

# PPWS News

Plant Pathology, Physiology, and Weed Science

[www.ppws.vt.edu](http://www.ppws.vt.edu)

2014

## Greetings!

Welcome to the annual newsletter from the Department of Plant Pathology, Physiology, and Weed Science.

This year we had the first external review of departmental activities since 2007. I am very proud of the many successes that this group of accomplished faculty, staff, and students has had. After completing a strategic planning process, the department has implemented a new hiring plan and conducted two faculty searches; one in the college plant genomics cluster, and a weed science Extension specialist position. In fall 2013, we welcomed to the department a new faculty member, Hillary Mehl, who is a plant pathologist at the Tidewater Agricultural Research and Extension Center. Be sure to check our website for updates on these positions at [www.ppws.vt.edu](http://www.ppws.vt.edu).

Following Henry Wilson's retirement this spring, we were pleased to honor him as an emeritus professor of weed science. John Willis and Jia Li were the deserving recipients of our annual outstanding alumni awards and former faculty member Carole Cramer was inducted into the departmental hall of fame. We also congratulated eight recent graduates of our department in the 2013-14 academic year.

Special faculty accomplishments this year include the recognition of David Schmale as one of Popular Science magazine's Brilliant Ten and the election of John Jelesko as a fellow of the American Association for the Advancement of Science. Additionally, Boris Vinatzer's PLoS ONE publication about a proposal for a novel method of classifying organisms based on genomic sequences has generated considerable commentary around the world.

Please read further to view the many other awards, recognitions, and accomplishments of the members of our department. And please remember to share with us your activities in the upcoming year.

Sincerely,  
Elizabeth Grabau



*Elizabeth Grabau*  
Department head

## PPWS Awards

### Arthur J. Webber Graduate Student of the Year Award

**Larissa Smith**, a Ph.D. student, was recognized as the 2014 Arthur J. Webber Graduate Student of the Year. Smith is an excellent role model for students within and outside of the department. While pursuing her Ph.D. in weed science, she organized the department's annual AREC-Ag Industry tour in 2013, has been an active member and officer in the departmental Graduate Student Organization, and was selected to serve on the search committee for the new weed science Extension faculty position. She has also served as a teaching assistant for three courses. She is the first author on six publications and co-author on one book chapter.



*Larissa Smith accepting the Arthur J. Webber Award from last year's awardee Gunjune Kim.*

Note: Please update your information at the Alumni Association website at [www.alumni.vt.edu/gateway](http://www.alumni.vt.edu/gateway) (select "View and Update Your Profile").

## John Jelesko named American Association for the Advancement of Science fellow

**John Jelesko**, associate professor, has been named a Fellow of the American Association for the Advancement of Science. Jelesko was given the association's highest honor for his distinguished contributions to the field of plant specialized metabolism, particularly in how master regulatory loci and alkaloid-specific transport processes regulate alkaloid accumulation levels. Jelesko was among 388 members honored in a ceremony on Saturday, Feb. 15, 2014, at the American Association of the Advancement of Science Fellows Forum during the organization's annual meeting in Chicago.

Prior to the event in February, Fellows were named in the News & Notes section of the November 29 issue of the journal *Science*. You can read more about Jelesko's nomination in a Virginia Tech News story.



*Associate professor John Jelesko congratulated as an AAAS Fellow by Phillip Sharp, AAAS President.*

### More news stories about PPWS students and faculty

**Boris Vinatzer** and **David Schmale**, both associate professors, make a weather forecast: Cloudy with a chance of microbes  
<http://news.cals.vt.edu/innovations/2013/07/cloudy-with-a-chance-of-microbes/>.

**David Schmale**, associate professor, participates at TEDx Virginia Tech: <https://www.youtube.com/watch?v=CpXxS0suk9s> and is named by Popular Science one of 2013's Brilliant Ten <http://www.vtnews.vt.edu/articles/2013/09/091713-cals-popscischmale.html>.

**Jacob Barney**, assistant professor, participates in a Virginia coal fields environmental restoration project that builds on its past with an eye to the future <http://www.vtnews.vt.edu/articles/2013/11/111913-cals-powellriver.html>.

