



Penn State's Department of *Plant Pathology & Environmental Microbiology*



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Some of the PPEM Department's dedicated staff including administrative, technical, and research staff.



Future Plant Pathologists at Ag Day 2012.



It has been a busy two years since our last newsletter. We passed a notable milestone in 2013 which was our 50 year anniversary as a stand-alone Department. To mark the occasion, a display of historical information was exhibited in Pattee Library and we held an open house and celebration on June 7, 2013. The celebration was attended by several Professor Emeriti who were active participants in founding the new department. Guest speaker Dr. George Abawi, President of the American Phytopathological Society, presented the department with a certificate honoring our contributions to the discipline of Plant Pathology over the past 50 years.

In September the Department organized and hosted an Environmental Microbiology Symposium to announce our new focus in this area of research and education. Over 100 participants attended the Symposium and heard keynote addresses by Dr. Rita Colwell, a past Director of NSF, and Dr. Reina Redman, founder of Adaptive Symbiotic Technologies. It was so successful that faculty from other colleges have requested that we sponsor similar symposia in the future, which we hope to do.

Three PPEM faculty will have retired by June 30, 2014. John Halbrecht retired in February, Paul Backman retired in March 2014 and Fred Gildow (yikes that's me) will be retiring this summer. To balance this loss, several new faces have appeared at faculty meetings since 2012. Kari Peter (Cornell) was hired in March 2013 as our new Tree Fruit Pathologist, Allysa Collins (U. of Delaware) was hired as Director of the Southeast Agricultural Research and Extension Center, and Cristina Rosa (U.C. Davis), began Jan. 1, 2014 as our newest plant virologist. In addition 10 new graduate students (all well above average) were recruited to replace the 12 superior students that we graduated from our Plant Pathology program.

Over the past two years several faculty and staff received significant national awards. In 2013 Fred Gildow was elected a Fellow of APS for his career contributions in research and teaching, and Seogchan Kang was awarded the APS Ruth Allen Award for innovative research. In August 2014 Gary Moorman is being honored for his distinguished career by induction as a Fellow of APS. The Laurence and Mary Ann Moore Staff Awards for 2013 and 2014 went to our Financial Assistant Debra Clemmer and our graduate assistant Lori Long. The annual William Merrill Excellence in Teaching Awards went to Maria Jimenez-Gasco and Beth Gugino. Past alumni James Moyer (Ph.D.,1975) and David Carroll (M.S. 1973) were selected as Outstanding Alumni of the College of Agricultural Sciences for 2012 and 2013, respectively.

We have been even busier than I have space to tell, but you can read all about it in the following pages.

Also, I encourage you to check out our Department Webpage at < <http://plantpath.psu.edu/> > where you can get all the PPEM news and details from our Annual Report and the new 2014-18 Strategic Plan.



Members of the PPEM Faculty.

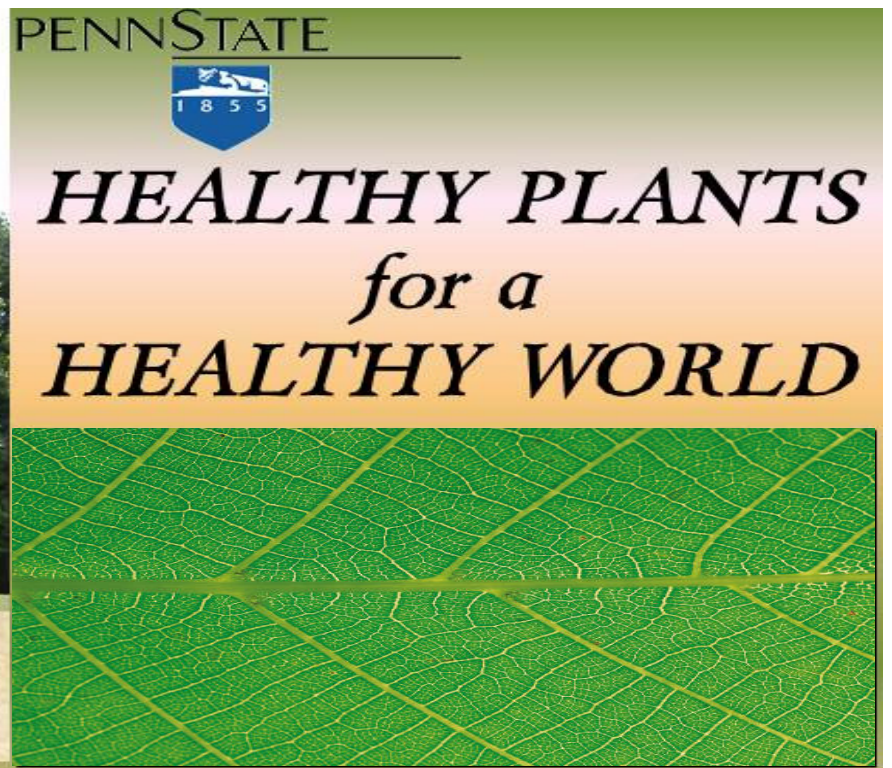
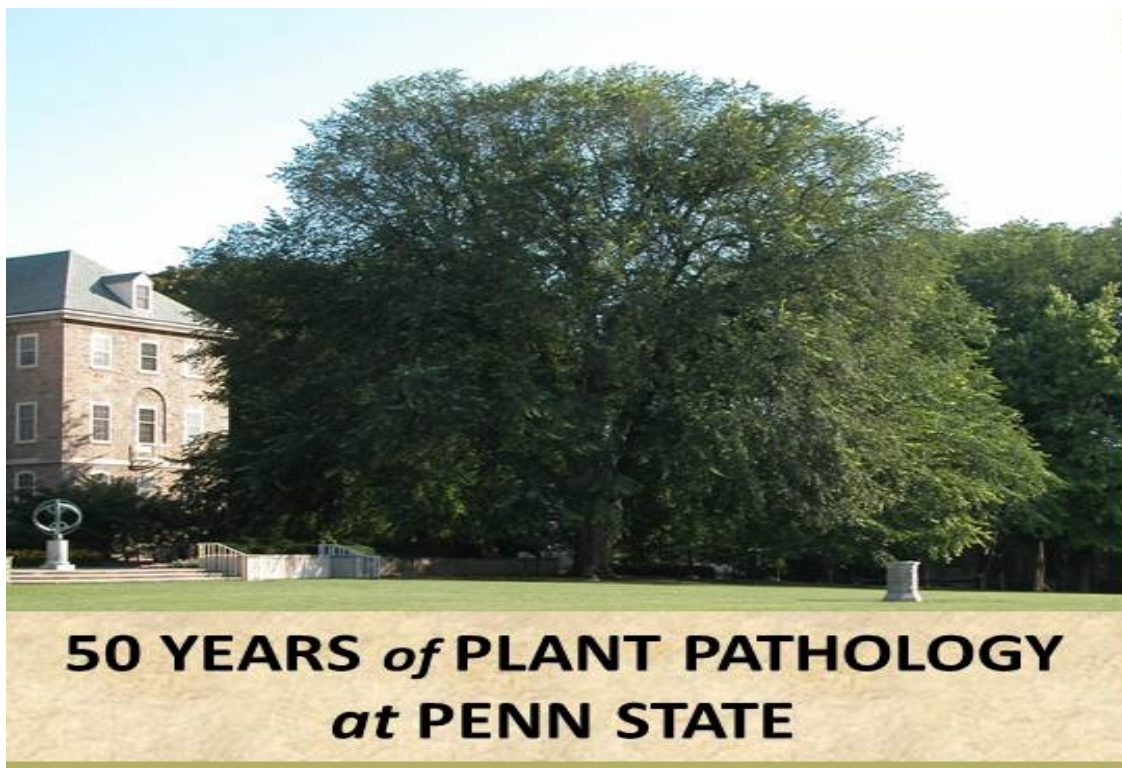
Riddle Me This!

Why shouldn't you tell a secret on a farm?

Answer on page 4



50 Years of Plant Pathology at Penn State



An exhibit created by the department titled, “Healthy Plants for a Healthy World: 50 Years of Plant Pathology at Penn State,” was on display for the general public in The Eberly Family Special Collections Library from June 5 through Sept 17, 2013. It covered the history of the PPEM department, past and present accomplishments, as well as future directions.

The exhibit’s grand opening and a 50th anniversary celebration were held on June 7 in the Foster Auditorium of the Paterno Library. Presentations featured comments by Dr. George Abawi, President-Elect of the American Phytopathological Society (APS) as well as Interim Dean of the College of Agricultural Sciences, Dr. Barbara Christ, and Dr. Fred Gildow, Department Head.

