PSNA News

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

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From the President: November 2013

Fred Stevens

It is my pleasure to write this letter as the new president of the Phytochemical Society of North America. First of all, I would like to thank Toni Kutchan and Cecilia McIntosh for their service as PSNA presidents and their help with preparing me for the coming year. A year is not a lot for making significant changes and launch new initiatives. That is why the society is actually led by a triumvirate consisting of the president, the immediate past president (Toni Kutchan) and the president-elect (Franck Dayan). The three of us will continue the tradition of the society and keep it vibrant for the future. I believe one of the best tools to achieve this goal is the Annual Meeting. The first PSNA meeting that I attended, as a postdoc from the Netherlands, was at Washington State University in Pullman in 1998. What struck me at that meeting was the camaraderie among the members and the easy way students and faculty interacted with each other. We have been able to keep that pleasant, informal atmosphere at the Annual Meetings while providing ample opportunities for students and faculty members to learn from each other and from top experts in the field of phytochemistry in its broadest sense. We define this very diverse field by what we investigate and publish, what we believe is the publication standard, what we teach in the classroom, and how we communicate with colleagues and with the public. Our society plays an important role in the future of phytochemistry, plant biochemistry, and plant molecular biology, and that is why meeting once a year is important.

The 2013 Annual Meeting was held on the campus of Oregon State University. As Chair of the Organizing Committee, I would like to thank the following committee members for making this meeting a success: Claudia Maier, Phil Proteau, Mark Berhow, Mark Bernards, David Gang, Meg Haggitt, Allison Heskes, Reinhard Jetter, Toni Kutchan, Cecilia McIntosh, Diana Roopchand and Deyu Xie. Over 120 registrants from 25 academic and other research institutions from 12 countries actively participated in the meeting by presenting talks or posters. The meeting was broken up into six symposia, each with two invited speakers and 5-6 speakers selected from the abstract submissions. By adding two more talks on Sunday and Tuesday, we were able to accommodate almost all requests for speaker slots. Many speaker slots were filled by early career researchers, students and young faculty members, which bodes well for the future of our society. I would like to express my thanks to all participants for making this meeting a memorable and positive experience. The program and abstract book is still available on the PSNA website. (… continues on page 3)

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The web PDF version can be downloaded from the website: www.psna-online.org.

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December 2012

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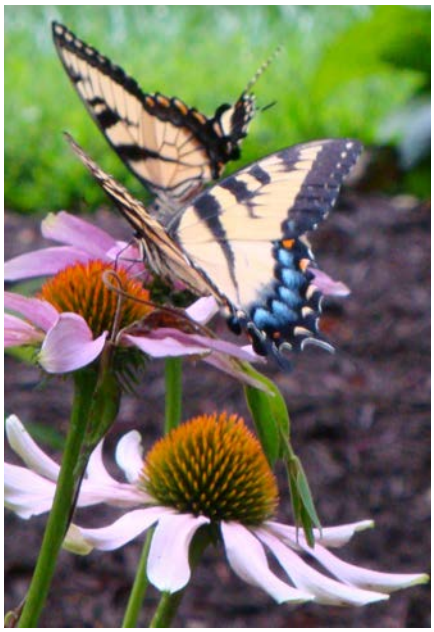

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The Phytochemical Society of North America

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.psna-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 continues from page 1)
Our society recognizes the accomplishments of young and early-career phytochemists. Our most prestigious award for early-career phytochemists and plant molecular biochemists is the Elsevier/*Phytochemistry* Young Investigator Award, sponsored by Elsevier. It will be awarded again in 2014 to an individual who has exhibited exceptional creativity in and dedication to the field of phytochemistry, plant biochemistry, or plant molecular biology. The recipient will receive $10,000 for proposed research and up to $2,000 for travel and lodging to present a lecture at the 2015 PSNA meeting. The recipient will receive half of the prize money at the 2014 PSNA meeting and half upon submission of a substantive and original review paper to *Phytochemistry*. I encourage PSNA members to nominate candidates and eligible candidates to submit applications to the Chair of the Awards Committee, Dr. David Gang, at gangd@wsu.edu. Eligibility criteria and instructions to apply are available on the society's website at www.psna-online.org.