### Plant pathologist Hillary Mehl joins PPWS as assistant professor

Plant pathologist **Hillary Mehl** joined PPWS in August 2013 as an assistant professor and Extension specialist. Mehl received her B.S. in botany from Humboldt State and her doctorate in plant pathology from the University of California at Davis. She conducted postdoctoral work on biological control of aflatoxin contamination in field crops as a postdoctoral researcher for the USDA-ARS and then as an assistant research scientist at the University of Arizona. Her current program aims to integrate basic laboratory and applied field research to elucidate interactions between crop plants, their associated pathogen communities, and environmental factors in order to better understand the epidemiology of plant diseases and to develop novel management strategies that will improve food safety and security. As an Extension specialist, her goal is to identify and implement novel, cost-effective, and environmentally sound strategies to prevent or control diseases in field crops and to deliver educational programs responsive to the needs of stakeholders in Virginia and beyond. Mehl's group currently includes a graduate student, Tian Zhou, and technicians Linda Byrd-Masters, Steve Byrum, and Ed Hobbs.



*Hillary Mehl, assistant professor*

## CALS Alumni Awards

**John Willis**, who received his Ph.D. in 2008 in the program of **Shawn Askew**, is a technology development manager for Monsanto at the corporate headquarters in St. Louis, Missouri. Willis was awarded the College of Agriculture and Life Sciences 2014 Outstanding Departmental Recent Alumni Award. John's responsibilities include product development, positioning, support, and marketing for Monsanto's selective chemistry business. Currently, he manages field and greenhouse experiments to refine use patterns and explores new uses for existing products as well as new product evaluation and development. Willis has a cross-functional role where interactions across several groups within Monsanto and outside stakeholders are necessary to support product registration, labeling, and distribution. He has been with Monsanto since his graduation, having sales support and regional technical responsibilities as a weed management technology development representative for Ohio, Indiana, and Kentucky, until he accepted his current role in April 2013.



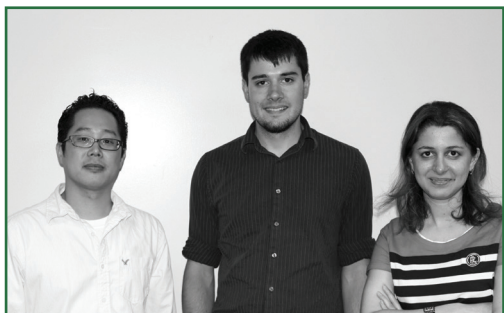
*John Willis and Shawn Askew at CALS award ceremony.*

**Jia Li**, who received his Ph.D. in 1995, is a 1000 Talents Program professor and dean of the School of Life Sciences at Lanzhou University, China. Li was awarded the College of Agriculture and Life Sciences 2014 Outstanding Departmental Alumni Award. After finishing his Ph.D. in **Elizabeth Grabau's** laboratory in 1995, Li joined John Walker's laboratory at the University of Missouri as a postdoctoral fellow, where he worked on plant hormonal signaling pathways. In 2002, Li accepted a position at the University of Oklahoma, where he established himself as an internationally recognized leader in plant biology. Li published a number of papers in several premier research journals such as *Cell*, *PNAS*, *Plant Cell*, *Current Biology*, and *Developmental Cell*. His findings have significantly contributed to a basic understanding of plant development and have practical implications for world agriculture. After earning his tenure from the University of Oklahoma in 2008, he was recruited to a leadership position at Lanzhou University as the dean of the School of Life Sciences. He has been able to recruit a number of outstanding scientists from abroad and has been successful in obtaining support from the university and the government to improve the research infrastructure at Lanzhou University.