During the exhibit’s three month run, several guided tours of plant diseases on campus were conducted for the general public. Each tour was led by department members ranging from faculty to grads to staff. PPEM graduate students also put together a video compilation of student interviews focusing on their experiences. The video ran continuously through the exhibit and featured PPEM students. Public talks on the Penn State Elms, Phytophthora late blight, the art of mushroom production, and the eradication of plum pox virus in PA were presented throughout the summer by Gary Moorman, Beth Gugino, John Pecchia, and Fred Gildow, respectively.



1. Professor emeriti Leon Kneebone and T.A. Toussoun attended the exhibit.
2. Rocking chair and bench made from classic Penn State elms.
3. Poster detailing future of plant pathology.
4. Herb Cole, T.A. Toussoun, Fred Gildow, and Barbara Christ gather for a photo at the exhibit.
5. PPEM Staff assistants checking out the case displays.
6. Library Archivist Jackie Esposito was integral in putting the exhibit together.



Recent Grads and New Students

Fall 2012

Matthew Kasson, (Ph.D. Plant Pathology; advised by Don Davis) “The invasive *Ailanthus altissima* in the Northeastern U.S.: History, distribution, growth patterns, and biocontrol”

Anna Testen, (M.S. Plant Pathology and International Agriculture Development; advised by Paul Backman) “Microbial Approaches to Support Andean Quinoa Production”

Spring 2013

Maria L. Burgos-Garay (Ph.D. Plant Pathology; advised by Dr. Gary Moorman) “Effect of heterotrophic bacterial communities on *Pythium* spp. in recycled irrigation water”

Emily Helliwell (Ph.D. Plant Pathology; advised by Dr. Yinong Yang) “The role of ethylene biosynthesis and signalling in resistance to fungal diseases in rice”

Yinfei Li (Ph.D. Plant Pathology; advised by Drs. Wakar Uddin and John Kaminski) “Factors influencing the development of gray leaf spot of perennial ryegrass turf and seasonal availability of the inoculum”

Bongsoo Park (Ph.D. Bioinformatics & Genomics; advised by Dr. Seogchan Kang) “Cyber-infrastructure supporting fungal and oomycete phylogenetics and genomics”

Summer 2013

Emmie Warnstrom (M.S. Plant Pathology; advised by Dr. Don Davis) “Reuse of spent mushroom compost for production of *Agaricus bisporus*”

Jill Demers (Ph.D. Plant Pathology; advised by Maria Jimenez Gasco) Evolutionary ecology of *Fusarium oxysporum*-plant interactions”

Bin Tian (Ph.D. Plant Pathology; advised by Fred Gildow) “Understanding the mechanism and evolution of vector transmission, vector specificity and host specificity for soybean dwarf virus”

Venkatesh Muktali (Ph.D. Bioinformatics & Genomics; advised by Dr. Seogchan Kang) “A comparative genomic investigation of niche adaptation in fungi”

Wenhua Liu (Ph.D. Plant Biology; advised by Dr. Yinong Yang) “Characterization of pathogen effectors and host endogenous peptide elicitors in the rice - *Magnaporthe oryzae* interaction”

Xin Lin (M.S. PLBIO; advised by Tim McNellis) “Identification of genetic expression markers associated with inheritance of late blight resistance in tomato using gene expression profiling of a segregating f2 population”

New Plant Pathology and Environmental Microbiology Students!

New students beginning SP13:

Maliheh Safari – PhD (advised by Dr. Roossinck)

New students beginning FA13:

Sara Atyeo – PhD (advised by Dr. McNellis)

Antia Behari - PhD (advised by Dr. Kuldau)

Robert Harvey – PhD (advised by Drs. Davis/Pecchia)

Carla Lanze – MS (advised by Dr. Moorman)

Gary Nolan – PhD (advised by Dr. Uddin)

Christopher Smyth – PhD (advised by Dr. Geiser)

Tobias Tucker – MS (advised by Dr. Beyer)

New students beginning FA12:

Freddy Magdama – PhD (advised by Dr. Jimenez-Gasco)

Eric O’Neal – MS (advised by Dr. Davis)



A few of our newest students at the Environmental Microbiology Symposium.



Departmental Comings and Goings

Newest Additions to PPEM!



Dr. Kari Peter joined the PPEM department in March 2013 and is at the Fruit Research and Education Center facility in Biglerville. Dr. Peter earned her bachelor's degree in Entomology and Plant Pathology at the Univ. of Delaware and her master's degree and doctorate in plant pathology from Cornell University. From 2008 to 2010 she was a postdoctoral fellow in plant pathology here at Penn State where she researched transmission of plant viruses by aphids and the mechanisms for vector specificity. Dr. Peter comes to Penn State after two years in the Food Quality Laboratory at the U.S. Dept. of Agriculture's Agricultural Research Service in Beltsville, MD. As a research associate, she studied post-harvest fungal diseases of apples and mechanisms associated with their biocontrol.



Dr. Alyssa Collins joined the PPEM department in June 2013. She is the director of the Southeast Agricultural Research and Extension Center in Landisville as well as an assistant professor within the department. Dr. Collins earned her bachelor's degree in Biological Sciences at Rutgers University, her master's degree in Plant Pathology at NC State University, and her Ph.D. in Plant and Soil Sciences from the University of Delaware. Dr. Collins's work at the SEAREC focuses on applied field research. Her areas of interest are the disease management of agronomic field crops, fungicide efficacy, and integrated crop management for plant health.

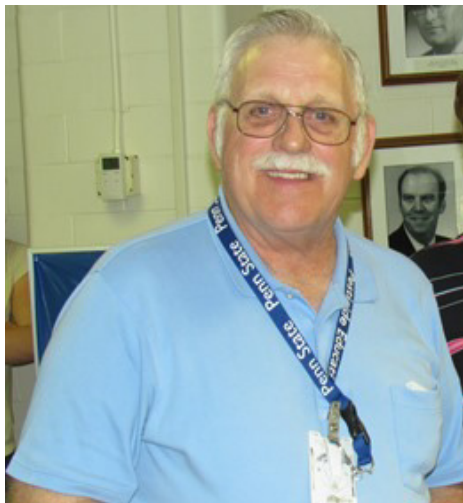


Dr. Cristina Rosa joined the faculty of the PPEM department in January 2014. She obtained a B.S. at the Universita' di Firenze in Italy, a Ph. D. in Plant Pathology at the University of California, Davis, and worked as a post doctoral scholar in Plant Pathology at UC Davis, and the Entomology Department at Penn State. She worked on different biological systems, such as the use of RNA interference to control the glassy winged sharpshooter vector of Pierce's disease of grapevines, the investigation of the entry of nucleopolyhedroviruses into their caterpillar host epithelial gut cells, the characterization of grapevine viruses and phytoplasma causing Elm Yellows disease, and the interactions between insect gut endosymbionts and plant defenses.

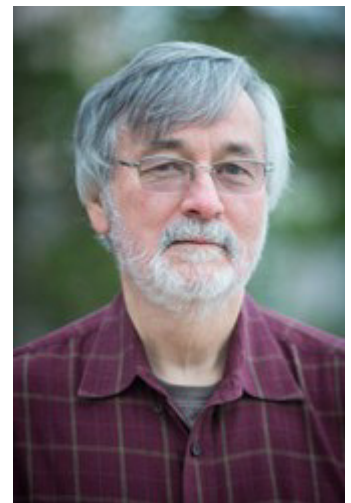
Department Retirements



John Halbrecht retired from the PPEM department on January 31, 2014. He is using his newfound freetime to run his vineyard.



Phil Williams retired from the PPEM department on May 5, 2013. He is spending his days as a retiree doing what he loves, woodworking.



Paul Backman retired on March 31, 2014. He is currently living in Alabama, enjoying his grandchildren and kayaking.



THE PPEM DEPARTMENT WOULD LIKE TO THANK YOU FOR YOUR SERVICE AND DEDICATION FOR ALL THESE YEARS. WE WISH YOU WELL AS YOU START A NEW CHAPTER. CONGRATULATIONS ON YOUR RETIREMENT! ☺

Riddle Me This
Answer:
Because the potatoes
have eyes and the corn
has ears!

Facilities Updates and News

Plant Health Resource Center



Sara May, PHRC Director



In June 2013 Sara May, our PPEM Plant Disease Clinic supervisor, was appointed as the first Director of the newly formed Plant Health Resource Center (PHRC) to formalize the partnership between Penn State's College of Agricultural Sciences (PSU) and the Pennsylvania Dept. of Agriculture (PDA) to better serve the Commonwealth. The PHRC works to protect Pennsylvania's crop and native plants in order to enhance and sustain the economic growth of our numerous plant industries. Critical issues are identified concerning bees and other pollinators, invasive species, high consequence pests, and pesticide safety and resistance through the input provided by academic, regulatory and industry experts. In return, the PHRC provides a focus for research and programs that effectively confront these high priority issues affecting Pennsylvania's producers and consumers. To learn more about the PHRC, visit our website at <http://agsci.psu.edu/resource-centers/plant-health>.