I would also like to draw our young members' attention to the Arthur C. Neish Young Investigator Award. This award was named after Dr. Arthur Neish who pioneered in elucidating biosynthetic pathways using radiolabeled precursors. He was a great mentor for young phytochemists. I encourage PSNA members to nominate deserving candidates for this award. More information on eligibility criteria and instructions for submitting nomination packages can be found on the society's website. Recipients of the 2014 Award will be invited to speak at the upcoming annual meeting in North Carolina. At the Corvallis meeting, three outstanding young investigators received the award and gave equally outstanding talks in a special symposium in honor of Dr. Neish.

Although PSNA membership has improved over the past several years, it still needs the attention of all PSNA members, not just the executive officers. I invite all of you PSNA members to send me ideas and proposals for strategic initiatives that benefit the membership. I am sure that at least a few technology-savvy members have ideas about how to improve the website. Does the format and choice of symposia at our annual meetings appeal to all members? How can we increase funds for student and postdoc travel stipends? Should we shorten the annual meetings by eliminating the field trip, allowing us to make conference participation more affordable? Proposals should include your contact information, a brief statement of your idea (one-half page maximum), a timeline and what your idea will cost. Please send your idea directly to me at fred.stevens@oregonstate.edu and write "PSNA idea" in the subject line. I look forward to your input! The executive committee will discuss all serious proposals.

Save the date! The 53rd Meeting of the PSNA will be held on the campus of North Carolina State University in Raleigh on August 9-14. Check www.psna-online.org for updates on the program and how to participate. I hope to see many of you in Raleigh next summer!

PSNA Executive Meeting Notes August 3, 2013

Eric Johnson, PSNA Secretary

Elsevier presentation and discussion. Natalie Steffen, from Elsevier, encouraged the submission of reviews for Phytochemistry, because they bring the highest citations and improve the impact factor. Journal articles listing phytochemistry as a keyword have grown steadily in the last decade. It was proposed that the winner of the Biennial Phytochemistry Award should be required to submit a review article of his/her choice to Phytochemistry.

Publications. The editor of Recent Advances in Phytochemistry (RAP) will invite authors to submit articles based on their presentations at the 2013 annual meeting. The contract for RAP will soon be needing renewal. It would be of benefit to have a journal sponsored by PSNA that would not lessen the impact of Phytochemistry- perhaps focusing on «omics" approaches to phytochemistry. Lloyd Sumner could be potentially recruited to help start the new journal.

Election. Almost 200 members voted. Franck Dayan will assume the office of PSNA President-elect.

Financial report. Total assets of the society are approximately $80,000. PSNA needs to submit its tax status to the IRS on an annual basis.

2012 and 2013 meetings: Both budgets are in the black. Many thanks go to Fred Stevens who solicited a number of commercial sponsors for the 2013 meeting. It was agreed to keep low registration costs for future meetings to continue attracting postdocs and graduate students.

The website needs input for jobs, and notices for meetings; perhaps more Social media technologies could be incorporated.

Newsletter: It was suggested that Aimee Eggler (or other PSNA award winners and pioneers) could write a short review of her research for the newsletter. Check ASP newsletter for ideas. Toni Kutchan offered to write an article about open access. It was noted that Phytochemistry runs an advertisement about PSNA every other month. It was suggested to publish the 2014-meeting flyer as broadly as possible.

Future meetings discussion: The 2014 meeting website will be www.psna2014.com. Possible 2015 meeting sites were discussed: joining PSA in Colorado, East Tennessee State University, and the University of Illinois. No decision was reached.

