal meeting, and this year is no exception. I would be personally interested in the session in optogenetics (although I might have heard some of the work elsewhere), possibly spectroscopy (depending on the specific topics), and possibly photobiology of extremophiles (again depending on the specific topics). If I had funds to attend one major meeting a year, which of the three meetings would appeal most to a plant photobiologist? The Gordon Conference, the international plant symposium, or ASP? The situation started off badly for plant biology in ASP because the photosynthesis people never joined in. For decades prior to the formation of ASP, they had had their own meetings and somehow never embraced ASP.

I am genuinely sorry about this situation, but I really don't know how to improve it. I have been a member of ASP since its founding and will keep my membership. But it doesn't make sense to use my scarce resources to attend its national meeting. I wish I could be more helpful. I think **Kendrick Smith**'s original and highly laudable objective was to bring all of us under one tent, hence our name "American Society for Photobiology". It didn't work for plant biology. The Gordon Conference and an international conference every other year do a far better job.

-Winslow Briggs, ASP Charter Member

Optogenetics at ASP-2012 ... and Beyond

In addition to all of the traditional fields of photobiology covered at ASP-2012, a recent field has attracted great interest. This year's meeting was opened by the "Kendric C. Smith Symposium: Emerging Light Technologies" that pointed to the application of light and photoreceptors for experiments in tissue culture and living organisms. In other words, optogenetics.

Use of photoreceptors in biotechnological and biomedical applications was further outlined in a

symposium that I organized called “Optogenetics and Biological Applications of Biological Photoreceptors” This symposium featured six speakers.

Optogenetics Program at ASP-2012

- Microbial Photoreceptors – Essentials for Bacterial Lifestyle and Trendy Applications
Wolfgang Gaertner
- Synthetic, Bacteriophytochrome-Based Photoregulatory Systems
Min-Hyung Ryu, Jessica Siltberg-Liberles, Mark Gomelsky
- Development and Optimization of LOV-Based Photosensors
Kevin Gardner
- Optogenetics: Tools for Controlling Neural Circuits
Edward Yongku Cho
- Conditional Control of Protein Activity Using Optical Dimerizers
Chandra Tucker
- Designing Light-Dependent Molecular Tools to Study Cytoskeletal Dynamics and Regulation
Jason Yi, Klaus Hahn

In optogenetics, photoreceptors are used to regulate physiological processes because they can be activated in a non-invasive manner simply by light. This has attracted many scientists to the field of optogenetics in recent years. Accordingly, our presentation of this fascinating new field at ASP-2012 was timely.

In the year 2010, *Nature Methods* named optogenetics as “Method of the Year”. Many optogenetics applications employ channel-rhodopsin due to the ability of this protein to be functionally expressed in selected tissue. There have been many reports of outstanding and fascinating effects in different types of neurons. However, other photoreceptors that regulate enzyme activity are entering the stage, and thus extend the potential for many novel applications.

We hope that optogenetics will continue to have an important role at future ASP meetings.

-Wolfgang Gaertner

Iranian Student in Prison

New council member **Alec Greer** is a co-chair of the Committee of Concerned Scientists, www.concernedscientists.org. This is a watchdog group that is focused on the human rights and scientific freedom of scientists, physicians, and engineers.

The CCS has recently noted the plight of **Omid Kokabee**, a PhD candidate in physics at the University of Texas, Austin. Mr. Kokabee is an Iranian citizen but has been in the United States attending graduate school. He returned to Iran earlier this year to visit his family and was detained by Iranian officials. He was later charged with conspiring with foreign countries because he is a teaching assistant at UT Austin. He was sentenced to ten years in prison.

Many scientific organizations, including the American Chemical Society and the American Physical Society, have written letters to **Ayatollah Khomeini**, the supreme leader of Iran, to protest this undeserved conviction. A recent article in *Nature* provides more information.

