Greetings to our alumni, colleagues, and friends!

We have had a busy year in the Department of Plant Pathology, Physiology, and Weed Science. We are pleased to share an update of our accomplishments with you. In the fall we welcomed new faculty member Dr. Xiaofeng Wang whose research interests include plant virology. We would like to congratulate the graduate students who successfully completed their degrees. We had a total of 12 graduations in the past academic year. In Fall 2012 we debuted a new student-organized mini symposium that now includes a poster competition and travel awards for outstanding graduate students. Our popular Agricultural Research and Extension Center and Ag Industry tour visited the Alson H. Smith, Jr. center in Winchester, the Southern Piedmont AREC in Blackstone, and the Eastern Virginia AREC in Warsaw last fall to provide students a first-hand view of our applied research programs. We were pleased to be able to honor Scott Hagood as an emeritus professor of weed science during this past year. At the annual college alumni awards celebration in March we also recognized two outstanding PPWS alumni, Anne Dorrance and David McCall. As we look ahead to the coming year, we hope to visit with many of you at meetings and conferences. Please keep us informed of your news and accomplishments. We also invite you to stop by the department whenever your travel finds you in the Blacksburg area.

Elizabeth Grabau, department head

CALS Alumni Awards

Anne Dorrance (Ph.D. ’95) is a professor and Extension specialist in the Department of Plant Pathology at The Ohio State University based at the Ohio Agricultural Research and Development Center. Anne was awarded the College of Agriculture and Life Sciences 2013 Outstanding Departmental Alumni Award. Her responsibilities include soybean research and field crop extension where she has focused on identifying and characterizing sources of resistance to soilborne pathogens as well as evaluating management strategies for soybean diseases in reduced and no-till production systems. Anne has developed a nationally recognized research and outreach program on the management of key soybean diseases caused by Phytophthora sojae, Pythium spp., and Phakopsora pachyrhizi. Anne has received several awards including the American Soybean Association Special Meritorious Award and The American Phytopathological Society Excellence in Extension Award.

Note: Please update your information at the Alumni Association website at www.alumni.vt.edu/gateway (select “View and Update Your Profile”).
Gunjune Kim, Ph.D. student, spearheaded the acquisition of a sequencing server (MAGYK) by organizing a consortium of Molecular Plant Sciences graduate students to apply for a grant. He tirelessly provides service to the academic community with advising on all kinds of bioinformatics analysis with a cheerful demeanor. Gunjune has presented his research internationally and has been the recipient of many poster awards as well as the top oral presentation prize at the International Parasitic Plant Society World Congress in Martina Franca, Italy in 2011.

JoAnne N. Ridpath Award in Recognition of Outstanding Staff

Julie Keating, program support technician at the Glade Road Research Center, has been a staff member of the department since 2005. During the past three years she has been a PPWS staff representative to the College of Agriculture and Life Sciences Staff Association. Julie works for two faculty members and has become an invaluable asset to these labs. Currently she is also in charge of the poster printing facility of the department and students appreciate her kindness and helpfulness.

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VT/0713/PPWS-21NP
Allan H. Kates Award in Recognition of Outstanding Service in Extension

Associate Professor Steve Rideout devotes his research program and lab activities to help homeowners, small growers, and large producers with plant disease problems and optimal growing practices. He has a wide breadth of knowledge in vegetable crops and is always willing to do trials on new varieties that may help vegetable producers. With the heightened interest in food security of fresh produce he has expanded his research to include salmonella risk assessment in tomato production systems. He has shown complete commitment to all types of growers throughout Virginia.

R. G. Henderson Award for Outstanding Faculty

Professor Jim Westwood was nominated by several students and faculty colleagues for Outstanding Faculty, an award only given every four years. He has demonstrated excellence in research, teaching, outreach, and service to the department. He leads a very productive research program and has obtained several large collaborative grants in support of sequencing genomes of parasitic plants. He mentors several graduate students who have presented the results of their work at professional conferences and won awards at numerous venues in the past several years. Jim participates in the teaching mission of the department through weed science courses both on campus and through the CALS online MS program. Jim’s international activities include participation in the West Africa Integrated Pest Management in Vegetable Crops Innovation Lab. He has also hosted several international scientists and supported attendance of his students at international conferences. In summary, his performance is exemplary and well balanced across departmental missions.