2013 Annual Meeting of the PSNA

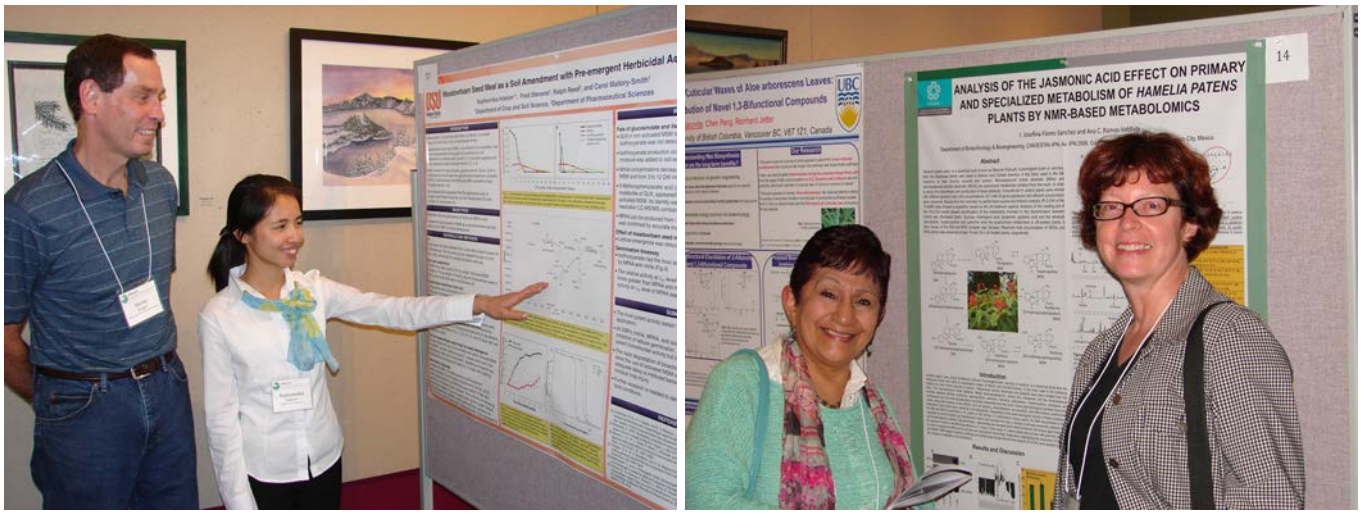
Oregon State University, Corvallis, Oregon

August 3-7

by Fred Stevens
Photographs: Ralph Reed and Mark Berhow.

The 2013 meeting of the PSNA was hosted by Oregon State University. As in previous years, the scientific program reflected our society's mission, with symposia focused on natural product biosynthesis and plant metabolism, plant metabolomics, bioproducts and biofuels, botanicals and medicinals, and on the role of phytochemicals in the interaction between plants and their environment. Each symposium featured two invited speakers who are leaders in their respective fields. The program had 47 talks and 63 poster presentations. The enormous diversity at this meeting was exemplified by the 120 registrants who represented well over 25 academic and other research institutions from no less than 12 countries.

The meeting offered special sessions dedicated to young scientists at the undergraduate, graduate and postdoctoral levels. On Sunday, August 4, Elsevier hosted a lunch workshop on how to get published in the scientific literature. In addition to the more than 30 young PSNA members at the meeting, this workshop was attended by about 20 Oregon State University students and postdocs. The Arthur Neish Young Investigator Award Symposium was scheduled for Monday morning, August 5. In this symposium, our society honored three talented young scientists who presented their scholarly accomplishments. They were Diana Roopchand of Rutgers University, Dejan Nikolić of the University of Illinois at Chicago, and Daniel Vassão of the Max Planck Institute for Chemical Ecology in Jena, Germany. Diana Roopchand presented the anti-hyperglycemic activities of grape polyphenols adsorbed to soy proteins. In this complexed form, grape polyphenols are chemically more stable and more palatable than grape pomace, a byproduct of the wine industry. Dejan Nikolić presented his progress on the identification of alkaloids from black cohosh (*Cimicifuga racemosa*), a popular dietary supplement for relief of menopausal symptoms. By using state-of-the-art mass spectrometry and NMR techniques, he identified



Sunday poster session. Left: OSU graduate student Suphannika Intanon shows Steven Vaughn her latest results on the herbicidal activity of meadowfoam seedmeal. Right: Women in Science. Ana Ramos-Valdivia (left) and Claudia Maier (right) discuss spectroscopic techniques for plant metabolomics.

almost a hundred known and novel natural products. Daniel Vassão focused his lecture on the toxicity and detoxification of glucosinolate breakdown products from Brassicales species and benzoxazinoids from grasses such as corn. Congratulations to all three Arthur Neish Award recipients!