*Jia Li and Elizabeth Grabau at CALS award ceremony.*

## Awards, scholarships, and recognitions



*Gunjune Kim, Dan Tekiela, and Delasa Aghamirzaie were the poster competition winners of the second annual PPWS-GSO Research Symposium.*

### Second annual PPWS-GSO research symposium

The PPWS Graduate Student Organization held its second annual research symposium on the Virginia Tech Blacksburg campus on April 16, 2014. The poster competition was judged by PPWS faculty and each winning presenter received a travel award for conference travel. The winners were: **Gunjune Kim**, "Massive exchange of mRNA between a parasitic plant and its hosts"; **Daniel Tekiela**, "Shade induced demographic variation of the invasive plant *Microstegium vimineum*"; and **Delasa Aghamirzaie**, "Changes in RNA splicing in developing soybean (*Glycine max*) embryos." Jeffery Dukes, Ph.D. of Purdue University, was invited as the keynote speaker following the event. Dukes presented his work, which aimed at better understanding the influence that climate change has on weeds and other invasive species, which has implications for crop-production and ecosystem services. This event was a great opportunity to share students' work with PPWS faculty and members of other departments.

*(continued on page 4)*





## Faculty

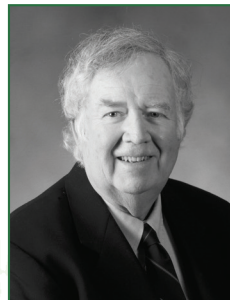
**Jon Eisenback**, professor, received the Service to the Society award from the Society of Nematologists, Knoxville, Tennessee on May 7, 2014.

**Henry Wilson**, professor, was conferred emeritus status on June 2, 2014.

**John Jelesko**, associate professor, was named Fellow of The American Association for the Advancement of Science Chicago, Illinois on February 14, 2014.

**Jim Westwood**, professor, was awarded Honorary Member by the International Parasitic Plant Society Sheffield, U.K., from July 12-15, 2013.

**David Schmale**, associate professor, was named as one of the Brilliant Ten scientists of 2013 by Popular Science magazine on Sept. 17, 2013.



Henry Wilson

## Students

**Delasa Aghamirzaie**, Ph.D. student, received the National Institutes of Health scholarship to attend National Short Course on System Biology, UC-Irvine in January 2014.

**Michael Cox**, Ph.D. student, received the Dave Meyers Virginia Sports Turf Managers Association Graduate Scholarship in Fall 2013, won second place in the graduate student poster contest at the Northeastern Weed Science Society's annual meeting, Baltimore, Maryland, from February 4-7, 2014; and second place in the graduate student paper contest at the Southern Weed Science Society's annual meeting, Birmingham, Alabama, from January 27-30, 2014.

**Gunjune Kim**, Ph.D. student, received the Hugh Carter Laine Graduate Scholarship in Fall 2013, and a travel award to attend the 12th World Congress on Parasitic Plants, where he won second place in the graduate student oral presentation.

**Charlotte Oliver**, M.S. student, won the Graduate Student Research award at the APS Potomac Division's Student Competition, Annapolis, Maryland, from March 12-14, 2014.

**Sandeep Rana**, Ph.D. student, was elected as secretary of the Southern Weed Science Society Graduate Student Association (2014-2015), Birmingham, Alabama from January 27-30, 2014. He also received the Virginia State Golf Association's Graduate Scholarship and the Louis and Ginger Brooking Turf Graduate Student Scholarship, in Spring 2014.

**Dan Tekiela**, Ph.D. student, received the Bruce Perry Graduate Scholarship in Spring 2014.

## Theses and Dissertations

**Michael Cox**, Starkville, Mississippi, Ph.D. 2014, "Characterizing oxadiazon resistance and improving postemergence control programs for goosegrass (*Eleusine indica*) in bermudagrass (*Cynodon* spp.)"

**Devdutta Deb**, Kolkata, India, Ph.D. 2013, "Elucidating essential roles of oomycete effector proteins in immune suppression and in targeting hormonal pathways in the host plant."

**Yihui Fang**, Qianjiang, China, M.S. 2013. "Transcriptional, post-transcriptional, and metabolic reprogramming in developing soybean (*Glycine max*) embryos."

**Kathryn Fiedler**, Ludlow, Massachusetts, Ph.D. 2014. "Integrated approach to understanding tomato sour rot and improving disease management on the Eastern Shore of Virginia."

**Binbin Lin**, Xiamen, Fujian, China, Ph.D. 2013. "Movement and Structure of Atmospheric Populations of *Fusarium*."

**Michelle Moore Price**, Lebanon, Virginia, Ph.D. 2013. "Functional Analysis of Plant Glutamate Receptors."

**Adam Smith**, Wilson, North Carolina, Ph.D. 2014. "Reduced Chemical Weed Control Options in Virginia for Corn and Turfgrass: Characterization of *Sorghum halepense* Expressing Multiple Resistance to Nicosulfuron and Glyphosate."

