New APS Council Members Elected

APS would like to welcome our newest council members: Mark Gleason, Iowa State University (ISU), who was elected as incoming vice president and will serve as president for the 2020–2021 term, and Katherine Stevenson, University of Georgia (UGA), who will serve as councilor-at-large for the 2018–2021 term. Both officers will begin their terms following ICPP2018. Thank you to everyone who voted!

Gleason is a professor in the Department of Plant Pathology and Microbiology at ISU in Ames. He specializes in diseases of fruit and vegetable crops.

Stevenson is a professor in the Department of Plant Pathology at UGA in Tifton. She specializes in epidemiology and disease management, as well as mechanisms of managing fungicide resistance.

Complete biographical sketches and personal statements of leadership for Gleason and Stevenson appeared in the May 2018 issue of Phytopathology News. Please join us in welcoming these new members of APS Council during ICPP2018.

Register now for the ICPP Closing Event

This is not your typical APS Annual Meeting! At ICPP2018, 5 full days of scientific sessions are planned, and more than 2,300 people from academia and industry are already planning to attend. So why not join your colleagues for a rockin’ close to ICPP2018 at Boston’s iconic House of Blues?

For a limited time, you can bring up to three students/post-docs to the closing party for 50% off the regular ticket price. Order tickets now, because only limited tickets will be available at the event. The party has been moved to Thursday, August 2, and is open only to ICPP2018 attendees and their guests. Purchase your tickets now, and use a personal credit card when modifying your registration. Tickets are $110 per person, and student/post-doc tickets are available for $55 until July 10.

Don’t miss this opportunity to enjoy the best Boston has to offer!
PLANT PATHOLOGY’S PERPLEXING PAST—THE REST OF THE STORY

Potato Late Blight and World War I

Robert M. Harveson, University of Nebraska, rharveson2@unl.edu

The elements arsenic, mercury, sulfur, and copper served pivotal functions in the development of early fungicides, because they are toxic to living organisms. Two of the most commonly used elements for managing plant disease over the years have been sulfur and copper. The famous Bordeaux mixture was created after both ingredients were combined to produce a brew of three inexpensive, easily obtainable ingredients: copper sulfate, slaked lime, and water.

Pierre-Marie-Alexis Millardet is generally credited with discovering Bordeaux mixture in the early 1880s, despite the fact that copper sulfate (with and without lime) was common and had been in use long before downy mildew reached European vineyards around 1878. This fungicidal concoction had been employed for almost a century as a theft deterrent for fruit in vineyards near pedestrian walkways, as a preservative treatment of wooden stakes for training grapevines, and as a seed treatment for protecting cereals from smut. By the 1890s, it was also fully recognized and widely utilized as an effective method for managing potato late blight.

Most of you likely know that late blight disease of potato was a major cause of the Irish potato famine in the mid-1840s and had lasting influences on world and social history.

Late Blight Disease and World War I

In July 1914, the bloodiest war to that point in history broke out in Europe between Serbia and Austria-Hungary. Germany and Russia were drawn into the conflict and soon joined by Great Britain and France, who were allies of Russia. The war continued for 4 years.

The 1915 potato crop in Germany was phenomenally productive. The harvested yield was nearly three times what the German people normally needed and more than could be consumed. This created a large oversupply for feeding livestock, and large quantities were even left over for conversion into alcohol. Things looked very promising for the coming winter and beyond!

The problem was the lack of sufficient storage for the potato crop. The warehouse space that was not filled with war equipment was not nearly large enough to store the tremendous surplus of potatoes. Given the lack of storage space, the warm basements of public buildings and schools were used to store potatoes. When tubers began to sprout and rot, it was realized that this was a mistake! Waste was immense, as rotting potatoes were removed and dumped into cull piles. This set the stage for the upcoming late blight epidemic.