The Mushroom Resource Center



John Pecchia, Director



During 2013-14 the PPEM Mushroom Research Center (MRC) has undergone significant renovations to upgrade facilities supporting research on mushroom diseases and efficacy of compost utilization in support of the PA mushroom industry. In 2013 total U.S. mushroom production was worth \$1.1 billion, with 70% of that produced in PA. The upgrades included a new Phase I bunker and Phase II tunnel designed to allow for more efficient substrate production for mushroom research in the MRC. Also, two additional controlled environment growth rooms for growing mushrooms are scheduled for renovation this summer at a cost of about \$120,000 each. Three rooms were already renovated and four remain to be completed. The University plans to complete renovation of all nine growth rooms in the near future. Renovations include complete replacement of all mechanical parts and control systems allowing computer control for more precise environmental control within rooms and more reproducible experiments. In addition, a research laboratory to study the microbiology of compost production has been designed into the MRC. The MRC managed by Dr. John Pecchia is currently the only academic mushroom research facility of its kind in North America and one of only a few in the world. For more info see our website at < <http://plantpath.psu.edu/facilities/mushroom-research-center> >.



Dr. Tim McNellis with some of his students.



Seogchan Kang with his wife and their family dog at the 2013 Fall Picnic.



Environmental Microbiology Symposium

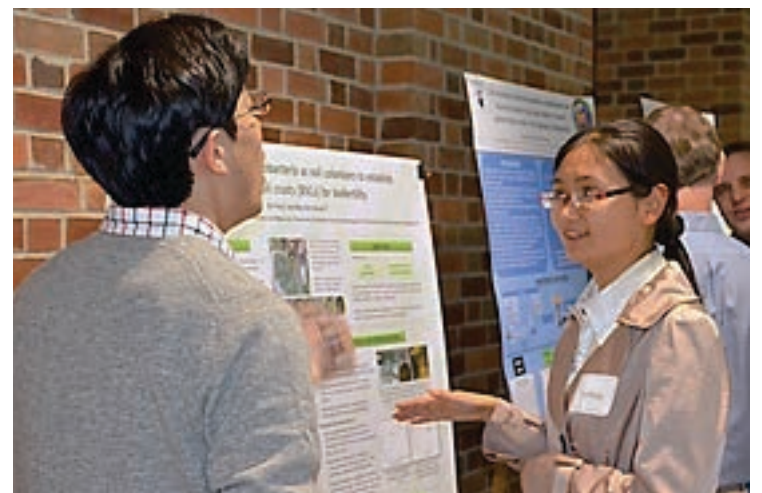
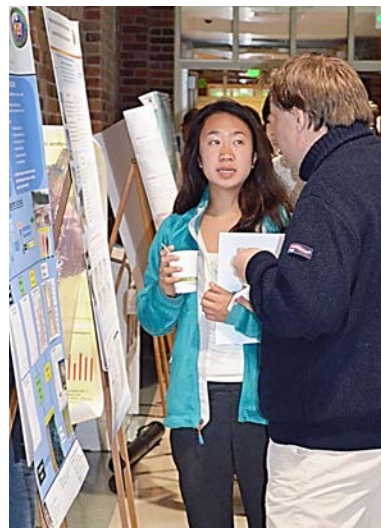
More than 100 students, postdocs, and faculty from four colleges and two satellite campuses of Penn State came together to attend a campus-wide symposium on Environmental Microbiology on September 28, 2013.

The event, which took place in 100 Thomas Building, was sponsored by the Department of Plant Pathology and Environmental Microbiology, the College of Agricultural Sciences, and the Huck Institute of the Life Sciences. It was one of many events held in celebration of 50 years of Plant Pathology at Penn State.

Dr. Rita Colwell, Professor at the University of Maryland and Director of the National Science Foundation from 1998-2004, presented the morning keynote address. Her speech was followed up with an afternoon keynote address presented by Dr. Regina Redman, the founder of Adaptive Symbiotic Technologies. Overall, there were 24 oral presentations by faculty and 35 posters.



PPEM Symposium Organizing Committee and Speakers: Drs. John Pecchia, David Geiser, Regina Redman, Marilyn Roossinck, Rita Colwell, Mary Ann Bruns



The PPEM Department wishes to thank the Symposium Organizing Committee (Dr. Marilyn Roossinck, Dr. John Pecchia, Dr. David Geiser, and Dr. Mary Anne Bruns, from the Department of Ecosystems Science and Management), the PPEM staff (Sandy Beck, Diane Yoder, Chardonnai Johnson), graduate students (Christopher Smyth, Robert Harvey, Maliheh Safari), and Post Docs (Dr. Vaskar Thapa and Dr. Xiaodong Bao) for their efforts in making the Symposium on Environmental Microbiology possible.

PPEM Outstanding Undergraduate STUDENT SPOTLIGHT

Patrick Thomas is not your average college student. He's a master juggler, balancing a major in Agricultural Science, minors in both Plant Pathology and Agronomy as well as McNair scholar duties, a part time lab job, and his own plant research project.

His research project is mentored by the department's very own Dr. Gretchen Kuldau and focuses on the effects of *Fusarium verticillioides*, a fungal endophyte, on corn growth and protein composition. His work inside and outside the lab garnered the attention of the WPSU-TV staff who are filming a documentary on McNair Scholarship awardees. Their film crew has been documenting Thomas's progress on his research project as well as reporting on him as he moves through his senior year and applies for grad school.

WPSU-TV wasn't alone in recognizing Thomas's excellence. In October he was selected as a Keynote Speaker at the College of Agricultural Science's Scholarship Awards Banquet. Representing all scholarship recipients, he spoke fondly to the audience about his time at Penn State and especially his experiences working in the lab with Dr. Kuldau and Nancy Wenner. Patrick has been accepted into the Ph.D. program in Plant Science at the University of California-Riverside. We look forward to seeing much more of Patrick's work in the coming years!



PPEM Socials



(L-R) Graduate students Eric O'Neal, Kristi Fenstenmacher, Rosemary Schwegel, Sarah Bardsley, and Hilary Cheesman at the Halloween party.



Farm Manager Randy Dreibelbis at the 2013 fall picnic.



Members of the PPEM department at the 2013 Fall Picnic.



2014 Cookie Contest winners, Vasilios Bitas, Sara Atyeo, and Nancy Wenner



(L-R) Administrative Staff Diane Yoder, Deb Clemmer, and Lori Long at the Halloween party.



Members of the department eating and chatting at the 2013 Potluck.



Halloween treats for the 2013 PPEM Halloween Party.

The PPEM Department really knows how to have fun!



The Plant Pathology Graduate Student Association

Our mission is to provide our members with a platform to develop and discuss topics related to plant pathology, and to explore and promote plant pathology within the Penn State community.

PPA Carnation Leaf Cutting Fundraiser



The PPA has taken over producing carnation leaf pieces for the Fusarium community. Carnation leaf pieces are the preferred substrate for growing Fusarium. When Jean Juba retired in 2011, carnation leaf production was no longer possible, but the PPA, under the guidance of PhD student Kristi Fenstermacher, took over the job. The PPA just had its second “Carnation Leaf Cutting Party” and has made over \$750 from the proceeds so far.

PPA Takes on Social Media



The PPA has created a new facebook page and twitter page. Both pages are run by Christopher Smyth (cws187@psu.edu). If you have any announcements, pictures, or news articles that you would like to be publicized by the PPA, please send the information to Sarah Bardsley (sjb328@psu.edu), or to the PPA President, Chris.

Facebook: <https://www.facebook.com/pennstate.plantpathology?fref=ts>

Twitter: <https://twitter.com/PSUPlantPath>

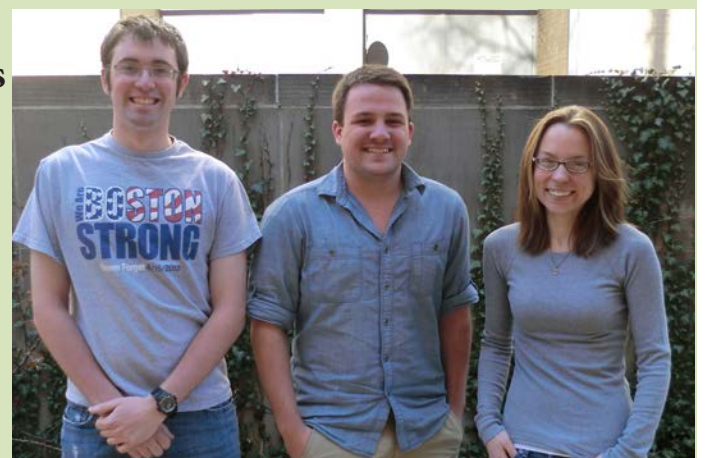
Riddle Me This Too Answer:
Because he's a Fungi!