More information about Omid Kokabee

www.nature.com/news/scientists-protest-against-prison-sentence-for-iranian-student-1.10800

During the ASP council meeting in Montreal, Alec made a motion that was unanimously passed that ASP would write a letter to Khomeini, with a copy to **Hillary Clinton**, asking that Mr. Kokabee’s conviction be reconsidered. The letter, signed on behalf of the ASP, was sent in July.

-Beth Gaillard, ASP President



Relationship of Cutaneous Papillomavirus and Skin Cancer

Researchers from the Moffitt Cancer Center (Tampa, FL), the University of South Florida (Tampa, FL), the German Cancer Research Center (Heidelberg), and the International Agency for Research on Cancer (Lyon, France) recently studied the association of squamous cell carcinoma (SCC) with seropositive responses to 5 different genera of the cutaneous form of human papillomavirus (HPV). This is the first case-control report to examine the relationship of SCC and different genera of HPV. The results indicate that SCC was significantly associated with seropositivity to any genus-beta HPV, particularly those in species-1.

Iannacone MR, *et al.* (2012) Case-Control Study of Cutaneous Human Papillomaviruses in Squamous Cell Carcinoma of the Skin. *Cancer Epidemiol Biomarkers Prev* PMID: 22707711

This research examined cutaneous HPVs, not the mucosal types that can cause cervical cancer. The five genera of cutaneous HPV were alpha, beta, gamma, mu, and nu. The study examined 173 patients with SCC (cases) and 300 patients without SCC (controls).



Wart caused by infection from a cutaneous HPV (from George Chernilevsky).

Dana E. Rollison (Vice President and Chief Health Information Officer, Moffitt Cancer Center) said "Squamous cell carcinoma of the skin is the second most frequently

occurring cancer among Caucasians in the United States, and the numbers of cases continue to rise. Risk factors for SCC include ultraviolet radiation exposure via the sun, older age, light skin and suppressed immune system."

The research did not establish the mechanism of the relationship between HPV and SCC. However, the long-term goal is to identify the role of cutaneous HPV in the pathogenesis of SCC in order to better identify at-risk individuals and to develop improved methods of prevention and treatment.

-PAE (from info at www.moffit.org)

Optogenetics in a Primate

Researchers report in the forthcoming issue of *Current Biology* that they used optogenetics to control the behavior of a rhesus monkey (*Macaca mulatta*). More specifically, they used pulses of blue light to excite cortical neurons in the arcuate

sulcus and elicit changes in eye movement. They also used optogenetics simultaneously with fMRI to record changes in neural activity in the monkey brain.



A Rhesus Macaque (*Macaca mulatta*) on Swayambhunath (also known as the "Monkey Temple"), Kathmandu Valley, Nepal (from Ester Inbar).

Wim Vanduffel, one of the co-authors of the recent study said, "We are the first to show that optogenetics can alter the behavior of monkeys. This opens the door to

use of optogenetics at a large scale in primate research and to start developing optogenetic-based therapies for humans."

In general, optogenetics involves the excitation of specific neurons by introduction of a photosensitive protein, such as channel-rhodopsin. Previous researchers have mostly used invertebrates and rodents as model organisms.

According to Vanduffel, "Several neurological disorders can be attributed to the malfunctioning of specific cell types in very specific brain regions. ...

It is important to identify the underlying neuronal circuits and the precise nature of the aberrations that lead to the neurological disorders and potentially to manipulate those malfunctioning circuits with high precision to restore them. The beauty of optogenetics is that, unlike any other method, one can affect the activity of very specific cell types, leaving others untouched."