The Epidemic Strikes Again

The spring of 1916 was very conducive for plant growth. The new potato crop thrived under the plentiful rains and warm temperatures. Then, the summer rains turned cold. Disease began from within the masses of tubers discarded the previous year, and aided by the cool, damp weather that summer, it spread rapidly throughout German potato fields.

There was no copper to spare for making the fungicides that could save the potato crop. Agriculture was forced to take a back seat to the needs of the military and war effort. Thus, potatoes rotted in the fields without being harvested. Potatoes that were harvested went to the army. The soldiers were not hungry that year, but their families back home were. By the end of 1916, German citizens were starving. An estimated 700,000 people died from starvation in the winter of 1916–1917.

The German people’s morale and interest in continuing the war plummeted in 1917. After more than 3 years of fighting a destructive, deadlocked war against the Allies, the Germans were fatigued and demoralized. Likewise, the military weakened in 1917, and it finally collapsed in November 1918, ending the war.

Concluding Remarks

The agricultural and environmental conditions in Germany in 1915–1916 were eerily similar to those of Ireland in the mid-1840s, and the outcomes were similarly catastrophic. In each case, farmers produced a bumber crop of potatoes one year and excessive quantities were carelessly dumped due to lack of storage facilities. The following year had a warm spring and a cool, wet summer, triggering widespread crop losses caused by late blight disease, which began...
Principles of Diagnostic Assay Validation

Concepts and Outputs from an APS Annual Meeting Workshop

Kitty Cardwell, Geoffrey Dennis, Andrew Flannery, Jacqueline Fletcher, Doug Lyster, Mark Nakhs, Anna Rice, Pat Shiel, James Stack, Colin Walsh, and Laurene Levy (in memoriam)

A 1-day workshop titled “Principles of Validation for Plant Pathogen Diagnostic Assays” was held August 5, 2017, in San Antonio, Texas, and attended by APS members from academic, government, and industry backgrounds. The workshop was designed by the organizers to develop a common understanding among plant pathologists of the language and metrics of diagnostic assay validation and to explore the modalities of validation research planning. Major outcomes and findings are briefly summarized in this note, and a glossary of terminology related to plant pathogen diagnostic assay validation will be available in the APS Education Center.

A panel of experts from various backgrounds in pathogen diagnostics presented detailed information on the following topics:

The role of validation in assays for the diagnosis of plant diseases

Validation is the process that (1) assesses the ability of a procedure to generate reliable results under specific conditions, (2) defines the conditions needed for specific results, (3) determines assay limitations, (4) identifies sources of variability that must be controlled, and (5) forms a basis for interpretation (Budowle et al., 2008). Plant disease diagnostic technologies are essential to the work of plant professionals, including diagnosticians and plant health regulators at the federal, state, and local levels; customs officials; academic researchers; industry personnel; and agricultural producers and their consultants. These widely divergent professional applications have a range of objectives and requirements for stringency and confidence.

Fitness for purpose

The ideal level of quality for a diagnostic assay can be defined in terms of the goals of the users. Examples of the fitness requirements of assay validation for different applications are as follows:

- **Forensic diagnostics for attribution.** The goal of forensic diagnostics is to identify biological agents in samples recovered from potential crime scenes to provide evidence relevant to the attribution of a crime. Operations and assay use are stringently managed during forensic diagnostic procedures to ensure biosafety and biosecurity, as well as the evidentiary chain of custody.

- **Validation for quarantine and regulatory diagnostics.** The USDA Animal and Plant Health Inspection Service (APHIS) and accredited National Seed Health System (NSHS), National Clean Plant Network (NCPN), and National Plant Diagnostic Network (NPDN) laboratories all use diagnostic assays for regulatory purposes in compliance with U.S. laws, regulations, and policies. Some authorized USDA regulatory assay testing is done by accredited NPDP and/or state departments of agriculture using USDA-validated methods. Regulatory decisions based on these tests must be

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REFERENCES

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Harveson, continued from page 75

in the cull piles and culminated in famine, starvation, and economic disaster.