The PPA Journal Club

Sara Ateyo, Rob Harvey and Chris Smyth started holding a Journal Club meeting for the PPEM department spring semester 2014. Meetings were held every Thursday in Buckhout 207A from 9:00 AM until 10:00 AM.

The purpose of the club is to discuss and critically analyze papers relevant to our field of study.

We hope this club continues to grow in the following semesters. Everyone is welcome to join, and suggestions on how to improve are always welcome.



AG DAY 2014

Every April the Plant Pathology Association (PPA) volunteers at the College of Agriculture's Ag Day. Located in the HUB, the PPA displayed posters on educational opportunities for undergraduates as well as on the plant disease clinic, passed out brochures on Pennsylvania mushroom production and the diseases threatening Penn State's historic elm trees, and taught Penn State students and State College community members about plant pathology through interactive



games. This year's display was coordinated by PPA President Sarah Bardsley. The PPA and Department of Plant Pathology and Environmental Microbiology was represented by faculty member Judy Sinn, graduate students Freddy Magdama, Anita Behari, Grace O'Keefe, Emily Pfeufer, Laura Ramos-Sepulveda, and Carla Lanze, and undergraduate students Kristina Gans, Jennifer Evans, and Sara Getson.



Faculty Activities



Marilyn Roossinck has been in the PPEM department since August 2011, moving from the Noble Foundation in Oklahoma. Her lab has been working on viruses of fungi, including fungal endophytes that are beneficial to their host, and on persistent viruses in plants. The lab is also interested in experimental evolution using Cucumber mosaic virus as a model system. They are hosting two visiting scientists this year, Dr. Tomofumi Mochizuki of Japan, and Dr. Mi-Kyeong Kim of Korea, who are working on different aspects of CMV evolution. Tony Stobbe and Vaskar Thapa joined the lab as postdocs over the past year, working on bioinformatics and virus discovery. Maliheh Safari joined the lab as a graduate student in early 2013, and is working on populations dynamics in persistent plant viruses. For the past two years, Marilyn has been visiting Murdoch University in Perth, Australia, for a month each year. There, she is studying the Australian plant *Nicotiana benthamiana*. This plant is extremely drought tolerant in its native outback habitat and is a nearly universal host for acute plant viruses. This summer Marilyn will be updating her outreach activities doing science magic shows for kids.



Kari Peter was hired in March 2013 as the tree fruit pathologist, which includes extension duties for both Pennsylvania and Maryland. Kari hit the ground running in her new role, especially since 2013 was the biennial FREC Grower Field Day and Penn State's Tree Fruit Production Guide update. On the research side, she has established collaborations with Drs. Maria del Mar Jimenez-Gasco (peach bacterial spot) and Tim McNellis (fire blight), as well as with Drs. Chris Gee (Erie, scab strobilurin resistance), Mark Boudreau (Brandywine, climate impacts on apple disease), Ruth Welliver (PDA, exotic orchard diseases), Dumitru Macarisin (FDA, apple microflora) and Wayne Jurick II (USDA-ARS, postharvest apple rots). All made possible due to a great lab crew: Brian Lehman, Teresa Krawczyk, and Taylor Hess. On the extension side, she is a regular contributor to Fruit Times and is busy thinking of novel ways to alert and educate folks about tree fruit diseases (twitter coming soon!). In the off-season she taught the PPATH 405 virus lectures and advocated plant pathology. As a member of the APS Office of Public Relations & Outreach, Kari helped create videos to spark plant pathology interest, as well as represented APS at the National FFA Convention (Louisville, KY, November 2013) and the USA Science & Engineering Festival (Washington, D.C., April 2014). Finally, one of her goals in her new role is to inform every Pennsylvanian that PA is the fourth largest producer of apples.



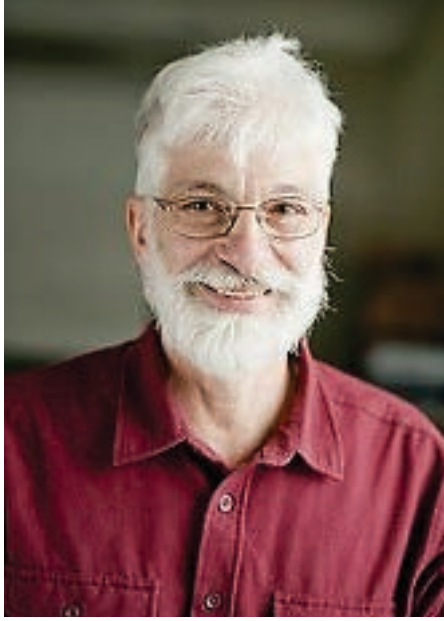
Gretchen Kuldau's lab has had a busy year with multiple projects. Undergraduate Patrick Thomas joined the lab in Summer 2013 as a McNair Scholar and continued his *Fusarium verticillioides* research through the fall and spring semesters. After graduation this spring Patrick will be pursuing a PhD in Plant Science at University of California, Riverside. Undergraduate Hunter Swisher joined the lab in January 2014 to pursue research on mycorrhizal associations between *Morchella* species and American Elm and will continue this project in Summer 2014. PhD students Doug Whalen and Anita Behari joined the lab this year. Doug is working on *F. verticillioides* and Anita is exploring the various roles of deoxynivalenol produced by *F. graminearum* and other fungi. Ed Kaiser has continued his analysis of fungi and bacteria growing on HVAC coils and has generated a large dataset for analysis. In addition to helping all of us in innumerable ways, Nancy Wenner has worked on a variety of projects including analyzing anti-fungal compounds effects on *Fusarium* and *Penicillium* commonly found in silages. Aside from teaching and graduate program responsibilities, Gretchen Kuldau has been busy trying to keep up with all the varied projects in the lab and enjoying everyone's successes.



Beth Gugino continued to build her vegetable extension/research program during 2013/2014. As usual, field season was a busy time of year and in part, due to the extreme weather, it proved to be another exciting one filled with drought and extreme rain events which led to outbreaks of late blight and the continued spread of diseases like *Phytophthora* blight! In 2013 her lab along with Sara May, Plant Disease Clinic, confirmed Cucurbit Yellow Vine Decline on pumpkin, a first for this squash bug vectored bacterial disease in PA. Most recently, she's been fortunate to travel to Guatemala and Honduras as part of a U.S.A.I.D. project to co-facilitate with colleagues several multi-day workshops designed to train growers and technicians in the integrated management of diseases of snow peas and French beans, crops that have been rejected for export due to pesticide related issues. After rotating off the leadership of the Northeast Division of the APS, she joined the leadership of the Penn State Chapter of Gamma Sigma Delta, the honor society for AG, as the historian. She continues to serve as co-leader of the Vegetable and Small Fruit Program Team for Penn State Extension and as Senior Editor of *Plant Health Progress*. In her spare time, she continues to train and participate in trail race events throughout beautiful central PA.



Faculty Activities



Scott Isard is currently organizing networks of producers, their consultants, industry representatives and Extension professionals to share field observations of pests (pathogens, insects and weeds). Currently, the vast majority of these observations are not shared in a timely manner and thus we are unable to take full advantage of the rapidly evolving cyberage technologies (e.g., smart phones apps, tremendous data transmission capacity, crowd sourcing) for improving IPM and food security. Scott and collaborators have deployed an information technology platform called the iPiPE (Integrated Pest Information Platform for Extension and Education). This platform evolved from the Soybean Rust-PIPE which saved U.S. growers \$100s of millions/year since 2004. As part of the Asian Soybean Rust Team, he recently received the International IPM Award of Excellence for The Soybean Rust-PIPE. The goal of iPiPE is to create a culture of sharing pest observations in near real-time. The result is an infrastructure of people linked by the web who can help respond when unanticipated and foreign diseases threaten our crops.



