



# PSNA News

Phytochemical Society of North America  
Sociedad Fitoquímica de América del Norte  
Société Phytochimique de L'Amérique du Nord

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## President's Message

David Gang

This past year brought a change in government administration to the USA. While we all understand that ours is an international society, such changes do have an impact on world politics and can also have an impact on science policy around the globe. This change in administration was followed by a shift in priorities in research funding and directions on many fronts that impact Society members. The largest change may be the reorganization of the research branch of the USDA, to create the new National Institute of Food and Agriculture, or NIFA. I believe that those of us who have a strong interest in Phytochemistry and related fields, be they plant metabolism, biofuels, or medicinal properties of plants or related areas, will view this change as a positive one. I hope that you will join me in supporting Roger Beachy as the new director of NIFA. I believe that he will be a great ally to plant biologists in general and to phytochemists and biochemists in particular. I am hopeful that we will see investment from NIFA in areas of research that we all know are crit-

ical to support if we are to retain stability of our food and fuel supplies. I encourage those of you who reside in the USA to find ways to support NIFA activities that are beneficial to our cause. This can be done by having conversations with your legislators, by serving on grant panels or acting as ad hoc reviewers, or by vocalizing support for positive efforts by NIFA and other agencies in areas related to Phytochemistry. I am sure that members from Canada, Mexico and other nations can see similar opportunities in their respective nations, such as in supporting efforts by Genome Canada to encourage plant biochemistry related research.

I believe that one of the most important opportunities that we now face resides in the fact that scientists in our field are now in a position to begin to make more of an impact in science policy at the national and international levels. Many of you already are actively engaged in this endeavor. It is critical that all members of the society be aware of and seek out opportunities to educate policy makers and the general public regarding the importance of science in general and of plant biochemistry and chemistry in particular.

Through current biofuels initiatives in North America and worldwide, for example, our members have an unprecedented opportunity to be involved in reshaping the way that plant chemistry is viewed by other plant scientists in particular and other scientists and our national populations in general. The knowledge base present in our society's membership is unique in the world, and we (I am talking about all members from the most senior to the youngest of student members) are therefore in a unique position to be able to provide important information and judgment regarding potential policy directions that may be taken at all levels.

I also applaud our members who take direct education of future generations to heart. If our Society and its mission, to promote plant chemistry and biochemistry research, is to continue to grow and have an impact in the world, we must enlarge our ranks with members from the younger generations. In this regard, the society has also renewed efforts in recent years to increase membership. We continue to encourage past

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In this issue: 2009 meeting reports, and update on the 2010 meeting

This is the printed version of the PSNA Newsletter. The web PDF version can be downloaded from the website: [www.pсна-online.org](http://www.pсна-online.org).



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WWW.PSNA-ONLINE.ORG



ADVISORY COUNCIL  
(Being reorganized)

# The Phytochemical Society of North America

The Phytochemical Society of North America (PSNA) is a nonprofit scientific organization whose membership is open to anyone with an interest in phytochemistry and the role of plant substances in related fields. Annual membership dues are U.S. \$60 for regular members and \$30 for student members. Annual meetings featuring symposium topics of current interest and contributed papers by conference participants are held throughout the United States, Canada, and Mexico. PSNA meetings provide participants with exposure to the cutting-edge research of prominent international scientists, but are still small enough to offer informality and intimacy that are conducive to the exchange of ideas. This newsletter is circulated to members to keep them informed of upcoming meetings and developments within the society, and to provide a forum for the exchange of information and ideas. If you would like additional information about the PSNA, or if you have material that you would like included in the newsletter, please contact the PSNA Secretary or visit our website at [www.pсна-online.org](http://www.pсна-online.org). Annual dues and changes of address should be sent to the PSNA Treasurer. Also check the PSNA website for regular updates.