Congratulations to Arthur Neish Young Investigator Award recipients: Daniel Vassão (second from left), Dejan Nikolić (center), and Diana Roopchand (second from right). Argelia Lorence (left) and Fred Stevens (right) presented the awards on behalf of the society.

The 2012-2013 PSNA/Elsevier Award Lecture was delivered by Professor Aimee Eggler on Tuesday just before the banquet. She presented a detailed molecular mechanism for how electrophilic phytochemicals, such as sulforaphane from broccoli and other Brassicaceae, induce the Keap1-Nrf2 pathway which is important in cancer chemoprevention. She demonstrated that covalent modification of cysteine at position 151 in Keap1, by sulforaphane, downregulates Nrf2 ubiquitination and degradation. With this finding, she solved a puzzle that kept the scientific community busy for several years. Congratulations to Aimee Eggler!

The first symposium, focused on biosynthesis and metabolism, had two invited speakers and five speakers selected from the abstract submission. Professor Joerg Bohlmann of the University of British Columbia presented his group's progress on the molecular characterization of terpenoid synthases and cytochrome P450s that are involved in the complex biosynthesis of diterpenes in conifers. The second invited speaker in this symposium was Professor Harro Bouwmeester of Wageningen University, The Netherlands. His lecture was focused on a newly identified group of plant hormones, i.e., strigolactones, which play an important role in the regulation of shoot branching and root architecture. Five selected speakers completed this symposium: Susan Howat of the University of Edinburgh, UK; Zerihun Demissie and Mariana Galata of the University of British Columbia, Kelowna; Matthew Kilgore of the Donald Danforth Plant Science Center in St. Louis; and Professor Umezawa of Kyoto University, Japan.

Professor Jim Tumlinson of Pennsylvania State University delivered an invited lecture in the second symposium, entitled "Interaction of Phytochemicals and Insects". Many PSNA members are familiar with Jim's work: he pioneered in the identification of volatile organic compounds that mediate insect-insect communication and insect-plant interactions and how this fundamen-

tal knowledge can be applied in environmentally safe and sustainable pest management programs. He presented his group's progress on how plants, when attacked by insect herbivores, attract natural enemies of the herbivores by emitting volatile organic compounds. Professor Vojislava Grbic of the University of Western Ontario, London, presented her work on the interaction between *Arabidopsis* and the spider mites. Using genome-wide transcriptome profiling, her group discovered that spider mite attack induces jasmonic acid signaling leading to indole glucosinolate accumulation in *Arabidopsis*, while the spider mites responded by increasing transcript levels of genes involved in glucosinolate detoxification. Dr. Eric Johnson, researcher at the National Center for Agricultural Utilization Research in Peoria, Illinois, demonstrated that transgenic expression of ribosome-inactivating protein and wheat germ agglutinin in maize provided resistance to fall armyworm and corn earworm. Matthew Crispin of Iowa State University, and Kathryn Storey and Lucas Busta of the University of British Columbia, Vancouver, presented their work on the biosynthesis of acylphloroglucinols, gibberellins, diterpenes, and cuticular wax compounds using state-of-the-art molecular and spectroscopic techniques. Professor Shivakumar Devaiah of East Tennessee State University and Mehran Dastmalchi, who provided an update on his work on subcellular localization of chalcone isomerase, closed this symposium.

Professor Wolfram Weckwerth of the University of Vienna, Austria, was the first speaker in the symposium on plant metabolomics. A pioneer in the field, Wolfram reported the results of a large grassland study called the "Jena-experiment" in which his group integrated genomics, proteomics, and metabolomics data to establish a predictive model for the study of genotype-phenotype relationships. He also presented an integrated platform for the automatic identification of phytochemicals using GC-MS and LC-MS data.

Wolfram Weckwerth entertains the audience.