Isn’t it amazing how history repeats itself? And now, you know the rest of the story!

NEXT MONTH: How the horrors of World War I led to improvements in plant pathology

Phytopathology News
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founded on sound science and sufficiently documented and validated to withstand legal challenges, both in U.S. courts of law and by international bodies.

**Validation of commercial assays.** The private-sector plant pathogen diagnostic industry serves a wide range of markets, from voluntary testing by orchid hobbyists to regulatory-driven regulatory/quarantine programs across the United States. Developers of commercial assays cover both traditional (prerelease) validation and approaches to the often-overlooked process of postrelease (ongoing) validation to ensure that each test remains fit for use over time in an ever-changing market.

Plant disease diagnosticians at universities and agricultural experiment stations use diagnostic assays from these specific sources and can also perform a multitude of other diagnostic procedures on a large variety of hosts and pathogens. Although these diagnoses are not always regulatory, they often have economic implications for the client. Therefore, it is important that the diagnostic pathologist be able to describe the degree of confidence in the assay. Often, well-validated assays are not available for every situation, especially when an outbreak is caused by a new or re-emerging pathogen. In such a case, a presumptive diagnosis made with an assay that is in the early stages of validation may suffice, depending on the needs of the client.

**Workshop discussion and breakout exercise topics**

Workshop discussions and hands-on exercises addressed major components of diagnostic assay validation in the context of fitness for plant pathology applications. These components included validation metrics, specificity, sensitivity, precision, accuracy, robustness, confidence levels, and fitness for pathogen type. Definitions of validation terms are available via the link provided earlier in this article. Additionally, a report is being prepared that will describe these concepts more fully.

**Recommendations**

The following steps for enhancing validation practices in the plant pathology community were identified by workshop participants as desirable subjects for future efforts in research, policy, communication, and application:

1. Identify funding gaps and communicate them to the APS Public Policy Board and stakeholders.
2. Develop a standard glossary of diagnostic assay validation terms, and publish it online.
3. Create and formalize a validation guide for phytopathogen diagnostics.
4. Establish an editorial checklist and standards for manuscripts on diagnostic assay validation in APS journals.
5. Engage international diagnosticians on the commonality of concepts and terminology.
6. Engage seed health testing professionals with experience in validation, and employ seed health examples/case studies in future activities.
7. Develop training materials/courses:
   - Develop interactive exercise examples in, for example, an Excel worksheet format.
   - Prepare in-depth workshops on all of the validation metrics.

**Acknowledgements**

The workshop was sponsored by the APS Microbial Forensics Interest Group; the APS Plant Pathogen and Disease Detection Committee; and the APS Emerging Diseases Committee and supported financially by Agdia, Inc.; PathSensors, Inc.; and APS. Thanks also to APS for assistance with the glossary of assay validation terminology and with formatting.

**Additional Thanks**

Workshop planning and execution involved many people. Specificity Workshop materials and concepts—M. Arif (University of Hawaii), A. Rice (EnviroLogix, Inc.), F. Ochoa-Corona (Oklahoma State University, NIMFFAB), and A. Flannery (PathSensors, Inc.); Sensitivity Workshop materials and concepts—A. Rice (EnviroLogix, Inc.), F. Ochoa-Corona and K. F. Cardwell (Oklahoma State University, NIMFFAB); Diagnostic Precision, Accuracy, and Confidence Levels Workshop materials and concepts—G. Dennis and V. Mavrodieva (APHIS, PPQ) and C. Walsh (Agdia, Inc.); Fitness for Pathogen Type Session—chaired by D. Luster and assisted by J. Fletcher (Oklahoma State University, NIMFFAB, Emerita), J. Rascoe (APHIS, CPHST), C. Garzon (Oklahoma State University), I. Tzanetakis (University of Arkansas), J. Bienapfl (APHIS, PPQ, SS&T), A. Espindola (Oklahoma State University, NIMFFAB), J. Stack (Kansas State University), W. Schneider (USDA, ARS), and S. Costanzo (APHIS, PPQ).