*The PSNA is an all volunteer organization which depends on its membership to run the organization. We appreciate the time and effort these volunteers are putting in to keep the organization up and running. As a member, please consider volunteering to serve on one of these committees. The PSNA can always use more help!*

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### President's Message

... continued from page 1

members to renew their interest in the field of Phytochemistry, viewed in the broadest sense, and rejoin our ranks. We also encourage new members to join. We need to seek new ways to foster this effort. I have high hopes that with your assistance, with the assistance of the members first and foremost, we will be able to continue to expand our membership over the next few years. There are important reasons to do so. Most importantly, I believe that our Society and its members, as I outline above, face new opportunities in being in a position to help shape science policy worldwide.

To the faculty members and senior scientists: please encourage your students and post-docs to join the PSNA attend the annual meeting this coming year. Our membership dues are low compared to many other societies, making membership readily available to students and post-docs. To the younger members, please join us again at this next year's meeting and encourage your friends to attend. I believe that the venue for next year's meeting will be especially attractive (on a tropical island on the Caribbean coast of Florida, at a beautiful hotel resort for a reasonable price--sounds like a meeting not to be missed, and that isn't even considering the great science that will be discussed!). Joining forces again with the American Society of Pharmacognosy, as we have done in the past, will bring new opportunities for our members. I personally believe that this meeting will open up opportunities to develop collaborations with others that may have otherwise remained untapped. Please see the meeting website for more information on this great opportunity: [www.asp2010.com](http://www.asp2010.com).

During the following year we will hold an annual meeting celebrating the 50<sup>th</sup> Anniversary of the Society. That meeting, to be held on the north Kona coast of the big island of Hawai'i, will again be at a great location and will open up additional opportunities for collaboration. We expect many of our friends from sister societies in Asia to join us for snorkeling, scuba diving and of course great science. Please plan now to attend that meeting. More details will follow in the next few months.

Although we have also faced many challenges during the past year, such as enduring the worst economic downturn since the Great Depression

of the 1930s, I believe that we have many reasons to be optimistic about the future. Funding opportunities for collaborative research enable new approaches to old problems, making many of these now appear tractable. New advances in technology each year increase our members' ability to perform world class science at reduced prices.

I also wish to welcome you to another great issue of the PSNA newsletter showcasing our annual meeting, held this past year at Towson University in Baltimore, Maryland. Jim Saunders and the rest of the local organizing committee and support staff did a great job of hosting the

meeting participants and making the meeting a pleasant experience at an enjoyable venue. The Baltimore area had a lot to offer the participants, from a lovely evening with Jim Duke and his herbs and songs, to delightful dining on the waterfront. Towson provided a great setting for the meeting, where participants could easily mingle and renew friendships or make new acquaintances.

As you will see in this issue, this past year's PSNA meeting was viewed by those who attended as a great success. The diversity of symposium and contributed talks and posters continued on with the society's efforts of recent years in showcasing

and supporting all areas of research related to Phytochemistry and plant biochemistry/metabolism. We heard about topics ranging from ecology and evolution to electrostimulatory effects of phytochemicals and insect neurological responses, from genomics to genetics to geminal coupling in NMR, from analytical chemistry and metabolomics to application of biosynthetic knowledge and metabolic engineering in efforts to improve plants.

It is a great time to be a scientist who is interested in plants, the chemicals that they produce and how they produce them!

## 2009 PSNA Annual Meeting "Biologically Active Phytochemicals"

M. Soledade C. Pedras, Secretary

The 2009 PSNA meeting was held at Towson University, a beautiful campus on the suburbs of Baltimore, Maryland on Aug. 8-12, 2009. The broad Symposium topic "Biological-

ly Active Phytochemicals" included several invited talks and contributed presentations on very diverse areas of Phytochemistry that filled the three and half days of this meet-

ing. The great hospitality of the organizer James A. Saunders and all his team at Towson University plus Benjamin Matthews, USDA, Jed Fahey, Johns Hopkins University



Jim Duke's medicinal garden



Scenes from the 2009 PSNA Meeting

and Mark A. Bernards, University of Western Ontario and the great warm weather made this conference very enjoyable and productive.