Molecular Plant Science students unite to develop high performance computational resources

Big Data is presenting life scientists with some challenges and opportunities that are impacting manufacturing, business, intelligence, and other sectors. For example, the emergence of Next Generation Sequencing (NGS) has increased the efficiency of DNA sequencing to the point that the quantity of data from a biological experiment can easily outstrip the capacity of researchers to make sense of it. A single experiment on plant response to pathogen attack can easily sequence a plant’s entire transcriptome many times over, resulting in datasets containing billions of sequences that overwhelm typical research computers. Students of the Molecular Plant Science (MPS) program recognized this problem and have worked together to purchase a shared use computer capable of processing these datasets. MPS students Gunjune Kim, Kevin Fedkenheuer, Michael Fedkenheuer, Alex Weisberg, and Yihui Fang collaborated to obtain $23,340 to purchase a high performance “whole genome sequencing server” computer. The server was installed and setup by fellow students Delasa Aghamirzaie, Neelam Redekar and Curtis Klumas. Yet another group, led by Michelle Price, Megan LeBlanc and Phoebe Williams, organized a workshop for the MPS community to introduce the computer and discuss challenges in sequence assembly. Nearly 50 students and faculty attended the workshop, which was held on April 11 and featured Dr. Roger Barthelson, a genome assembly expert from the iPlant Collaborative at the University of Arizona to provide training. He discussed how the field of plant transcriptome and genome assembly is still in its infancy and how obtaining optimal results hinges on many nuances of data collection and processing. Nearly all labs associated with MPS are dealing with some aspect of NGS data and the new computer will accelerate discoveries in plant biology at Virginia Tech. These efforts will enable the entire VT plant science research community to capitalize on the NGS revolution.
Faculty

John Jelesko, associate professor, was named CIDER “Teacher of the Week”, Virginia Tech, October 21-27, 2012.

Shawn Askew, associate professor, was recognized as the Outstanding Young Weed Scientist at SWSS, Houston, TX, January 28-31, 2013.

Scott Hagood was conferred the title “Professor Emeritus” by the Virginia Tech Board of Visitors. November 5, 2012.

Jon Eisenback, professor, Pat Phipps, emeritus professor, and CALS colleagues David Holshouser and David Moore were recognized with the Certificate of Excellence from the American Society of Agronomy’s annual meeting for the publication of the Soybean Nematode Management Guide. Cincinnati, OH, October 21-24, 2012.

David Schmale, associate professor, was awarded the APS Potomac Division Distinguished Service Award. Shepherdstown, WV, April 3-5, 2013.

Students

Mike Fedkenheuer, Ph.D. student, was recognized by the Graduate School at Virginia Tech as the College of Agriculture and Life Sciences Outstanding Graduate Student of the Year.

Adam Smith, Ph.D. student, Weed Science, was awarded the Virginia Crop Production Association Scholarship.

Dev dutta Deb, Ph.D. student, won a travel award to attend and present at the Oomycete Molecular Genetics Network research conference, Asilomar, CA, March 9-14, 2013.

Michael Cox, Ph.D. student, won 10th Place overall individual, Southern Weed Science Collegiate Weed Contest, Arkansas, August, 2012.

Yihui Fang, Ph.D. student, was awarded the Lawrence Miller/Laurence Moore Graduate Scholarship.

Shelley Moore, Ph.D. student, received the David R. Spence Graduate Tuition Scholarship, Spring 2013.

Michael Cox, Ph.D. student, received the Chester L. and Betty Foy Graduate Scholarship, Fall 2012.

Angela Post, Ph.D. student, received both the Weed Science Society of America and Northeastern Weed Science Society Outstanding Ph.D. student awards, Baltimore, MD, February 4-7, 2013.

Kate Venner, Ph.D. student, won Northeastern Weed Science Society Best Poster Award, Baltimore, MD, February 4-7/2013.

Gunjune Kim, Ph.D. student, won a travel award to attend and present at Weed Science Society of America, Baltimore, MD, February 4-7, 2013.

Dan Tekiela, Ph.D. student, received second place honors for “Best Talk” in the Graduate Student Paper Contest at Northeastern Weed Science Society, Baltimore, MD, February 4-7, 2013.

Larissa Smith, Ph.D. student, won first place in the Northeastern Weed Science Society photo competition, Baltimore, MD, February 4-7, 2013.

Group awards


Virginia Tech Weed Team receives first place at the Northeastern Weed Science Society Collegiate Weed Contest competition.
**Theses and Dissertations**

**Akshay Kakumanu**, (M.S. ’12), “Effects of drought on gene expression in maize reproductive and leaf meristem tissues as revealed by deep sequencing.”