Maria del Mar Jimenez-Gasco continues to build her research program on population biology of plant-associated microorganisms, integrating population genetics and ecology. Sarah Bardsley continues to work on the development of antibiotic resistance in the bacterial leaf spot pathogen of peach, *Xanthomonas arboricola* pv. *pruni*. She has been spending summers at FREC, sampling and interacting with peach growers. The fall of 2012 brought a new PhD student to our program, Freddy Magdama. Freddy is from Ecuador and is researching populations of the fungus that causes Panama disease in banana and spent the summer of 2013 sampling banana plantations back home. So, since the lab is pretty empty during the summer, Maria can actually get some work done(!) and do some traveling. Aside from attending and participating in APS annual meetings, she also visited Germany (11th Verticillium International Symposium), and Peru (XXII Latin American Congress of Phytopathology) in 2013. Once again our lab has been very lucky to have great undergraduate students helping with research on various aspects of

fungal biology: Kristina Gans, Jennifer Evans, and Eva Beyen. Maria visited family in Greece during 2013, and she'll spend some summer time back home in Spain in 2014.



Seogchan Kang's research on how fungal volatiles contribute to fungal niche adaptation and pathogenesis, conducted in collaboration with Jim Tumlinson, has uncovered novel mechanisms underpinning plant-fungal interactions. His collaborative research with Kirk Czymmek at Univ. of Delaware, developed tools for in vivo imaging of the dynamic nature of calcium signatures, which was instrumental for studying how changes in calcium signatures control fungal growth, development and pathogenicity. Two IT platforms supporting community research on *Phytophthora* and *Fusarium*, *Phytophthora* DB and Cyberinfrastructure for *Fusarium*, respectively, have been accessed >2,000 times each per month on average. He shared the Ruth Allen Award from the APS with his long-term collaborator Yong-Hwan Lee at Seoul National University. He spent 3 months in Lee's lab during summer 2013 to carry out a number of joint projects and visited six

universities and government lab in Korea to give seminars. Ningxiao Li, a Ph.D. student in Plant Biology, joined the lab in 2013. Kholaf Rafique, a Ph.D. candidate in plant pathology at PMAS Arid Agriculture University in Rawalpindi, Pakistan, works in the Kang lab for 6 months to characterize *Fusarium* pathogens causing diseases in lentil.



Tim McNellis's general plant biology course AGECO 121 has been increasing in enrollment over the past few years, with enrollments of 72 students in the fall of 2012 and 100 students in the fall of 2013. The course includes numerous lab activities that involve inoculating plants with pathogens and observing and measuring symptoms. Students especially enjoy the lab parts of the course. Dr. McNellis's lab published two papers on apple tree genomics, one in 2012 and one in 2014, both with postdoctoral researcher Dr. Philip Jensen as first author. The 2014 publication introduced a novel method of using gene expression patterns as a genetic mapping tool in crops with complex genetics, such as apple. Dr. McNellis's Ph.D. student Laura Ramos published a paper in the fall of 2013 describing a gene that regulates the expression of virulence activities in the fire blight pathogen *Erwinia amylovora*. Ph.D. student Sara Atyeo joined Dr. McNellis's lab in August 2013. Undergraduate student Jacob Smith worked with Dr. McNellis in the spring semester of

2014 and successfully identified several wild tomato accessions. During the first six months of 2013, Dr. McNellis took a sabbatical at the U.S. Horticultural Research Laboratory in Fort Pierce, FL, working on developing grapefruit trees resistant to citrus greening disease. He is continuing this project at University Park and in collaboration with USDA researchers in Florida.



Faculty Activities



Yinong Yang taught PPATH 543 Pathogen Variation and Host Resistance (Spring 2014) and AGRO 518 Plant Stress Biology (Fall 2013) with Prof. Dawn Luthe from the Department of Plant Sciences) during the past academic year. These graduate level courses involve lectures and case studies with an emphasis on the molecular, biochemical, genetic and genomic aspects of host-pathogen interactions and plant stress tolerance. Using rice blast disease as a model pathosystem, Yang lab continues to study the molecular and biochemical mechanism of pathogen virulence and host immunity. Recently, Yang lab has successfully adapted the bacterial CRISPR/Cas system for efficient genome editing and targeted mutagenesis in plants and fungi. The CRISPR/Cas technology likely has broad applications in plant genome engineering and precision breeding of agricultural crops. In addition, Dr. Yang has edited a book (Methods in Molecular Biology: Rice Protocol) published by Springer. Currently, his program is mainly supported by National Science Foundation Plant Genome Research Program. He works with two Ph.D. students (Yueying Chen and Bastian Minkenberg), two postdoctoral research associates (Drs. Kabin Xie and Xiangling Shen) and a senior research technologist (Qin Wang). In addition, Xu Zhao, a visiting student from Fujian Agricultural and Forestry University in China, is working in his lab to study the mechanism of fungal pathogenesis during the rice-Magnaporthe oryzae interaction. In the past year Dr. Yang served as an organizer and session chair for the International Congress of Plant Pathology and presented invited talks in a number of international conferences and universities.

PPEM Faculty host U.S. Culture Collection Network Workshop

On May 19-20, Drs. David Geiser and María del Mar Jiménez-Gasco hosted a two-day workshop associated with an NSF Research Coordination Network focusing on culture collection resources. The goal of the USCCN is to develop a plan for the long-term stability of national microbial culture collections, which are recognized as key biological resources that are threatened by a lack of oversight and support. The workshop focused on the national and international regulations and guidelines for the distribution of microbial cultures in consideration of quarantine, biodiversity and intellectual property issues. One highlight was a discussion of yeast culture resources, engaged while sampling locally produced, yeast-derived products at Happy Valley Vineyard and Winery. The workshop included tours and presentations on key culture collection resources in the Department of Plant Pathology and Environmental Microbiology.



Fred Gildow

As many of you are already aware, I will be retiring at the end of this academic year after serving 31 years on the Penn State faculty and the last 5.5 years as the Department Head. I began my professional career in Plant Pathology in 1975 at Cornell University working with Dr. Bill Rochow as my Ph.D. advisor. Little did I know the influence this would have on my life's trajectory the day I made the spur-of-the-moment decision to work with Dr. Rochow on aphid transmission of barley yellow dwarf virus. In 1979 I accepted my first job offer as an Assistant Professor in the Department of Plant Pathology at U.C. Berkeley to study "Insect Transmission of Plant Viruses." It was a great experience, and I benefited from valuable mentoring by Al Weinhold, Milt Schroth, and Jack Morris. In 1983 Sam Smith, then Dean of Agriculture at Penn State, walked into my lab and said, "We have a job for you at Penn State. Are you interested?" That's how I ended up spending the next 31 years working in Buckhout Laboratory. I have been extremely fortunate in my career to have worked with many outstanding colleagues and

students here at Penn State. I have always been fortunate that doing research in the lab and working on the electron microscope felt more like a hobby, than a job. I am convinced that teaching introductory plant pathology for 28 years was my real job. It was very rewarding to me to think that I had influenced a few students each year to pursue careers in plant pathology. My last five years as Department Head have been equally rewarding but in many different ways. I have learned to deal with the daily unforeseen challenges and learned that my most important job was to facilitate the work of others and mentor their careers. I like to think that I helped the department weather a few economic and restructuring challenges. I believe that I leave the department in pretty good condition, following the lead of the nine Department Heads before me. As much as I will regret leaving my post as the Department Head, I must admit that my kayak and fly rod are calling to me to sample the waters of the Adirondacks. Therefore, I must answer the call. However, I will follow Jim Tamman's (Head, 1963-76) example and be checking in with the new Department Head occasionally to make sure they are not screwing up "my" department.



Outstanding Alumni



Dr. James Moyer 2012 Outstanding Alumni

Dr. James Moyer was honored with the College of Agricultural Sciences 2012 Outstanding Alumni Award by Dean Bruce McPheron at an award ceremony held on October 19, 2012, at the Nittany Lion Inn.

Jim and his wife Mary visited the Department of Plant Pathology and Environmental Microbiology from October 18 through October 20. During the visit he presented a seminar on “Leadership in a Changing World” and met with graduate students and faculty to discuss research and career goals. Dr. Moyer is a recognized international leader in the field of Plant Pathology. His career has spanned basic and applied science and he is recognized for his expertise in plant virology and his work on transgenic plant resistance and genomic

fingerprinting of new cultivars. His leadership in science has been recognized by his election as President of the American Phytopathological Society (APS) and his continued work to direct national science policy through APS.

Dr. Moyer received his M.S. degree in Plant Pathology from Penn State University in 1973 studying the effects of air pollutants and pesticides on ornamental plants with Dr. Herb Cole. He then worked on characterization and immunological identification of mushroom viruses with Dr. Sam Smith, earning his Ph.D. in plant virology in 1975. In 1976 Dr. Moyer was hired into the Department of Plant Pathology at North Carolina State University (NCSU) as a plant virologist.