*(continues on page 3)*  
*(2009 PSNA Meeting continued from page 1)*

The Meeting took off on Saturday evening with a very interesting key note presentation by James Duke on “Spices and Culinary Herbs in Folk Medicine and Phytomedicine” (complete with a song about “Old Bay” spice) which was followed by a great reception, and provided a good opportunity to renew acquaintances and find the latest news. The following morning sessions started at 8:30 am and included presentations on Phytochemicals and Human Health, Biochemical Evolution of Phytomedicines, Cuticular Triterpenoids, Phytochemicals in Medical Foods for Phytotherapy, and Botanical Drug Development in the U.S. The afternoon session included 2 minutes Poster Introductions and poster presentations (over 40).

Monday started with an invited presentation on Analytical Strategies for Ecologically Active Phytochemicals; followed by The Effects of Alkaloids on the Feeding Behavior and Neurophysiology of Insects; Salvage of Folate Catabolites in Plants; COMT Mutations and Effects on Both Lignin Primary Structure and Deconstruction; Drug Discovery of Natural Products for Pharmacognosy; Xanthohumol and Related Prenylated Flavonoids from Hops; Identification, Biochemical Characterization, and Structure Function Analysis of a Flavonol 3-O-Glucosyltransferase from *Citrus Paradisi*; and Red Callus Culture of *Arabidopsis* as a Tool for Analyzing the Regulation Mechanism Controlling the Function of Pap1 Transcription Factor.

The sessions on Tuesday included presentations on Ecologically Active Phytochemicals; Antarctic Red Marine Algae Products; Evaluation of Extraction Methods for Gallic Acid, Catechins and Xanthines; Glucosinolate Degradation Products in Fermented Meadowfoam Seed Meal; Biosynthesis of Volatiles In Plant Defense; Steroidal Glycoalkaloids; Characterization of PAP1-Transgenic Cell Suspension Culture; Spilanthol and extracts from *Spilanthes acmella*; Cruciferous Plant Defenses and Pathogen Attack; and Tellimagrandin II Biosynthesis.



Smith Hall on the campus at Towson State University

The last session on Wednesday morning included presentations on Regulation of Isoflavonoid Synthesis, Ecological Role(s) of Ginsenosides; HPLC/MS Profiling of Anthocyanin and Carotenes; Substrate Versatility of Monolignol Acyltransferases and Phenol Synthases; and Hinokiresinol Synthase, and Improving Sensitivity of HMBC Spectra.



Tim Martin, Tissa Thomas, Christina Engstrom and Jim Saunders

Tuesday evening was highlighted by a visit to Jim Duke's medicinal garden at his home in Fulton, Maryland. The attendees were treated to a personal tour of the gardens with commentary and demonstrations by Jim, all accompanied by the sounds of a classical guitarist. The tour was certainly a great highlight of the meeting. More information on Jim's garden and on ethobotany can be found his website at <http://www.greenpharmacy.com>. Some of the attendees then went out for an evening on the Baltimore waterfront.



President David Gang and Jim Saunders

The titles and abstracts of all presentations (invited and contributed) as well as all conference participants and their addresses can be downloaded at <http://bioinformatics.towson.edu/PSNA2009/Agenda.html>. A great banquet held on Tuesday



Professor Norman Farnsworth



Gale Bozzo and Mark Bernards



Daniel Owens



Jeffery Weidenhamer



Soledade Pedras



evening featured a historical and very entertaining presentation by Professor Norman Farnsworth on "YSONGOCAMRAHP and the Search for Bioactive Chemicals".

The Awards Ceremony followed with the 2009 Frank and Mary Loewus Travel Award Recipients.