Another expert in the field of plant genomics and metabolomics, Professor Vladimir Shulaev of the University of North Texas presented his group's work on the discovery of biosynthetic and regulatory genes involved in the biosynthesis and metabolism of flavonoids in woodland strawberry, *Fragaria vesca*. Professor Markus Lange of Washington State University guided the audience through his online "Spektraris" metabolomics tool for rapid identification of plant natural products. Professor Reinhard Jetter of the University of British Columbia, Vancouver, showed exciting data from a new Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS) instrument which makes it possible to directly map surface composition of plant leaves. Doralyn Dalisay of Washington State University, Mark Sumarah of the Southern Crop Protection and Food Research Centre in London, Ontario, and Michael Qian of Oregon State University concluded the plant metabolomics symposium.

The fourth symposium was focused on bioproducts and biofuels. Dr. Steven Vaughn of the National Center of Agricultural Utilization Research in Peoria, Illinois, outlined the various projects in his institute: novel sophorolipids from yeast as natural emulsifiers for organic pesticides, seedmeals from biofuel processing as organic fertilizers, and absorbants from modified dried distiller grains for use as cat litter. Professor Lam of Rutgers University made a case for duckweed as a viable feedstock for fuel and feed production. Duckweed aquaculture also holds promise for remediation of wastewater from agriculture or municipalities. The selected talks in this symposium highlighted research progress in biofuels and bioproducts from the oilseed crop camelina (De-Yu Xie, North Carolina State University, Raleigh), poplar (Drs. Kim and Marques, Washington State University, Pullman), *Leptospermum scoparium* (Daniel Owens, USDA, University, Mississippi), and from glycyrrhizin-producing transgenic plants (Toshiya Muranaka, Osaka University, Japan).

In the fifth symposium on botanicals and medicinals, Professor Nadja Cech of the University of North Carolina, Greensboro, presented novel methodology to study synergistic effects of phytochemicals in complex plant extracts. Using goldenseal (*Hydrastis canadensis*) as proof of principle, she explained how the new approach termed "synergy-directed fractionation" works.

In the second invited talk, Professor Claus Schneider of Vanderbilt University provided a plausible explanation as to why curcumin exerts a wide spectrum of pharmacological effects despite its poor bioavailability. He identified several cyclization products of oxidized curcumin with surprising biological effects. Other

Session Chair John Arnason introduces Nadja Cech.

Nicole Clay on the plant innate immune system.

botanicals discussed in this symposium were *Jatropha isabelli* as a source of antimalarial therapeutics (Fatima Rivas, St. Jude Children's Hospital, Memphis, Tennessee), Javanese ginger as a source of neurotrophic compounds (Yoshiyasu Fukuyama, Tokushima Bunri University, Japan), hops as a source of prenylated flavonoids for treatment of metabolic syndrome (Jay Kirkwood, Oregon State University, Corvallis), the Maya medicinal plant Ik Che as a source of antifungal saponins (Chieu Anh Ta, University of Ottawa, Canada), and rosemary as a source of anticancer diterpenes (Jeremy Johnson, University of Illinois at Chicago).

synthesis and its regulation at the molecular level. He also discussed the complex ecological roles of tannins beyond plant defense. Professor Nicole Clay of Yale University provided an overview of the plant innate immune system. Plants respond to pathogen or microbe attack by deposition of the glucan polymer callose and lignin at the site of attack. Her group found that the callose immune response is triggered by the production of 4-methoxy-indol-3-ylmethylglucosinolate in *Arabidopsis thaliana*.

Other talks in this symposium were focused on hairy roots as a model to investigate the role of suberin in soybean resistance to *Phytophthora sojae* (Mark Bernards of the University of Western Ontario, London), wound healing in potatoes (Keyvan Dastmalchi, The City University of New York), salicylic acid signaling in *Arabidopsis* (Dhirendra Kumar, University of Saskatchewan, Saskatoon, Canada). Katherine Lisko (Arkansas State University) delivered the last talk on engineering vitamin C content in rice to improve abiotic stress tolerance.

After a brief recess, the Awards Committee announced the best Oral Presentation Award winners: Lucas Busta (University of British Columbia, Vancouver) and Katherine Lisko (Arkansas State University).

Critical looks from the audience.