**Larissa Smith**, Ithaca, New York, Ph.D. 2014. "The Thin Green Line: A Framework for Evaluating the Invasive Potential of Bioenergy Crops."

## Group Awards

Virginia Tech Weed Team A earned second place overall honors at the Southern Weed Science Society contest, on Aug. 7, 2013, in Holly Springs, North Carolina.



## Carole Cramer, Ph.D., inducted to the PPWS Hall of Fame

Carole Cramer was a faculty member of PPWS from 1986 until 2004, when she moved to Arkansas State University to head the Arkansas State University Biosciences Institute. Cramer was not only the first female molecular plant biology faculty member at Virginia Tech, but she was also a pioneer in the biotech startup world and founded Crop Tech Corporation in 1993.

As chief scientific officer of Crop Tech, Cramer headed research on the use of plants to produce human lysosomal enzymes as replacement therapeutics for human lysosomal storage diseases, which recently led to the development of one of the first plant-made pharmaceuticals in human use. To recognize her contributions to PPWS, Virginia Tech, and the biomedical research community at large, Cramer was inducted to the PPWS Hall of Fame on Feb. 20, 2014.

## Faculty and Staff Updates

**Christopher Clarke** joined Jim Westwood's lab as postdoctoral associate in January 2014.

**Dana Danis** joined as departmental grants manager in March 2013.

**Lloyd Hipkins** retired June 2014.

**Xiaoyan "Isaac" Jia** joined as postdoctoral associate in Jim Westwood's lab in January 2014.

**Matt Kasson** resigned July 2014 to accept a faculty position at the University of West Virginia.

**Julie Keating** resigned August 2013.

**Claude Kenley** retired March 2014.

**Hillary Mehl** joined as assistant professor, Tidewater AREC, in August 2013.

**So-Yon Park** joined as senior research associate in April 2014.

**Henry Wilson** retired February 2014.

**Qian Zhang** joined as lab manager in Elizabeth Grabau's lab in September 2013.

## Examples of Recent Publications by PPWS Faculty and Students:



**Jones, A.M., ... G. Pilot, R. Pratelli ... W.B. Frommer** (2014) "Border control – a membrane-linked interactome of Arabidopsis." *Science*. 344(6185): 711-716.

**Barney, J.N., D.R. Tekiela, E. Dollete, B. Tomasek** (2013) "What is the "real" impact of invasive plant species?" *Frontiers in Ecology and the Environment*. 11: 322-329.

**Collakova, E., C. Klumas, H. Suren, E. Myers, L.S. Heath, J.A. Holliday, and R. Grene** (2013) "Evidence for extensive heterotrophic metabolism, antioxidant action, and associated regulatory events during winter hardening in Sitka spruce." *BMC Plant Biology*, 13, 72.

**LeBlanc, M., G. Kim, B. Patel, V. Stromberg, and J. Westwood** (2013) "Quantification of tomato Arabidopsis mobile RNAs trafficking into the parasitic plant *Cuscuta pentagona*." *New Phytologist*. 2013 Dec;200(4):1225-33. doi: 10.1111/nph.12439. Epub 2013 Aug 5.

**Rallos, L.E., N.G. Johnson, D.G. Schmale, A.J. Prussin, and A.B. Baudoin** (2014) "Fitness of *Erysiphe necator* with G143A-based Resistance to Quinone Outside Inhibitors." *Plant Disease. First Look*.

**Smith, A.N., J.B. Willis, and S.D. Askew** (2013) "Absorption and translocation of flazasulfuron applied to shoots and roots of *Lolium perenne* L." *International Turfgrass Society Research Journal*. 12: 685-688.

**Venner, K.A., T. L. Mittlesteadt, and S. D. Askew** (2013) "Improving quality of bermudagrass post-dormancy transition using partial control techniques." *International Turf Society Research Journal* 12:707-711.