Next up were the Best Poster Presentation Awards to Nik Kovich of the University of Ottawa, Reza Sohrabi of Virginia Tech University and Ivette Guzman of New Mexico State University. The Arthur C. Neish Young Investigator Awards were given to Gale Bozzo of the university of Guelph, De-Yu Xie of North Carolina State University, and Syed Moinuddin of Washington State University.

The Young Investigators Program was held on Tuesday, after the afternoon session and brought together our young and senior phytochemists for exchange of ideas and advice, etc. The topic for this session was tips for applying for job. Comments and hints ranged from how to get an application to the top of the applicant pile to what to do in the interview.

The PSNA would like to thank the organizing committee chaired by James Saunders, Christopher Saunders, Tim Martin, Christina Engstrom, and Tissa Thomas for all their enormous amount of work in putting this meeting together. Thanks also to the meeting sponsors, Towson University and McCormick and Company, Inc. Finally, thanks are due to the session chairs James Saunders, Cecilia McIntosh, Roland Roberts, Tim Dwyer, John Arnason, David Gang, and Norman Lewis and to all participants for their enthusiasm and participation.

The next PSNA meeting together with the APS is set for July 2010.



James Duke and his garden



Jed Fahey



Douglas Kinghorn



Thor Arneson and Bill Baker





Mark Bernards at the PSNA Awards Ceremony



Nik Kovich  
University of Ottawa,



Reza Sohrabi  
Virginia Tech University

## 2009 PSNA Best Presentation Awards



Ivette Guzman  
New Mexico State University.



## 2009 Neish Award Speakers



Dr. Gale Bozzo  
Dept of Plant Agriculture  
University of Guelph,  
Guelph ON, Canada.

Dr. Gale Bozzo received his BSc (Biology) from York University in 1996, and his MSc from the same institution in 2000 under the supervision of Brian Colman. His thesis was based on carbon concentrating mechanisms in freshwater algae. Dr. Bozzo carried out his PhD studies under the supervision of Bill Plaxton in the Department of Biology (Queen's University) where he studied the biochemical properties of intracellular and secreted purple acid phosphatases induced during the phosphate-starvation response in tomato. In 2005, Dr. Bozzo received an NSERC postdoctoral fellowship to study plant folate biochemistry in Andrew Hanson's lab (Horticultural Sciences Dept, University of Florida). Specifically, he studied the biochemical and molecular aspects of folate transport and folate precursor glucosylation and sequestration. A major focus was on developing biochemical approaches to investigate enzymatic reactions involved in the salvage of folate degradation products in plants. In 2008, Dr. Bozzo was hired as an Assistant Professor in the Department of Plant Agriculture at the

University of Guelph. His lab is currently studying the biochemistry of processes involved in browning disorders in postharvest fruits as well as the mechanisms of flavonoid catabolism in Arabidopsis during environmental stress. The aim of the latter work is to identify the functional role of flavonoid deglycosylation processes in Arabidopsis.



Dr. Sangeeta Dauhbhadel  
Agriculture and Agri-Food Canada  
Southern Crop Protection and Food  
Processing Lab,  
London, ON, Canada

Dr. Sangeeta Dhaubhadel was born in Nepal and received her B.Sc. Agriculture (hons) degree with major in Plant Breeding and Genetics from Haryana Agricultural University, India. She completed her Masters in Molecular Biology and Genetic Engineering from Govind Ballabh Pant University of Agriculture and Technology, India in 1992 and Ph.D. from Department of Plant Sciences (Biology), University of Western Ontario in 2001. During her Ph.D. in Dr. P. Krishna's laboratory at UWO, Dr. Dhaubhadel discovered the first direct evidence on the mechanism of brassinosteroid-induced thermotolerance on plants. In May 2001, Dr. Dhaubhadel joined Dr. M. Gijzen's laboratory at Agriculture and Agri-Food Canada, London for a short postdoc where she studied the routes of isoflavonoid accumulation in soy-

bean seeds. Her study demonstrated that total accumulation of isoflavonoids in soybean seeds is a result of both *in vivo* synthesis within the seed and transport from maternal tissues. In May 2002, Dr. Dhaubhadel was the successful candidate for the indeterminate Research Scientist position at Agriculture and Agri-Food Canada, London. Dr. Dhaubhadel's research interest lies in the area of expression and regulation of genes involved in the synthesis of plant natural compounds. The current research in her laboratory focuses on identifying and characterizing the regulatory factors involved in isoflavonoid biosynthesis and its related pathways.