In the sixth and final symposium, the spotlight was on phytochemicals in the interaction between plants and their environment. Professor Peter Constabel of the University of Victoria, Canada, presented his group's research on condensed tannin biosynthesis and its regulation at the molecular level. He also discussed the complex ecological roles of tannins beyond plant defense. Professor Nicole Clay of Yale University provided an overview of the plant innate immune system. Plants respond to pathogen or microbe attack by deposition of the glucan polymer callose and lignin at the site of attack. Her group found that the callose immune response is triggered by the production of 4-methoxy-indol-3-ylmethylglucosinolate in *Arabidopsis thaliana*.

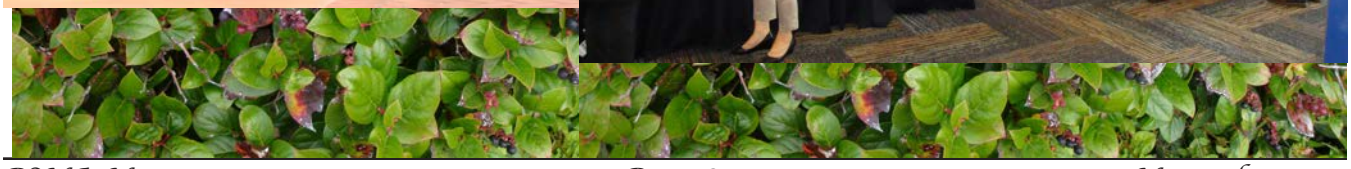
Other talks in this symposium were focused on hairy roots as a model to investigate the role of suberin in soybean resistance to *Phytophthora sojae* (Mark Bernards of the University of Western Ontario, London), wound healing in potatoes (Keyvan Dastmalchi, The City University of New York), salicylic acid signaling in *Arabidopsis* (Dhirendra Kumar, University, Johnson City), and on the interaction of cruciferous phytoalexins and glucosinolates with fungal pathogens (Soledade Pedras,

Best Oral Presentation Award winners: Katherine Lisko (left) and Lucas Busta (center). Argelia Lorence presented the awards on behalf of the PSNA.

Travel Award (in alphabetical order)
Danda Chapagai, East Tennessee State University
Mehran Dastmalchi, University of Western Ontario
Zerihun Demissie, University of British Columbia, Kelowna
Mariana Galata, University of British Columbia, Kelowna
Susan Howat, The University of Edinburgh
Alvaro Luna, University of British Columbia, Vancouver
Neelesh Kumar Nema, Jadavpur University, Kolkata, India
Ileana Vera-Reyes , CINVESTAV Zacatenco, México

Best Poster Presentation Award
William R. Chezem, Yale University

Thanks to Argelia Lorence and her team for taking care of the judging duties.



2012-2013 Elsevier/ Phytochemistry Young Investigator Award Lecture

Aimee Eggler, Ph.D.
Assistant Professor
Department of Chemistry
Villanova University
Villanova, Pennsylvania

Aimee Eggler received her B.S. in Chemistry with highest honors from the University of California at Santa Cruz in 1996 and her Ph.D. in Biochemistry from the University of Wisconsin, Madison in 2002. Dr. Eggler began studies on phytochemical activation of the Nrf2 transcription factor in 2003 during postdoctoral training with Dr. Andrew Mesecar in the Department of Medicinal Chemistry and Pharmacognosy at the University of Illinois-Chicago. Nrf2 activation leads to increased levels of numerous proteins that defend cells against oxidative and electrophilic stresses, resulting in protection of higher organisms from chronic diseases such as cancer and neurodegenerative diseases. Dr. Eggler continued studies of the mechanisms of Nrf2 activation as an Assistant Research Professor first at UIC and subsequently at Purdue University, and in 2012 she joined the Chemistry Department at Villanova University as an Assistant Professor. Her group's current research interests are in both the molecular and cellular mechanisms of Nrf2 activation by phytochemicals, including synergistic activation of Nrf2 by combinations of phytochemicals and the role of reactive oxygen species.