Dr. Moyer’s academic leadership abilities were recognized in 1994-97 when he was asked to serve as Department Head to the Department of Biochemistry at NCSU. In 2002 Jim was hired as the Head of the Department of Plant Pathology at NCSU, a position he held until 2013. Dr. Moyer is currently the Associate Dean and Director of the Washington State University Agricultural Research Center in Pullman, WA. In 2001 Dr. Moyer was named a Fellow of the American Phytopathological Society. This is the highest honor bestowed on APS members for meritorious service and achievement in their discipline. From 2006 to 2010 Dr. Moyer served as an officer in the APS society and presided as President of APS at the annual meeting in 2009. He continues to be a leader in plant sciences at the national level serving on several national APS and USDA committees.



Dr. James Moyer----2012 Outstanding Alumni



Mr David Carroll 2013 Outstanding Alumni

David Carroll was awarded the College of Agricultural Sciences 2013 Outstanding Alumni Award at the Award Ceremony held on October 21 at the Nittany Lion Inn. Mr. Carroll received his B.S. degree in Botany with Honors and High Distinction from Penn State in 1971 and completed his M.S. Degree in Plant Pathology in 1973, advised by Dr. Lee Schisler.

His graduate research project on mushroom biology resulted in the development of a delayed release nutrient supplement that significantly increased mushroom growth. The product was one of the first intellectual properties patented by Penn State University. The resulting commercial product

named “Spawn Mate” significantly increased mushroom production and was widely adopted by the mushroom industry becoming a huge commercial success. Carroll is currently the president of Giorgi Mushroom Company, the largest mushroom producer in North America employing over 800 employees.

Over the past five years, Giorgi Mushroom Company has donated over \$500,000 to mushroom research in the College. He is also president of several other companies associated with Giorgi Mushroom Company and an active industry leader serving as President of the Eastern Mushroom Marketing Board and on the Board of Directors of the Mushroom Marketing Cooperative Growers Association and the American Mushroom Institute. He and his wife, Anne, are active in many local charities and in supporting college scholarships to deserving local high school students.



Dr. Lee Schisler and David Carroll at the Outstanding Alumni Ceremony.



American Phytopathological Society

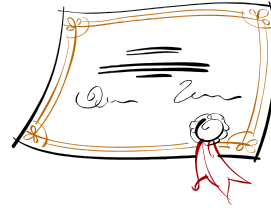
The 2013 American Phytopathological Society's National Meeting, August 10th-14th

APS Melhus Awardees



PPEM graduate students **Sarah Bardsley** and **Emily Pfeufer** were awarded the 2013 American Phytopathological Society Melhus Awards, allowing them to attend the Annual APS Society meeting in Austin, Texas, and present their research reports at the 13th Annual Melhus Graduate Student Symposium.

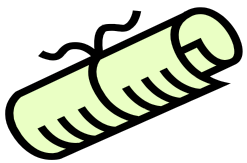
Ruth Allen Awardee



PPEM professor Dr. Seogchan Kang received the 2013 Ruth Allen award by the APS this past summer. Kang was honored for his innovative efforts done in collaboration with Dr. Yong-Hwan Lee at the Seoul National University in Korea. Kang and Lee worked on developing and deploying bioinformatic platforms for pathogen identification and characterization.

Department Head Receives 2013 Fellow Award

2014 APS Fellow Selected



Dr. Gary Moorman was selected as one of the 2014 APS Fellows. This award is one of the highest recognitions given by the APS in recognition of distinguished contributions to plant pathology in original research, teaching, extension, and public service.



Dr. Fred Gildow, PPEM department head, was awarded the 2013 APS Fellow Award in recognition of his distinguished contributions to plant pathology throughout his career. Dr. Gildow is known for his pioneering studies of cellular and molecular mechanisms regulating vector-specificity of plant virus transmission as well as for his career teaching intro courses in plant pathology for over 30 years.



President of the APS, Dr. George Abawi, presents the PPEM department with a certificate in celebration of 50 years of Plant Pathology at Penn State!

Alumni News

Weimin Gao (Ph.D. 2001): Time is flying! I cannot image that I already graduated from the Department of Plant Pathology at Penn State for over 12 years! After leaving Happy Valley, I did my postdocs in the Environmental Sciences Division first at Oak Ridge National Lab in Tennessee and then Brookhaven National Lab in New York. Currently, I am living in the greater Phoenix metropolitan of Arizona and working at the Biodesign Institute of Arizona State University. I am very glad to learn that the name of the department now includes “environmental microbiology” since this not only reflects the reality of the current research going on in the department, but also my current research!



Gene Milus (Ph. D.): Nothing too exciting to report. You can say that I have been the wheat pathologist at the University of Arkansas for the past 26 years and am mostly working on stripe rust and Fusarium head blight. My son, Lee, is close to completing his apprenticeship to be a commercial electrician, and my daughter, Cat, is a junior at the U of A, majoring in animal science / pre-vet.

Here is a photo from the early 1990s of me and Jim Correll showing off our black pepper sausage flavored with elk that we made from Jim’s family recipe.

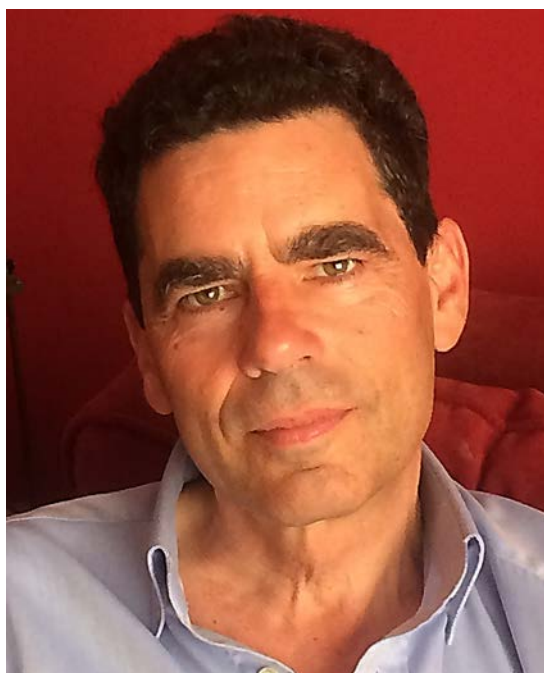
Patrick Collopy (Ph.D. 2004): I’m currently living in Philly and working as a Project Manager in Global R&D of FMC Corporation’s Agricultural Solutions in Ewing, NJ. I’m enjoying this role as it gives me a lot of exposure to many functions beyond R&D (e.g. finance, marketing, supply chain, regulatory, business development, legal) and continuously challenges me to grow and learn.



The Department wishes to extend its deep appreciation to Dr. Herb Cole (Professor Emeritus) for his recent donation of an endowment to the department entitled “The Herb Cole Jr. Fund for Plant Pathology and Environmental Microbiology.” It is Dr. Cole’s wish that the endowment be used to support graduate studies of international agricultural production practices through invited lectures and workshops by international agricultural experts from around the world. Herb earned his B.S., M.S. and Ph.D. degrees at Penn State. He received his Ph.D. co-advised by Clifford Wernham and Houston Couch in 1957, working on the etiology and epidemiology of anthracnose on red clover. After serving through the professor ranks and as Department Head of Plant Pathology from 1986 -1993, he retired from Penn State in 2005 with over 50 years of service. Although long retired, Herb still uses his office in Buckhout to continue lobbying for support of Penn State and PA agriculture. In 2006 Herb was selected as an Outstanding Alumnus of the College of Agricultural Sciences. Recently, Dr. Cole received the Volunteer of the Year Award to honor local community service. He served six years on the Penn State Extension Advisory Board and was on the Finance Committee. He also assisted in funding 4-H activities for

underfunded youth and serves as an advocate for the College of Agricultural Sciences in many venues at the local and state level. We consider him an Outstanding Plant Pathologist and friend.

WHERE ARE THEY NOW?



Dr. Inigo Zabalgogazcoa (Ph.D. 1992): Inigo is a research scientist with the Spanish National Research Council (CSIC) working in the Institute of Natural Resources and Agrobiology of Salamanca, Spain; and Adjunct Professor of Biology at the University of Salamanca. Although Inigo’s thesis research focused on characterization and inheritance of double-stranded RNA in barley, his career as a plant virologist has eventually turned to mycology. Inigo is now an international expert on studies of fungal endophytes infecting pasture grasses and wild grassland species. These seed transmitted endophytes develop symbiotic relationships with their grass hosts influencing host plant survival. He also thinks that these infecting endophytic fungi may have potential for commercial uses in turfgrass and crop improvement. He has discovered that the grass-infecting endophytic fungi also are infected with their own viruses, thus returning him to his virology roots as well as to new interests in the ecology of plant-fungus-virus interactions. In addition to his research position, he has been teaching Plant Pathology at the University of Salamanca for the past 12 years.