Dr. Syed G A Moinuddin  
Institute of Biological Chemistry  
Washington State University  
Pullman WA, USA

Dr. Syed Moinuddin received a Master's Degree in Organic Chemistry from Andhra University (India) in 1994 and a Ph.D. in Synthetic Organic Chemistry in 2001 from the same institution. His Ph.D. was completed under the supervision of Dr. Revuru Venkateswarlu where he dealt with synthesis of modified podophyllotoxins that belong to a class of compounds known as lignans. In 2001, he joined Professor Norman G Lewis' laboratory at Washington State University as a Research Associate where he contin-

ued his research work in various areas of strategic national importance such as plant compounds for cancer treatment and cancer prevention, as well as for plant-based biofuels. Dr. Moinuddin extended his work on possibly the most complex plant natural products known, lignins. He has developed a series of synthetic regimens to study the effects of mutations in the lignin biochemical pathway. The goal of this project is to study inter-unit linkage frequencies and lignin primary structure.



Dr. Deyu Xie  
Department of Plant Biology  
North Carolina State University  
Raleigh, NC 27695

Dr. Deyu Xie received his B.Sc., (Biology) in 1988 from the Department of Biology, Hunan Normal University, and his MSc (Cytogenetics) in 1993 from the Department of Biology, Beijing Normal University. Dr. Xie earned his Ph.D. (1997) in Plant Physiology and Plant Molecular Biology, from the Department of Cell and Gene Engineering, Institute of Botany, Chinese Academy of Sciences. After a Post-doc with Richard Dixon at the Noble Foundation, Dr. Xie was appointed as an Assistant Professor in the Department of Plant Biology, North Carolina State University (2005), where he has established a research group investigating the role of transcription factors in anthocyanidin biosynthesis.



## 2010 Annual Meeting of the Phytochemical Society of North America

The Phytochemical Society of North America (PSNA) and the American Society of Pharmacognosy (ASP) will meet together at St. Petersburg Beach, Florida, July 10-15, 2010. This will be a large meeting with 500-600 anticipated participants. The meeting venue will be at the Tradewinds Resort ([www.justletgo.com](http://www.justletgo.com)). Participants will fly to Tampa and then take a short shuttle across the bay to the meeting site.

There will be 8 symposium topics: 1. Natural Products in Agriculture; 2. Biodiversity; 3. Drug Discovery – Problematic Diseases; 4. Issues in Botanicals; 5. Natural Products, Ecological Roles, and Tritrophic Interactions; 6. Bioassays and Targets; 7. Metabolism and Metabolomics; 8. Metabolic Engineering and Biotechnology. There will be both invited speakers and contributed paper in each symposium.

Aside from a stimulating scientific program, we can offer you near perfect weather in Florida in July, with sea breezes and Gulf temperatures hovering around 86°. Family attractions include Busch Gardens Tampa, Disney World Orlando, the

Salvador Dali Museum in St. Petersburg, and countless others.

We look forward to your participation in this meeting. A meeting site is being established and a call for papers will be sent soon.

The ASP website is [www.pharmacognoscy.us](http://www.pharmacognoscy.us)

The site for the ASP 2010 meeting is [www.asp2010.com](http://www.asp2010.com).

Visit the PSNA website ([www.psnanonline.org](http://www.psnanonline.org)) for links and updates on the meeting.