**Reference**


**References**

Assay Validation, continued from page 76

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Public Policy Board

PPB Seeks Applicants for Open Board Positions

Application Deadline: July 6, 2018

APS announces that multiple positions are open on the APS Public Policy Board (PPB) for members who are enthusiastic about helping to provide scientific input for public policymaking. The PPB focuses on policy issues related to funding for research and extension in the agricultural sciences and education and regulation in areas relevant to plant pathology. Expertise in APHIS- or EPA-based regulatory affairs, microbial culture collections, or emerging pathogens is desirable, but members with any area of expertise will be considered.

One of the three current open PPB positions is designated for a representative from industry.

Activities of PPB members include interacting with relevant APS committees and groups, providing leadership on the development of PPB input to national agencies, participating in monthly conference calls, joining the PPB’s midyear meeting in Washington, DC, to discuss initiatives with policymakers and funding agencies, and helping to communicate science policy issues to the APS membership through Phytopathology News articles and activities at the APS Annual Meeting.

Interested individuals must have an interest in public policy and may have demonstrated interest and expertise in any aspect of plant pathology. Individuals should be willing to take the lead on developing PPB initiatives in existing or emerging policy areas of importance to the society. PPB requests submission by July 6 of a short statement of interest and background (short CV) from any member interested in serving APS as a PPB member. The applicant should send these items to PPB Chair Gwyn Beattie. Questions should also be directed to Beattie via email or phone (+1.515.294.5571)

PPB will review all submitted materials and make determinations on the PPB appointments before ICPP2018 in August.

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July 2018 79
Connect with Your Colleagues at the Welcome Reception

Immediately following the Opening Plenary Session on Sunday, July 29, join us in Hall D for the Welcome Reception to experience all the local flavors of Boston. Stroll through different food stations that represent the various neighborhoods of Boston—the North End, Seaport District, Chinatown, Southie, and Fenway—to sample the ethnic flavors and culinary delights of each part of this historic city as you reconnect with colleagues and make new acquaintances.

Boston Red Sox vs. Phillies on 7/31 at 7:10PM

You just can’t plan a trip to Boston that doesn’t include Fenway Park! Experience the Major League Baseball tradition at one of the most iconic, oldest ballparks in America! Sit with your colleagues from ICPP in reserved seating in the grandstand and outfield bleachers when the Boston Red Sox take on the Philadelphia Phillies on Tuesday, July 31 at 7:10 PM Eastern Standard Time. Tickets in the block for ICPP2018 must be purchased at the following website:

https://groupmatics.events/event/icppnight

Print your tickets before your trip to ICPP and bring them with you to the game. See you at the ballpark!

Closing Party at House of Blues!

The fun times don’t end Tuesday… Get ready for a BIG closing party for ICPP2018 on Thursday, August 2 at the House of Blues, Boston featuring the World Premier Band! Always a crowd-pleaser, the World Premier Band’s music will have you dancing and celebrating with hit songs spanning decades and multiple genres to please music lovers. Get a taste of true Americana with great food in addition to great tunes at the House of Blues. This show is just steps away from Fenway Park! Preregistration and ticket purchase is required; see ICPP2018 website for details.

REGISTER NOW!
Are You Ready for ICPP2018?

ICPP2018 will make history in Boston as ISPP celebrates its 50th anniversary. Connect with industry colleagues, meet others from around the world, and discuss new technologies and trends. There may never be a better time for you to attend ICPP than this year in Boston!

Abstracts Online

Meeting abstracts are available online for posters and concurrent sessions. Content in your area of expertise or another specific area of science will be available. Search by keyword and find a topic of interest; then get additional information about it at the meeting. A list of session titles appears on page 83.

Engaging Session Formats, and Emerging Topics!