**Vinatzer, B.A., C.L. Monteil, C.R. Clarke** (2014) "Harnessing Population Genomics to Understand How Bacterial Pathogens Emerge, Adapt to Crop Hosts, and Disseminate." *Annual Review of Phytopathology* DOI: 10.1146/annurev-phyto-102313-045907.



## Annual AREC–Ag Industry Tour



Faculty and students enjoyed a visit to Machipongo's Chatham Vineyards as part of the 2013 AREC Ag-Industry Tour.



The 2013 annual Agriculture Research and Extension Center – Agriculture Industry Tour focused on many important agricultural commodities across Southeastern Virginia and was organized by Steve Rideout, associate professor, and Larissa Smith, Ph.D. student. Three faculty members and 19 students took part in the annual event. Many other PPWS members played a critical role in showcasing research at the Hampton Roads, Eastern Shores, and Tidewater ARECs.

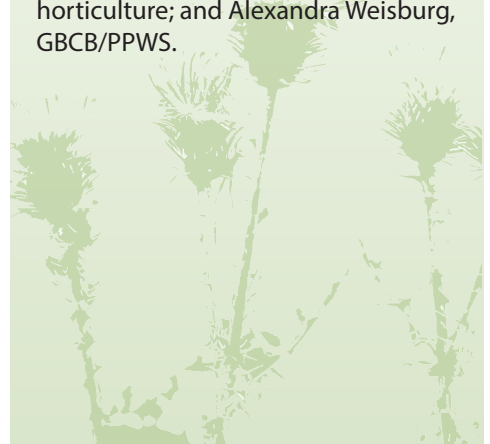
Participants began the trip in Virginia Beach with a visit to the greens at Bayville Golf Club, sharing in a discussion with course superintendent and Virginia Tech alumnus Cutler Robinson. On the Eastern Shore, students and faculty received a behind-the-scenes tour of the Pacific Tomato Growers Packing Facility before heading to Tankard Nurseries and Mattawoman Creek Farms, a 40-acre organic vegetable operation addressing many challenging pest management issues. At Chatham Vineyards in Machipongo, faculty and students sampled a selection of wine grapes while observing the many diseases exacerbated by the rainy summer. The day was capped off with a final stop in the tasting room, where participants were treated to a complimentary wine tasting. Following the tour of the Tidewater AREC, George Birdsong, president of Birdsong Peanut Company, led an in-depth discussion of the of peanut genome project. The tour ended at Montague Farms Grain Terminal in Windsor with a presentation on the production requirements, marketing, and handling of Natto Soybeans.

Thanks to all hosts for making the tour a success!

## Fifth Annual molecular plant sciences mini-symposium

The fifth annual Molecular Plant Sciences Mini-Symposium was held on Feb. 21, 2014. Ninety-five students and faculty from Virginia Tech and other institutions attended a day of world-class research presentations by invited speakers, a graduate student oral presentation competition, and a poster competition.

The invited speakers included Joe Chappell, Ph.D., the University of Kentucky; Carole Cramer, Ph.D., Arkansas State University; and Carol Auer, Ph.D., the University of Connecticut. Graduate students who participated in the oral presentation competition included Phoebe Williams, biochemistry; Hardik Zatakia, biology; Suchi Wu, horticulture; and Alexandra Weisburg, GBCB/PPWS.



## Almost a century of service

**Judy Fielder, Lloyd Hipkins, and Ruth Grene** were honored at a recent university-hosted luncheon in appreciation of their 25-plus years of service to Virginia Tech. Judy is the department's program support technician and has been with Virginia Tech for 35 years. Senior Research Associate Lloyd Hipkins reached his 30 year milestone, and Professor Ruth Grene was recognized for 25 years of service.

*Judy Fielder, Lloyd Hipkins, and Ruth Grene share ninety years of combined service to PPWS and Virginia Tech.*





## Boris Vinatzer proposes a new genome-based classification and naming system for all life

**Boris Vinatzer**, associate professor, has proposed a new way to classify and name organisms based exclusively on their genome sequence, so that scientists can communicate with unprecedented specificity about all life on Earth. In a paper published in the journal PLoS ONE, Vinatzer proposes moving beyond the current biological naming system to one based on the genetic sequence of each individual organism. This creates a more robust, precise, and informative name for any organism, be it a bacterium, fungus, plant, or animal. Vinatzer suggests that the new model of classification not only crystallizes the way we identify organisms, but also enhances and adds depth to the naming convention developed by the godfather of biological classification, Carl Linnaeus.