A program committee consisting of leaders from the industrial and academic communities has been assembled and a first-rate scientific program consisting of eight general symposia has been put together covering the following topics:

- \* Natural Products in Agriculture
- \* Biodiversity
- \* Metabolism and Metabolomics
- \* Drug Discovery- Problematic Diseases

- \* Issues and Botanicals
- \* Natural Product Ecological Roles and Tritrophic Interactions
- \* Bioassays and Targets
- \* Metabolic Engineering and Biotechnology

#### Confirmed Speakers

Symposia #1 - Natural Products in Agriculture,

- \* Pam Marrone, Marrone Bio-Innovations; “The Potential of Natural Products in Agriculture”
- \* Sharon L. Doty, University of Washington, “Endophytes for sustainable bioenergy crop production”

Symposia #2 - Biodiversity,

- \* Susan McCormick, USDA/ARS ; “Trichothecene Triangle – toxins, genes and plant-microbe interactions “
- \* Jurgen Rohr [bio], University of Kentucky, College of Pharmacy; “Generation of Biodiversity of Microbial Natural Products through Combinatorial Biosynthesis”

Symposia #3 - Drug Discovery – Problematic Diseases,

- \* Dennis Kyle, University of South Florida, College of Public Health; Title forthcoming
- \* Gunda Georg, University of Minnesota, Masonic Cancer Center; “Natural Products as Promising Therapeutics for Pancreatic Cancer Treatment”
- \* Scott G. Franzblau; University of Illinois at Chicago, Department of Medicinal Chemistry and Pharmacognosy Director, Institute for Tuberculosis Research; “Natural product-based drug discovery for tuberculosis“

Symposia #4 - Issues in Botanicals,

- \* Diane Birt, Iowa State University, College of Human Sciences/ Agriculture and Life Sciences; “Using diversity in Echinacea, Hypericum and Prunella to understand and enhance potential health benefits”
- \* De-an Guo, Shanghai Institute of Materia Medica, Chinese Academy of Sciences; “Recent Research Progress in Traditional Chinese Medicine”

Symposia #5 - Natural Products: Ecological Roles and Tritrophic Interactions,

- \* James Tumlinson, Penn State, College of Agricultural Science, Ralph O. Mumma Professor of Entomology, Director, Center for Chemical Ecology; “ “
- \* Juergen Gross [bio], Julius Kuhn Institute; ”Drugs for Bugs: The potential of infochemicals mediating insect-plant-microbe interactions for (phyto)medical purposes”

Symposia #6 - Bioassays and Targets,

- \* Susan Mooberry, UT Health Science Center, Pharmacology; “Mitosis, the Great Divide: The value of Cell-based Screens to Identify Tubulin-disrupting Antimitotics”
- \* Hendrik Luesch, University of Florida, Chemistry; “Global and Targeted Approaches to Determine Bioactivities and Mechanisms of Action”

Symposia #7 - Metabolism and Metabolomics,

- \* Anne Osborne, John Innis Center, UK; “Operon-like Gene

Clusters for Adaptive Evolution in Plants”

- \* Eve Wurtele, Iowa State University; “Searching the Transcriptomic and Metabolomic Space to Decipher Metabolism and its Regulation: Focus on Complex Polyketides in Medicinal Plants”

Symposia #8 - Metabolic Engineering and Biotechnology,

- \* Wendy Kelly, Georgia Tech University, Chemistry; “Thio-strepton: a Model System for Thiopeptide Antibiotic Biosynthesis”
- \* Eric Schmidt, University of Utah, Molecular Biology; “Supply and Genetic Modification of ‘Symbiotic’ Natural Products”

#### Short Course

Development and Validation of Analytical Methods for Dietary Supplements

This one-day course is designed for those who perform, supervise, manage, audit, or oversee the validation of analytical methods for the quality control of Dietary Supplements. This includes, but is not limited to, students and professionals in Analytical Development, Quality Control, and Quality Assurance. The course will benefit any persons who find method validation and/or the evaluation of analytical methods among their responsibilities.

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