**Lynn Rallos**, Philippines, (Ph.D. ’12), Characterizing resistance of the grapevine powdery mildew Erysiphe necator to fungicides belonging to quinone outside inhibitors and demethylation inhibitors.”

**Stephanie Pollard**, Emporia, Va. (M.S. ’12), “The potential interaction of *Salmonella enterica* and *Ralstonia solanacearum* in tomato plants.”

**Taylor Jones**, Accident, Md. (M.S. ’12), “Documentation of grapevine leafroll-associated viruses in wine grape varieties and native grape species in Virginia, and examination of the movement of grapevine leafroll disease to develop management strategies.”


**Anastasia Naumenko**, St. Petersburg, Russia. (M.S. ’13), “Dissection of innate immunity in tomato and tolerance to bacterial wilt in solanaceae species.”

**Megan McCullough**, Madera, Calif. (Ph. D. ’13), “Characterization of mobile RNA from hosts into *Cuscuta pentagona*.”


**Daljit Singh**, Ludhiana, Punjab, India. (M.S. ’13), “Physiological and metabolic responses to water-deficit and heat stress of Virginia-type peanut cultivars and breeding lines.”


**Binbin Lin**, Xiamen, China (Ph. D. ’13), “Movement and structure of atmospheric population of Fusarium”.

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**PPWS Nematologist Dr. Jon Eisenback hosts workshop**

Jon Eisenback hosted a workshop entitled “New Techniques in Plant Nematology with Emphasis on Root Knot Nematode Identification” on October 16, 2012, for seven students and their supervisor, Dr. Weiman Ye, from the Nematode Assay Section of the North Carolina Department of Agriculture and Consumer Services.

After an introduction to the techniques, Eisenback and the students spent the afternoon in the lab learning and practicing several new techniques for preparing nematodes for light and scanning electron microscopy and gaining familiarity with useful characters for identifying the four most common species of the root-knot nematodes.

Dr. Eisenback is currently the president-elect of the Society of Nematologists and is serving as this year’s Program Chair.

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**Faculty and Staff Updates**

**Verlyn Stromberg**, lab technician, retired December 2012.

**Michelle Sare**, grants manager, resigned April 2013.

**Xiaofeng Wang**, joined PPWS as assistant professor, August 2012.
Annual AREC-Ag Industry Tour

Students and faculty from PPWS and MPS participated in the fourth annual Agricultural Research and Extension Center-Ag Industry Tour in August 2012. Locations this year featured the Shenandoah Valley and Central Virginia.

Participants received behind-the-scenes tours of the Shenandoah Valley Produce Auction in Dayton, Timberville’s Bowman Apple Orchards, Turkey Knob Apples’ distribution plant, and a vineyard and winery tour and tasting at Chateau O’Brien Vineyard in Markham. Staff of Thomas Jefferson’s Monticello estate led a guided walking tour of the historical flower and vegetable gardens. At Virginia State University’s Randolph Farm in Petersburg, the group was provided the opportunity to see numerous native and non-native fruits and vegetables successfully grown in Virginia. Faculty and students also observed tobacco harvesting and processing and participated in field-based disease identification and discussion of the major diseases of tobacco led by Professor Chuck Johnson at Stanley Owens’ tobacco farm in Blairs, VA.

The 2012 tour was organized by Assistant Professor Steve Rideout and Ph.D. student Kathryn Fiedler.

More VT News stories about PPWS students and faculty

Scott Hagood is honored with emeritus status:
http://www.vtnews.vt.edu/articles/2012/11/110712-cals-hagoodemeritus.html

Twin brothers Kevin and Mike Fedkenheuer, both PPWS Ph.D. students, are featured in the following VT News story: “For twin plant pathologists, it all comes down to genetics.” http://www.vtnews.vt.edu/articles/2012/12/122112-fralin-twins.html

Some of Professor Jon Eisenback’s “scientific art” was included in a VT Spotlight on Achievement video, “Agriculture, life sciences researchers examine intersection of art, science.”

Associate Professor Shawn Askew is featured in a VT news article with the title, “New videos help homeowners grow beautiful, environmentally friendly lawns.”
http://www.vtnews.vt.edu/articles/2012/08/081512-ext-turfgrassvideo.html

Fourth Annual MPS Mini Symposium

The Molecular Plant Sciences program at Virginia Tech was initiated in 2004 by a group of enthusiastic molecular plant science faculty members in PPWS, horticulture, crop and soil environmental sciences, biology, and forestry to collectively recruit graduate students and build a strong community of faculty and students to grow molecular plant sciences at Virginia Tech. As part of this program, the fourth annual MPS Mini Symposium was held on February 22. Ninety-two 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. PPWS’s very own Shelley Moore won the graduate oral presentation competition (after having won the poster presentation at last year’s symposium). Congratulations, Shelley!

