John Jelesko and David Haak go mobile with poison ivy research

Associate Professor John Jelesko and Assistant Professor David Haak collaborated in 2016 to use geo-locating smartphone apps to tag poison ivy growth on the Appalachian Trail. In cooperation with Assistant Professor Lynn Ressler from the Virginia Tech Department of Geosciences, the team hopes to better understand poison ivy’s adaptability to various environmental conditions and its neo-invasive tendencies. Details on their summer data collecting adventure can be found at: https://goo.gl/1XxWxb.

Poison ivy headlines, while politics sidelines. The Roanoke Times’s Jul. 27, 2016 lead story featured John Jelesko and David Haak and their research in geomapping poison ivy growth on the Appalachian Trail.

Farm-to-table agriculture and organic farming among the highlights of 2016 AREC-Ag Industry Tour

In August 2016, 21 students and faculty participated in the eighth annual Agricultural Research and Extension Center-Ag Industry Tour. This year’s trip began at the Southern Piedmont Agricultural Research and Extension Center with a tour of labs and fields led by plant pathologist and epidemiologist Professor Chuck Johnson. Participants also visited Double B Farms, site of the 2016 Ag Expo. Assistant Professor Hillary Mehl demonstrated scouting methods and showed participants common diseases found in row crops with help from Virginia Cooperative Extension agent Mike Parrish. Students and faculty also toured Virginia State University’s Randolph Farm and observed current research on high value small-scale farming.

On day two of the tour, participants learned about farm-to-table operations, beginning at the historic Bellair Farm, an 853-acre organic community supported agriculture farm near Charlottesville. Afterwards, participants visited the Local Food Hub in Charlottesville where they toured the cold storage facility and learned about coordination between local farmers and restaurants. The day concluded with a tour and tasting at Gadino Cellars led by the owner Bill Gadino.

The final day of the tour focused on the wine grape and tree fruit industry with visits to the Winchester Ciderworks and the Alson H. Smith Agricultural Research and Extension Center for a discussion of current research on wine grapes and tree fruit led by Assistant Professor Mizuho Nita and Professor Keith Yoder. The group also learned about organic herb production from Shenandoah Growers.

Note: Please update your information at the Alumni Association website at www.alumni.vt.edu/gateway (select “View and Update Your Profile”).
Dear students, staff, faculty, alumni, and friends of the Department of Plant Pathology, Physiology, and Weed Science

It was a real honor to serve PPWS as interim department head for a second year. While the new School of Plant and Environmental Sciences is in our near future, PPWS has continued to grow as a strong community committed to excellence in research, Extension, and teaching/learning. At the same time, we have not forgotten that first of all we are brought together by our common passion for plants and agriculture. Some of us are even fascinated by the nasty life forms that make plants sick.

Enjoy this year’s newsletter and see for yourself.

Go Hokies,

Boris

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Randall Murch leads multi-university project in biomanufacturing security

Beginning September 2016, PPWS Adjunct Professor Randall Murch became the principal investigator for a novel, groundbreaking project titled, “Cyberbiosecurity: Securing the Emerging Domain of Biomanufacturing” for which faculty from the Hume Center at Virginia Tech, the Biological Process Development Facility, the University of Nebraska, Lincoln, and Colorado State University are contributing. Funded by the Department of Defense, this project is the first to identify and characterize vulnerabilities at the interfaces of life sciences, biosecurity, information systems infrastructure, and cybersecurity, and is focused on bioprocess development and biomanufacturing of critical medical products such as vaccines, biotherapeutics, and prophylactics.

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Winning tradition continues at annual Southern Weed Science Society Weed Contest

The weed team placed second at the Southern Weed Science Society annual Weed Contest in Scott, Mississippi held on Aug. 3, 2016. Competing from Virginia Tech were graduate students John Brewer, Sandeep Rana, Shawn Beam, and Kara Pittman. In team competition, the Virginia Tech team placed second. Individually, Sandeep Rana placed third, John Brewer placed fourth, and Shawn Beam placed eighth overall. Coaches were associate professors Shawn Askew, Jacob Barney, and assistant professor Michael Flessner.

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Interim PPWS Department Head Boris Vinatzer grilling at the Memorial Day cookout.
Faculty, students, and staff enjoyed food, fun, and games prior to a 2016 Thursday night Virginia Tech football game.

David McCall named new assistant professor in turf pathology

While David McCall has been a member of PPWS for nearly two decades, he became its newest assistant professor and Extension specialist in December 2016. McCall has served as turfgrass pathologist in a research and Extension appointment since 2008 where his responsibilities included fungicide efficacy evaluations, continuing education of turfgrass professionals, and disease diagnostics through laboratory and on-site assessments. In 2016, McCall successfully concluded his doctoral studies under the direction of Associate Professors Anton Baudoin and Shawn Askew. His work focused on improving the understanding of how turfgrass under stress responds to light. This research has enabled early detection of stress in turfgrass prior to visible changes in the turfgrass.