He believes that his teaching makes him even more interested in pursuing his research to learn more. For more information, Dr. Zabalgogazcoa may be contacted at i.zabalgo@irnasa.csic.es or through <http://www.irnasa.csic.es/>



In Memoriam



Walter Albright at the department's 2012 Holiday Party.

J. Walter Albright, a friend to many Plant Pathology students and faculty, passed away on Monday, March 17, 2014, at his residence. Born June 26, 1925, in Spring Mills, PA, Walter was drafted into the U.S. Army while attending 11th grade at the Gregg Township Vocational School. He was wounded in combat on March 21, 1945, and received the Purple Heart and Star Medal. Returning home as an unknown war hero, Walter went to work at Penn State University in janitorial. His last 28 years of employment at the University before retiring were devoted to taking meticulous care of Buckhout Laboratory and those residing inside.

Everyone who knew Walter has a story to tell about how he helped them. He was always fixing things around the building, even if he wasn't supposed to. One faculty member even swears that Walter helped him get tenure, since Walter was thought to be an unofficial advisor to Sam Smith, the Department Head! After retiring, Walter was finally awarded his high school diploma, in recognition of what he had sacrificed going to war. In recent years Walter and his wife, Dorothy, have been consistent attendees at our annual Christmas party, so we have maintained contact. Walter enjoyed camping and fixing clocks. He was a lifetime member of the Disabled American Veterans, a member of the Gregg Township Fire Co., the 572nd Battalion Anti-Aircraft Artillery Battery D, and the Black Panther Riding and Camping Club. In addition to his wife, Dorothy, Walter is survived by one son Steven Stirrett of Spring Mills.

Awards and Honors

Scholarship and Travel Awards

Casida Graduate Scholarship
2012-2013--Vaselios Bitas and Yinfei Li
2013-2014--Ilse Huerta

Gaspari Memorial Scholarship
2012-2013--Anna Testen
2013-2014--Laura Ramos

Nichols Memorial Award
2012-2013--Alamgir Rahman
2013-2014--Sarah Bardsley

Popp Award
2012-2013--Sarah Bardsley, Hilary Cheesman,
Kristi Fenstermacher, Sara May, Grace O'Keefe,
Laura Ramos, and Douglas Whalen
2013-2014--Eric O'Neal and Brian Aynardi

Roberts Scholarship
2012-2013-- Emmie Warnstrom
2013-2014--Robert Harvey and Tobias Tucker

Graduate Studies Enhancement Fund
2013-2014-- Grace O'Keefe

Francl Endowment Award
2013-2014-- Yueying Chen, Freddy Magdama,
and Alamgir Rahman

Faculty and Staff Awards

Staff Excellence Award
2012-2013--Deb Clemmer
2013-2014-- Lori Long

Excellence in Teaching award
2012-2013-- Maria Jimenez
2013-2014-- Beth Gugino

Service Awards

5 Years
2013-2014--Beth Gugino

10 Years
2013-2014-- Sara May and Kim Paley

15 Years
2012-2013-- Seogchan Kang
2013-2014--Wakar Uddin,
David Geiser, and Paul Backman

25 Years
2012-2013-- Randy Dreibelbis, Douglas
Keith, and Vija Wilkinson
2013-2014-- John Halbrendt

30 Years
2012-2013--Roxanne Lease and Mike Peck
2013-2014--Fred Gildow and Gary Moorman

Student Awards

Gamma Sigma Delta Research Expo

Biological Sciences Division
2nd Place---Eric O'Neal (2013)

Undergraduate Plant Related
Systems Division
2nd Place---Hunter Swisher (2014)

Biological Sciences Division
1st Place---Emily Pfeufer (2013)

Environmental Sciences Division
2nd Place---Hilary Cheesman(2013)

University Graduate Research Expo

Health & Life Sciences
2nd Place---Emily Pfeufer (2013)
3rd Place---Eric O'Neal (2014)



Awards and Honors 2012-2013



Henry Popp Award
Emily Pfeufer and Sarah Bardsley
Kristi Ferstermacher and Grace O'Keefe



25 Years of Service Award
Vija Wilkinson



James P. Roberts Award
Emmie Warnstrom



25 Years of Service Award
Randy Dreibelibis



Larry J. Jordan Award
Emily Pfeufer



Graduate Student Travel Award
Ilse Huerta



Staff Excellence Award
Debra Clemmer



Excellence in Teaching Award
Maria Jimenez-Gasco



Casida Graduate Scholarship
Vasileios Bitas



15 Years of Service Award
Seogchan Kang



Gaspari Memorial Scholarship
Anna Testen

Awards and Honors 2013-2014



**5 Years of Service Award
Beth Gugino**



**10 Years of Service Award
Sara May
Kim Paley**



**Staff Excellence Award
Lori Long**



**15 years of Service Award
David Geiser
Wakar Uddin (Not Pictured)
Paul Backman (Not Pictured)**



**30 Years of Service Award
Fred Gildow
Gary Moorman**

**College of Agricultural
Sciences Spirit Award
Lori Long**



**In recognition of 34 Years of service
Daniel Royse**



**25 Years of Service Award
John Halbrendt**



**Excellence in Teaching Award
Beth Gugino**

Awards and Honors 2013-2014



Leonard Francl Endowment
 Yueying Chen
 Freddy Magdama
 Alamgir Rahman



Graduate Studies Enhancement Fund
 Grace O'Keefe



Nichols Memorial Award
 Sarah Bardsley



Casida Graduate Scholarship
 Ilse Huerta-Arendondo



Gaspari Memorial Scholarship
 Laura Ramos-Sepulveda



Henry Popp Award
 Brian Aynardi
 Eric O'Neal



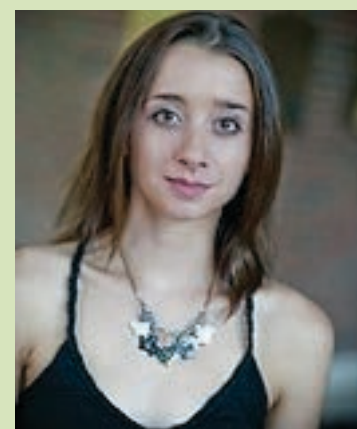
James P. Roberts Award
 Rob Harvey



Paul Hand Award for Graduate Student Teaching Achievement
 Awarded to---Emily Pfeufer



Research Expo Awardees
 Hilary Cheesman and Emily Pfeufer



Storkan-Hanes-McCaslin Foundation Award
 Kristi Fenstermacher

Guest Seminar Speakers

FALL 2013

Adam Bogdanove--Cornell University—Professor
Dept. of Plant Pathology & Plant-Microbe Biology
The Effects of TAL Effectors on Plant Genomes and Vice-Versa

Rachel Melnick--USDA-NIFA—Program Specialist
The Wicked Problems in Agricultural Research,
Education, and Extension

Katharine Stevenson--University of Georgia— Professor
Dept. of Plant Pathology
Fungicide Resistance in Population of Watermelon Gummy Stem Blight Pathogen

Anne Pringle--Harvard University—Associate Professor
Dept. of Organismic and Evolutionary Biology
Life and Death in Petersham Cemetery: The Dispersal and Demography of Fungi

Todd Ward--USDA-ARS—Research Leader
Diversity and Population Structure of Fusarium Head Blight Pathogens



Laurence Madden

On Friday, April 4, 2014, Dr. Laurence V. Madden, Distinguished Professor of Plant Protection and Associate Chair, Epidemiology, Statistic,

Biomathematics at The Ohio State University, was our honored speaker for the R.R. Nelson Memorial Seminar.

Dr. Madden attended Penn State, received his B.S. degree in Biology/Botany in 1975, stayed to earn his M.S. and Ph.D. degrees in plant pathology, and went onto Ohio State as a research scientist. Famous for his epidemiological research and teaching, he is very active in the American Phytopathological Society (President 1996-1997) and was Editor-in-Chief of the scientific journal “Phytopathology.”



Mike Boehm with PPEM Graduate Student, Brian Aynardi.

On April 7 Dr. Michael Boehm, Vice Provost for Academic and Strategic Planning and Professor of Plant Pathology at Ohio State University, was the Graduate Student Invited Guest Seminar Speaker for 2014. Dr. Boehm, also the current Past President of the Am. Phytopathological Society, presented a seminar entitled “Plant Pathology: A Systems Approach.” Dr. Boehm discussed the interdisciplinary nature of plant pathology and the need for cross training and team building. He advocated problem-based learning and the need for translational research for the future of Plant Pathology.