Gerits A, Farivar R, Rosen BR, Wald LL, Boyden ES, Vanduffel W (2012) Optogenetically Induced Behavioral and Functional Network Changes in Primates. *Curr Biol* PMID: 22840516

-PAE (from info at www.neurosciencenews.com)

ASP-2012

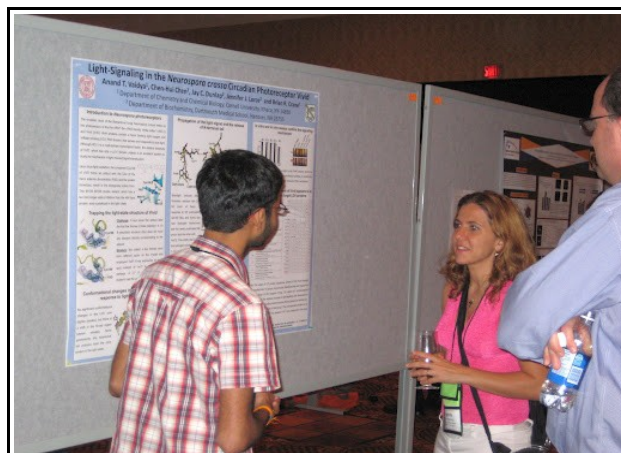
The ASP is very grateful to the many sponsors who helped to make our recent Montreal meeting a success.

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Antony McDonagh (L), winner of the ASP Research Award with former ASP President David Mitchell.



Poster session.

These and additional photos from Montreal and from all ASP meetings since 2002 are available at www.bit.ly/ASP-photos

-PAE

All truths are easy to understand once they are discovered; the point is to discover them.

-Galileo Galilei



Urbach Travel Award Winners.

Photobiology Events



Aug 19-23, 2012

American Chemical Society
Materials for Health & Medicine
Philadelphia, PA (USA)
Web site: www.chemistry.org

Oct 11-12, 2012

Optogenetics and Pharmacogenetics in Neuronal
Function and Dysfunction
New Orleans, LA (USA)
Web site: www.brainresearchconference.com

Oct 21-26, 2012

IPMB-2012: 10th International Congress on Plant
Molecular Biology
Jeju City (Korea)
Web site: www.ipmb2012.org

November 5-7, 2012

Photonics Asia
Beijing (China)
Web site: www.spie.org/x6445.xml

Dec 15-19, 2012

American Society for Cell Biology Annual Meeting
San Francisco, CA (USA)
Web site: www.ascb.org

Jan 6-11, 2013

Gordon Research Conference: Carotenoids
Ventura, CA (USA)
Web site: www.grc.org

Feb 2-7, 2013

Photonics West
The Moscone Center
San Francisco, CA (USA)
Web site: www.spie.org/x2584.xml

Mar 7-10, 2013

International Symposium on Ocular Pharmacology
and Therapeutics (ISOPT)
Paris (France)
Web site: www.isopt.net/isopt2013

Jul 14-19, 2013

Gordon Research Conference: Photochemistry
Easton, MA (USA)
Web site: www.grc.org

Jul 20-24, 2013

Plant Biology 2013
Providence, RI (USA)
Web site: aspb.org/calendar

Aug 11-16, 2013

16th International Congress on Photosynthesis
Research
St. Louis, MO (USA)
Web site: www.ps16stlouis.wustl.edu

Aug 31-Sep 4, 2013

ESP 2013
Liège (Belgium)
Web site: www.esp-photobiology.it



Liège lies along the Meuse River in Belgium.

Nov 10-13, 2013

6th Asia and Oceania Conference on Photobiology
Sydney (Australia)
Web site: www.aocp2013.org.au

Other Event Calendars

SPIE Events: spie.org/x1375.xml
Plant Biology Events: aspb.org/calendar
Chemistry Events: www.chemistry.org
Gordon Research Conferences: www.grc.org

All Submissions to:
ensmingr@twcnny.rr.com



Life on a Sun-Drenched Planet

The 6th Asia & Oceania Conference on Photobiology

10-13 November 2013

Sydney, Australia

www.aocp2013.org.au

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ESP meeting 2013 in Liège Belgium

August 31 to September 4

www.esp-photobiology.it



American Society for Photobiology



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The American Society for Photobiology promotes research in photobiology, integration of different photobiology disciplines, dissemination of photobiology knowledge, and provides information on photobiological aspects of national and international issues.

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