You can read more about Boris Vinatzer's new naming system in a Virginia Tech News story or in the PLoS ONE publication.

## Elizabeth Grabau is among U.S., Chinese scientists discussing risk management to enhance trade of genetically modified products

**Elizabeth Grabau**, professor and department head, and Eric Hallerman, professor of fish and wildlife conservation in the College of Natural Resources and Environment, received a grant from the USDA Foreign Agriculture Service to expand the skills of leading Chinese researchers engaged in regulatory assessment of new biotechnology products; provide a better understanding of U.S. trade policies, safety requirements, and science-based regulations; establish contacts between Chinese and U.S. research and policy experts; and foster long-term cooperation on international trade. The two Virginia Tech faculty members traveled to China in October and gave talks at two institutes of the Chinese Academy of Agricultural Sciences. They also met with regulatory affairs officers of the U.S. Embassy and of Chinese subsidiaries of leading biotech companies.



*Yunhe Li, Elizabeth Grabau, Eric Hallerman, and Yusong Wan.*

## PPWS faculty and students give presentations at international conferences

**Maria Balota**, associate professor, visited soybean research programs in China together with colleagues in CSES from Sept. 16-30, 2013.

**Jon Eisenback**, professor, presented a paper at the sixth International Nematology Congress in Capetown, South Africa on May 5, 2014.

**Guillaume Pilot**, assistant professor, was an invited speaker at the Second International Symposium on the Nitrogen Nutrition of Plants, held in Puerto Varas, Chile from Nov. 18-22, 2013.

**David Schmale**, associate professor, spent his sabbatical at the French National Institute of Agricultural Research station in Avignon in the group of Cindy Morris, Ph.D., during Spring 2014. He also attended the Atmospheric Ice Nucleation workshop in Vienna, Austria, from April 26-27, 2014.

**Boris Vinatzer**, associate professor, was an invited speaker at the 13th Conference of Plant Pathogenic Bacteria in Shanghai, China, from June 8-13, 2014.

**Jim Westwood**, professor, and **Gunjune Kim** and **Kristen Clermont**, both graduate students, presented their work at the 12th World Congress on Parasitic Plants in Sheffield, U.K., from July 15-20, 2013. Westwood was also the invited keynote speaker at the workshop, Building a new research alliance to reclaim fava bean production area abandoned to *Orobanche*, in Rabat, Morocco, from October 7-9, 2013.

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## Stay connected with PPWS

We are updating our alumni contact list as we consider future paperless newsletter distribution, which would go directly to your email inbox and improve communication between PPWS and alumni. Please take a moment to complete the survey below or online at:  
<http://tinyurl.com/q2cka75>

What is your last name? \_\_\_\_\_ What is your first name? \_\_\_\_\_

Mailing address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip Code \_\_\_\_\_ Country \_\_\_\_\_

VT PPWS Degree  M.S.  Ph.D.  Did not graduate from Virginia Tech Year graduated \_\_\_\_\_

Employer and employer city address \_\_\_\_\_

Job title \_\_\_\_\_ What is your email address? \_\_\_\_\_

May we add you to our alumni email list?  Yes  No

Which of the following accounts do you have? (Check all that apply)  Facebook  Twitter  LinkedIn  Instagram other: \_\_\_\_\_

How would you like to receive future newsletters and announcements?  Mail  Email/electronically  Both  Do not wish to receive future announcements

If located in Virginia, would you or your company be interested in providing an informative tour of your facility to our students as part of the annual agriculture industry tour held in August?  Yes  No  Maybe

Would you be interested in being a professional mentor or networking contact for current PPWS students and recent graduates?  Yes  No

If you are an alumnus, would you be willing to be a "featured alumnus" on our alumni web page? (currently under development)  Yes  No

Please tell us more about yourself in regard to your personal and professional life. Recent promotion? Marriage or new family member?

Celebrating retirement? etc. \_\_\_\_\_

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