Arthur Neish Young Investigator Award Symposium

Diana Roopchand, Ph.D.
Faculty Research Assistant
Rutgers University

Diana Roopchand earned her PhD in Biochemistry from McGill University (2005) and recently completed a NIH T32 Postdoctoral Fellowship with the Pennington-LSU-Rutgers NIH Center on Botanical Approaches to Combat Metabolic Syndrome (2009-2012) prior to being promoted to her current position as faculty Research Assistant. In addition, she has four and a half years of experience in the pharmaceutical and dietary supplement industries. Dr. Roopchand's cross-disciplinary academic research experience spans the areas of metabolic syndrome, type-two diabetes, cell cycle and cancer biology. Her research at Rutgers University is focused on dietary phytochemicals and addresses both fundamental and applied research questions relevant to nutrition, food and human health.

Dejan Nikolić, Ph.D.
Research Assistant Professor
Department of Medicinal Chemistry and Pharmacognosy
University of Illinois at Chicago

Dejan Nikolic received his BS in Pharmacy from University of Belgrade, Serbia and PhD degree in Medicinal Chemistry from University of Illinois at Chicago working on the development of new technique for screening combinatorial libraries and natural products extracts for ligands to target receptors. He then joined the UIC/NIH Center for Botanical Dietary Supplements Research where he is currently in charge of daily operations of the Analytical Core that provides analytical support for all Center Projects. In his research he uses modern LC-MS and LC-MS-MS approaches to address challenging problems in phytochemical research. His interests include structure elucidation of natural products, determination of ADME properties of active plant ingredients as well as development of new assays for drug discovery from plant sources. He is also interested in the development and validation of modern UHPLC MS-MS methods for quantitative analysis of active ingredients both in plant extracts and in clinical

specimens in support of Phase I and Phase II clinical trials. His research is currently focused on the structure elucidation and biological activities of alkaloids and other nitrogenous compounds from black cohosh and on the development of new analytical methods for identification and quantitative analysis of pyrrolizidine alkaloids in various matrices. He has authored and co-authored more than 70 publications and is currently an Associated Editor of an open-access journal Natural Products Against Cancer.

Daniel G. Vassão, Ph.D.

Project Leader (Group: Detoxification & Mode of Action)
Department of Biochemistry
Max Planck Institute for Chemical Ecology

Daniel G. Vassão received his B.Sc. in Chemistry (2001) from the University of São Paulo, and Ph.D. in Biochemistry (2008) from Washington State University. As an undergraduate in Brazil, he gained his first contact with Natural Products Chemistry while spending 3 years in the laboratory of Prof. Massuo J. Kato. During his doctoral studies under the supervision of Prof. Norman G. Lewis, Daniel studied the Chemistry and Enzymology of the biosynthesis of plant phenylpropanoids. After a short postdoctoral stay at WSU, in 2010 Daniel joined the group of Prof. Jonathan Gershenzon at the Max Planck Institute for Chemical Ecology in Jena, Germany, where in 2011 he became leader of a research group. The current research in his group is focused on the interaction between plant defensive compounds and insect herbivores, specifically on chemical and biochemical aspects of metabolism, detoxification, and toxicology of these plant chemicals. His group uses isotope labeling, enzymology, in vivo bioassays, transcriptomic and proteomic techniques to examine how insects biochemically process compounds such as glucosinolates and benzoxazinoids, and how these phytochemical defenses exert their toxic effects.

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NC STATE UNIVERSITY

Office of Professional Development

Save the Date!

Phytochemical Society of North America
53rd Annual Conference

August 9-13, 2014

McKimmon Conference and Training Center

North Carolina State University

Raleigh, NC USA

For more information, please contact:

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

New Member Application Form

Please fill in the following application and return to the Treasurer with your dues payment. Once your application has been processed, you will receive newsletters and special mailings. You are also eligible for PSNA member discounts on the Recent Advances in Phytochemistry series (See Website).

Payments should be made by one of the following: check drawn on a US checking account, US travelers check, or US money order, International Money Order, Credit Card on the PSNA Website or Paypal payment to psnatreasurer@yahoo.com . Please make check or money order payable to the Phytochemical Society of North America.

We would appreciate it if you would also enter your contact information for the PSNA membership at: http://psna.uhhconferencecenter.com/?page_id=878

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