McCall’s current research includes remote sensing with UAVs (drones) to monitor disease epidemics and water inefficiencies, site-specific precision turf management, novel strategies to reduce pesticide inputs, and fungicide performance, efficacy, and ancillary benefits.

McCall’s lab is housed at the Glade Road Research Facility, but his team conducts field research across the Commonwealth. Most projects are related to practical applications that will have an immediate impact on turfgrass professionals around Virginia. His program works closely on numerous projects with the Virginia Tech Turf Team, including those associated with the programs of Shawn Askew, Jeffrey Derr, as well as Mike Goatley and Erik Ervin of the Department of Crop and Soil Environmental Sciences. McCall and his students are working closely with several industry partners to develop unique methods to reduce pesticide needs through directed chemical applications.

In his spare time, he enjoys camping in Virginia state parks with his wife, Kelley, and their two daughters, Layla and Scarlett.
Jim Westwood’s research discovers parasitic plants are also genetic bandits

In cooperation with biology colleagues at Penn State University, Professor Jim Westwood concluded a study that found 52 occurrences of nonsexual, also known as horizontal, DNA transfer from a host plant to parasitic broomrape plants. The transferred DNA was also shown to become operative in the parasitic broomrape plants. According to Westwood, “We looked at a range of different parasitic plant species and found that those with the greatest level of dependency on their hosts were the ones that stole the most genes.” Data collected from this study should provide insight into future studies regarding how to better manage menacing parasitic plants in agriculture. For the complete Virginia Tech news story, visit: https://goo.gl/kXcvey.

Personnel updates

Jacob Barney promoted to associate professor
Guillaume Pilot promoted to associate professor
David G. Schmaile, III promoted to professor
Boris Vinatzer promoted to professor

Emeritus Professor Henry Wilson passed away January 11, 2017 at his Virginia home. Wilson served for 47 years as a professor of weed science and for 13 years as the director of the Eastern Shore AREC. His obituary is online at: http://www.doughtyfuneralhome.com/sitemaker/sites/Dought1/obit.cgi?user=30599673_DWilson.
Professor David Langston and Nicole Juba, Ph.D., were selected as PPWS honorees at the College of Agriculture and Life Sciences 2017 Alumni Awards Reception. Distinguished Departmental Alumni awardee David Langston earned his doctorate in plant pathology from PPWS in 1998 and is the director of Virginia Tech’s Tidewater Agricultural Research Extension station. In addition to his leadership role, Langston’s research focuses on agricultural crop diseases. Outstanding Recent Graduate Alumni Award recipient Nicole Juba received her doctorate from PPWS in 2011 and is employed as a regulatory affairs manager at Syngenta in Raleigh, North Carolina.

Jacob Barney featured on NPR’s “Pulse Of The Planet”

Associate Professor Jacob Barney was interviewed on the nationally syndicated NPR radio show “Pulse of the Planet.” The three-part invasive plants series was broadcast on March 29, 30, and April 21, 2017, and included a discussion of “potluck kudzu,” a dish prepared by one of his students for an invasive species potluck dinner Barney organized for his class.

“Pulse of the Planet” is a weekday radio series of two-minute mini-stories “tracking the rhythms of nature, culture and science worldwide, blending interviews with extraordinary natural sound”. To download the broadcasts, visit https://www.pulseplanet.com/dailyprogram/.

Thank You

A sincere thank you to our donors who provide valuable support to achieve our mission of training students and generating and disseminating knowledge to the scientific community and public in our three disciplines:

Mason Carter  Roberta Dow  John Sterrett
Judy Trimble  Gail Tomimatsu  Keith Yoder

Newsletter contributors: Jacob Barney, Eva Collakova, Jeffrey Derr, Michael Flessner, Elizabeth Grabau, Mary Ann Hansen, David McCall, Randall Murch, Charlotte Oliver, David Schmale, Cris Thompson, Boris Vinatzer, Xiaofeng Wang

Editors: Boris Vinatzer, Cris Thompson, and Elizabeth Bush
Student awards


Kasia Dinkeloo 1st Place Student Poster Competition, Oomycete Molecular Genetics Network, Pacific Grove California, March 2017.

Rebecca Fletcher 3rd Place Poster Competition, CSES/PPWS Graduate Symposium, February 2017.


Ranjeet Randhawa 1st Place Poster Contest, Southern Weed Science Society Annual Meeting, Birmingham, Alabama, January 2017. Travel Grant, Virginia Tech Graduate Student Assembly Travel Grant Fund, April 2017.