Shelley Moore presented her work at the 2013 MPS Mini-symposium and won first place at the graduate oral presentation competition.
Innovative Solution to Ensure Biofuel Plants Do Not Become Noxious Weeds

In a recent paper in the journal BioScience, Assistant Professor Barney and colleagues proposed a way to improve and streamline the regulatory methodology for evaluating the invasive potential of plants, especially biofuel feedstock, that are under consideration for large-scale cultivation.

In their article, “Navigating the ‘Noxious’ and ‘Invasive’ Regulatory Landscape: Suggestions for Improved Regulation,” the authors also advocate liability for industry developers who fail to show due diligence in evaluating the potential invasiveness of a new cultivar. This will help take the expense of noxious weed control away from taxpayers while protecting conscientious biofuels developers, some of whom have backed away bioenergy farming for fear of lawsuits from the Environmental Protection Agency. To read more on this topic link to:

http://www.vtnews.vt.edu/articles/2013/03/030613-cals-weeds.html

PPWS faculty and students give presentations at international conferences

Guillaume Pilot and Rejane Pratelli presented their recently published work (Pratelli et al, Plant Physiology, 2012 158: p1628) at two international conferences: the 4th Pan American Plant Membrane Biology Workshop; Asilomar, Calif. and the 3rd Banff Conference on Plant Metabolism, Banff, Canada.

David Schmale gave an invited talk at the Association for Unmanned Vehicle Systems Australia (AUVS-A) meeting in February 2013 in Melbourne, Australia, and an invited seminar in March 2013 at the Queensland University of Technology in Brisbane, Australia. His presentations focused on the use of unmanned aerial vehicles to track biological threat agents in the atmosphere.

John McDowell and two graduate students and two postdocs traveled to the Oomycete Molecular Genetics Network Annual Conference in Nanjing, China in May 2012 to present their work.

Boris Vinatzer and postdoc Christopher Clarke attended the XV International Congress of Molecular Plant-Microbe Interactions in Kyoto, Japan from July 29 to August 2, 2012. Dr. Vinatzer gave an oral presentation and Dr. Clarke presented a poster.

Virologist Xiaofeng Wang joins PPWS as assistant professor

Plant virologist Xiaofeng Wang joined PPWS in August 2012 as assistant professor. Dr. Wang got his bachelor’s and a master’s degree in plant genetics and breeding in China. He completed his Ph.D. training at Michigan State University with a major in genetics, working on host genes involved in genomic replication of Zucchini Yellow Mosaic Virus. After his post-doctoral training at the University of Wisconsin-Madison, he worked for three years at Texas AgriLife Research, Texas A&M University as an assistant professor. His current interests include virus-host interactions and viral RNA replication mechanisms of positive-strand RNA viruses. Dr. Wang’s group currently includes a post-doctoral researcher, Dr. Jiantao Zhang; a graduate student, Jianhui Li; a research specialist, Haijie Liu; and visiting scholars Xiao Yu, and Dr. Zhiyan Du.

Assistant Professor Jacob Barney presents a solution to ensure biofuel plants do not become noxious weeds.

Virologist Xiaofeng Wang joins PPWS as assistant professor in August 2012.
The PPWS-GSO (Graduate Student Organization) held its first research symposium on the Blacksburg campus on October 25, 2012. Dr. Tim Gottwald (USDA-ARS), an American Phytopathological Society fellow, gave the keynote lecture. Dr. Gottwald discussed his work with pathogens that cause disease of citrus fruits. Dr. Gottwald’s lecture was followed by a student poster competition. The poster competition winners each won a grant to be used for conference travel: Michael Cox, Annual Bluegrass Control in Kentucky bluegrass with Amicarbazone; Shi Yu, “Myristoylation of loss of GDU2, a E3 Ubiquitin Ligase, is Important for its Membrane Localization and the Interaction with Glutamine Dumper1”; and Gunjune Kim, “Parasitic Plant Exchanges Wide Range of mRNAs with Hosts.” This event was well received by faculty and students and was a great opportunity to hear about everyone’s work. This will become an annual tradition for PPWS.