SPRING 2014

Isabel Munck--Forest Pathologist USDA Forest Service
Diseases threatening white pine health in Eastern North America

Jean-Philippe Marelli--Mars Center for Cocoa Science—Science Director
Saving the planet from a chocolate shortage: Mars journey to Tackle the Main Cacao Diseases in Brazil and Around The World

Jim Spadafora--FMC
The Future of Disease Management and Careers in Industry

Mark Wach--Sylvan Inc.—Vice President and Director of Research
Use of Solid Substrate Fermentation in the Development of a Novel Mycoherbicide

Matt Tancos --Cornell University—Graduate Student
Dept. of Plant Pathology and Plant Microbiology

On March 25, 2014, guest seminar speaker Dr. Carolee Bull presented a professional development workshop entitled “How to Be Your Own Best Mentor” to the department.

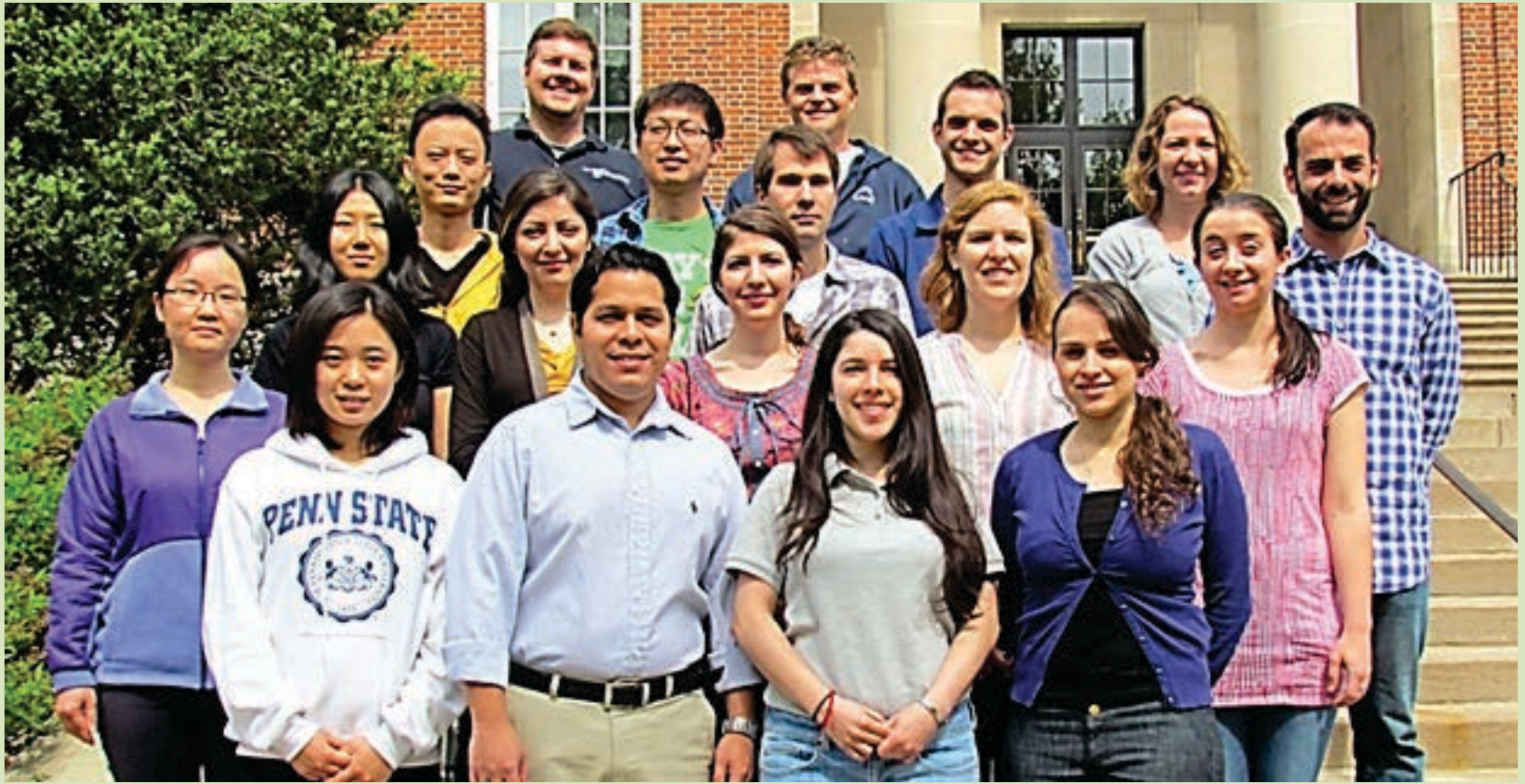
The seminar was organized by Maria Del-Mar Jimenez Gasco and was open to all students, staff, faculty, and post-doctoral researchers.

Dr. Bull ended her workshop with a group photo and the promise to follow up with any attendees wanting to scale their progress.



Carolee Bull with several members of the PPEM Department.

Endowments



A few of our current PPEM graduate students.

We sincerely thank all of our alumni, friends, and families who generously contributed to the endowments listed below or made gift donations to the department. During this time of decreasing state and federal support your contributions are becoming critical for our ability to maintain high quality graduate and undergraduate science education through support of faculty research programs or through direct support of student scholarships. Your continued support of our endowments allows us to offer unique educational opportunities to our graduates and allows us to remain competitive in recruiting highly motivated students who will further advance the science of Plant Pathology and will continue to enhance the reputation of the department and its graduates into the future.

Program Support

Herb Cole Jr. Fund for Plant Pathology and Environmental Microbiology
Leonard J. Francl Memorial Endowment in Plant Pathology
Albert Hildebrandt Botany Library Endowment
Larry J. Jordan Memorial Endowment in Plant Pathology
Alan A. MacNab Plant Pathology Memorial Endowment for Vegetable Research
William Merrill, Jr. Memorial Endowment for Teaching Excellence
Laurence D. and Mary Ann Moore Faculty and Staff Award in Plant Pathology
The Mushroom Industry Endowment for Mushroom Research
James F. and Marilyn L. Tammen Memorial Endowment for International Plant Pathology
James Oscar Watts Memorial Potato Research Endowment for Plant Pathology

Student Support

L. Earl and Veronica Casida Graduate Scholarship in Plant Pathology
Arthur Gaspari Memorial Scholarship
Lester P. Nichols Memorial Award
Henry W. Popp Graduate Assistantship
James P. Roberts Scholarship
Plant Pathology Graduate Studies Enhancement Fund

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Endowments

Please join other students, alumni, industry, and friends in enhancing the teaching, research, and outreach programs in the Department of Plant Pathology and Environmental Microbiology by contributing to the department as indicated below. Donations may be of any amount, big or small. The amount given is less important than your desire to help continue the academic quality for which our department is known.

I/We wish to make a donation of \$_____ to the fund indicated below.

- James and Marilyn Tammen Endowment for International Plant Pathology
- Larry Jordan Memorial Endowment supporting student field studies
- Leonard J. Francl Memorial Endowment supporting graduate research programs
- William Merrill Jr. Memorial Endowment enhancing teaching excellence
- The Plant Pathology Graduate Studies Enhancement and Travel Fund
- Albert Hildebrandt Botany Library Endowment
- Alan A. MacNab Plant Pathology Memorial Endowment for Vegetable Research
- Laurence D. and Mary Ann Moore Faculty and Staff Award in Plant Pathology
- The Mushroom Industry Endowment
- Herb Cole Jr. Fund for Plant Pathology and Environmental Microbiology
- Other (describe desired use): _____

Name: _____

Address: _____

Phone: _____

Email: _____

Make all checks and money orders payable to: The Department of Plant Pathology and Environmental Microbiology

Please cut out and mail form to:

**Diane Yoder, The Department of Plant Pathology and Environmental Microbiology, 212
Buckhout Lab, Pennsylvania State University, University Park, PA 16802**





Please Keep In Touch

Do you have news you'd like us to include in our next newsletter? New job? Family updates? We want to know what you've been up to. Don't forget to update us on any address changes as well. You can send all updates and news by mail to: [The Department of Plant Pathology and Environmental Microbiology, 211 Buckhout Lab, University Park, PA 16802](#) or Email: ppath@psu.edu.



This newsletter was edited by Chardonnai Johnson with layout and design also done by her. Many thanks to the members of the PPEM News Committee — Lori Long, Sandy Beck, Diane Yoder, Sarah Bardsley, and Department Head Fred Gildow — as well as others in the PPEM department who contributed news items and photos.

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