Kayla Varnon and Kaitlyn Posey Each were awarded a $2,000 research grant, Weed Science Society of America Annual Conference, Tuscon, Arizona, February 2017. (undergraduates, J. Barney)

Brock Davis and Katrina Somers Best Oral Presentations, Virginia Tech Undergraduate Research Conference, March 2017. (Undergraduates, D. Schmale)

Theses

Kevin Fedkenheuer, Ph.D. “Molecular Analysis of Oomycete Pathogens to Identify and Translate Novel Resistance Mechanisms to Crops”

Michael Fedkenheuer, Ph.D. “Development of Tools to Analyze Disease Resistance against Oomycete Pathogens”

Jianhui Li, Ph.D. “Cornichon proteins: unexpected roles in plant pathogen infection, ER morphology maintenance and pollen development”

Sandeep Rana, Ph.D. “Influence of Annual Bluegrass on Putting Green Trueness and Control of Weedy Poa Species in Kentucky Bluegrass and Creeping Bentgrass Turf”

Nina Wilson, Ph.D. “Strategies to detoxify the mycotoxin deoxynivalenol and improve food safety in the U.S.”

Anna Benton, M.S. “Effectiveness of Current Boron Application Recommendations and Practices on Peanut (Arachis hypogaea) in the Virginia - Carolina Region”

Alyssa Smith, M.S. “Adaptation of an invasive grass to agriculture: ecological and genomic evidence”
Faculty recognized at the Virginia Turf Council annual meeting

PPWS turf faculty Professor Jeffrey Derr and Assistant Professor David McCall received accolades for their support of the turfgrass industry at the Virginia Turf Council’s annual meeting in Fredricksburg, Virginia, on Jan. 31, 2017.

Jeffrey Derr received the R.D. Cake Memorial Award, which recognizes individuals “who [have] made outstanding contributions to the development of the Virginia turfgrass industry.” Originally named the Silver Tray Award, this award has been given annually since 1962. Derr joins the ranks of previous honorees including former College of Agriculture and Life Sciences Dean Andy Swiger (2000), and former PPWS Department Head Houston B. Couch (1991).

David McCall was honored with the Virginia Turfgrass Council President’s his “distinguished service in promotion of the growth and development of Virginia’s turfgrass industry.”

Congratulations

Congratulations to PPWS alumna and Ohio State University soybean pathology Professor Anne Dorrance who was named a Fellow of the American Phytopathological Society.

Graduate Student Mini-Symposium

The 2016 PPWS Graduate Student Mini-Symposium was held on November 11 in the Graduate Life Center. This year’s keynote speaker was R. Douglas Sammons, senior fellow at Monsanto. A student poster competition and reception followed Dr. Sammons’s talk. Winner’s at this year’s poster competition were doctoral students Joseph Opoku (Communicating Science), Kristen Clermont (Best Poster, Basic Science), and master’s student Camden Shelton (Best Poster, Applied Science).

The annual PPWS Graduate Student Mini-symposium is organized by the PPWS Graduate Student Organization, and was led this year by GSO President Shelton Boyd.

2017 annual PPWS award recipients

- Graduate Students of the Year: Kasia Dinkeloo and Charlotte Oliver, Arthur J. Webber
- Excellence in Scholarship: Professor David Schmale III and doctoral student Jianhui Li

Congratulations to PPWS alumna and Ohio State University soybean pathology Professor Anne Dorrance who was named a Fellow of the American Phytopathological Society.
Hampton Roads AREC hosts annual Turfgrass Field Day

The seventh annual Turfgrass Field Day was hosted by Professor Jeffrey Derr and Research Technician Adam Nichols on June 21, 2016 at the Hampton Roads AREC in Virginia Beach. Attendees were given a walking tour of the turfgrass plots showcasing Professor Derr’s weed control trials. They also saw turfgrass cultivar trials and disease management studies conducted in cooperation with Professors Erik Ervin and Mike Goatley, both from the Department of Crop and Soil Environmental Sciences, and Assistant Professor David McCall. A barbecue lunch was served, followed by pesticide recertification classes. The field day was co-sponsored by the Virginia Turfgrass Council.

Caitlyn Allen returns to alma mater as featured speaker

PPWS alumna Caitlyn Allen ’87 was the featured guest speaker at the Biocomplexity Institute of Virginia Tech’s Life Science Seminar on Feb. 24, 2017. Her presentation was titled “Strategic Switches in the Bacterial Plant Pathogen Ralstonia solanacearum”.

A professor of plant pathology at University of Wisconsin-Madison, Allen’s research focuses on interactions between the plant pathogenic bacterium Ralstonia solanacearum and its plant hosts. Her accolades include fellowships with the American Phytopathological Society and the American Association for the Advancement of Science. Allen is also founding faculty director for the Women in Science and Engineering Residence Program.
Translational Plant Sciences group visits Washington, D.C.

Plant science graduate students visited several federal agencies in April 2017 as part of the spring Translational Plant Sciences course taught by Professors John McDowell and Elizabeth Grabau. Students met with officials in the Animal and Plant Health Inspection Service, Environmental Protection Agency, Food and Drug Administration, Agricultural Marketing Service, and the National Institute of Food and Agriculture to learn about regulatory aspects impacting bioengineered food products.
PPWS faculty and students excel in publishing peer-reviewed journal articles

Here are a few highlights from many high-impact journal articles published by PPWS faculty and their students in 2016/17.

Xiaofeng Wang

All mRNA-sense, single-stranded RNA viruses replicate in association with lipid-composed membranes of various organelles. However, how viruses modulate host lipid synthesis, and how viral replication proteins are targeted to the destination organelle are poorly understood. PPWS 2017 doctoral graduate Jianhui Li and his advisor Assistant Professor Xiaofeng Wang, along with collaborators in Israel demonstrated that the host secretory pathway is required for targeting brome mosaic virus replication protein 1a to the nuclear membrane, where BMV replicates. Jianhui Li’s accomplishment was recognized with the 2017 PPWS Excellence in Scholarship Student Award at the spring 2017 picnic.


David Schmale III

This was another exciting year for publications in Professor David Schmale III’s lab. One of the highlights was a feature article for Scientific American magazine titled, “High Flying Microbes.” This article was co-authored with Shane Ross in the Virginia Tech Department of Biomedical Engineering and Mechanics. The article reviewed more than a decade of work by Schmale and Ross to track microbes with unmanned aircraft along highways in the sky. Another example of the many papers published by David Schmale III is doctoral student Ray David’s paper in Fungal Genetics and Biology. The study examined the compressive strength of spore-producing structures which could inform disease management efforts in the future by determining when the structures are mature and might be ready to release spores. Doctoral student Renee Pietsch is the first author of a manuscript in Frontiers reporting on some field campaigns at Claytor Lake, Virginia to characterize strains of Pseudomonas syringae collected at multiple depths, locations, and seasons. Virginia Tech News followed up with a great press release about this paper. Professor David Schmale III’s impressive publication record was recognized with the 2017 PPWS Excellence in Scholarship faculty award at the 2017 spring picnic. These and other selected papers are listed below:


Eva Collakova

Metabolism involves conversion of small molecules called metabolites, which provide the cellular building blocks and energy needed for growth, development, and cell function. Imagine that each cell must make specific metabolites in required amounts under given conditions and developmental stages. As such, the production of metabolites is regulated in a very complicated way. Associate Professor Eva Collakova explores regulation of metabolism from different angles to understand how to manipulate plant metabolism to our needs. Manipulating metabolite production in photosynthetic cells has enormous practical applications in biotechnology, specifically in metabolic engineering of organisms to produce valuable products such as pharmaceuticals and various feedstocks for food and biofuel production. In two studies, the focus was on Arabidopsis thaliana seeds because they make large amounts of oil and proteins. The first one was in collaboration with Professor Ruth Grene and Assistant Professor Song Li (CSES) and was published in BMC Genomics. The second manuscript was in collaboration with Lenwood Heath (CS), Ruth Grene, and Song Li and was published in Frontiers in Plant Science. These and other papers co-authored by
Eva Collakova are listed below:


Jacob Barney

Dan Tekiela (Ph.D., 2016) and Associate Professor Jacob Barney’s research on the long term implications of eradicated invasive Japanese stiltgrass on ecosystems has been published and is one of the most widely viewed publications in a recent issue of the journal Invasive Plant Science and Management. Results from their three-year study concluded that although some soil nutrients showed some degree of reversion to an uninvaded state, removing the Japanese stiltgrass did not affect native restoration of the larger impacted ecosystem. Instead, other weedy species emerged after the Japanese stiltgrass removal, thus presenting new control issues. According to Dan Tekiela, “Fortunately, newly established invasive populations don’t produce the same level of lingering legacy effects as those that are long established. That makes early eradication an important imperative.”

The complete article in the March 2017 issue of IPSM can be found at: https://www.cambridge.org/core/journals/invasive-plant-science-and-management/article/invasion-shadows-the-accumulation-and-loss-of-ecological-impacts-from-an-invasive-plant/D3505C208E9A70B3D4D5A71A17F-CEDAE.


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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? __________________________________________________________

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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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