POD Talks
Phytopathologists of Distinction share insights and lessons learned in their colorful career paths in plant pathology. These POD talks are open, informal discussions for anyone at any career stage. Join us for a talk!

Idea Cafés
Meet with great minds to discuss 20-plus specific topics related to teaching, professional advancement, and more.

Hot Topics
These sessions focus on new and emerging threats and issues and how we can respond to them.

Workshops
Get hands-on experience with plant–microbe interactions, or study how parasitic nematodes impact crop yields through lab techniques and a slide preparation. Interact and exchange ideas with the ICPP Subject Matter Committee on the topic of Rhizoctonia spp. Choose from more than 10 workshops, ranging from introductory to advanced topics.

Unable to make it to Boston this July? Then participate in live streaming sessions!

To make this meeting more readily available to a global audience, ICPP2018 will offer individuals the opportunity to participate in the Opening and Monday Plenary Sessions via a live stream. Visit the *live stream site* for links the day of the event.

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Widely Prevalent Plant Pathogenic Fungi List Working Group

Phytopathology News
Get Personal, Get Inspired: Check Out POD Talks at ICPP2018!

Conversations with Phytopathologists of Distinction (PODs) offer congress attendees in all stages of their careers an opportunity to connect with notable phytopathologists in an informal setting, as they discuss their individual career journeys. This year’s POD Talk speakers bring fresh, exciting perspectives that you won’t want to miss—plus there is time built in for discussion after each talk! All POD Talks will be presented in the Exhibit Hall.

MONDAY, JULY 30
16:30

Jimmy Botella, University of Queensland, kicks off the series with a talk titled “From Quantum Theory to Plant Pathogens: You Never Know Where You’re Gonna End Up!” Botella started his academic career in quantum chemistry and took exactly one biology class. “Plants were those green bits that stuck out of your Big Mac.” He later came to realize that biology is not a dead science but exactly the opposite. Find out what changed his mind, and learn how he still uses his background in the middle of the jungle!

TUESDAY, JULY 31
16:30

For Shazia Iram, Fatima Jinnah Women University, the journey to becoming an accomplished plant pathologist was not easy. Growing up as a woman in Pakistan presented particular barriers to her science education. Unable to secure a place at a medical school, Iram still continued her education, obtaining an MSc, MPhil, and PhD in plant pathology. Along the way, Iram relied on invaluable mentors, who encouraged her and guided her toward her current career. Her talk will describe this journey and the impact that plant pathologist Ifikhar Ahmed had on her life. This talk is sure to inspire and inform!

THURSDAY, AUGUST 2
16:30

Rashmi Aggarwal dreamed of joining the Indian Agricultural Research Institute (IARI) after finishing her botany honors degree as an undergraduate. After meeting renowned mycologist K. G. Mukherjee, Aggarwal became fascinated with mycology and plant pathology. She was selected to work at IARI and specialized in karnal bunt of wheat. Her experiences in the laboratory and the field have taken her on many adventures, and over the span of her 33-year career, she has never looked back. Hear about her journey and work at her talk.

THURSDAY, AUGUST 2
17:30

The last POD talk of the congress offers a glimpse into the strong, passionate community of plant pathologists in Nigeria. Sylvester Osemare Aigbe shares the founding story of the Phytopathological Society of Nigeria (PSN). PSN started as a Yahoo Group! in 2008. Inspired by the meetings of other phytopathological societies, Aigbe decided to take on the challenges that came with forming a society in Nigeria. In his own words, “How did a young plant pathologist, from a state university in the countryside, come to form a nationwide phytopathological society, attracting and uniting eminent plant pathologists from all over the nation and abroad? Just come and listen to my story!”
ICPP2018 Sessions at a Glance

Visit the ICPP2018 website for abstracts and more information about the sessions and to register for the congress if you haven’t yet! Be sure to download the official meeting mobile app to start building your meeting schedule!

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<td>• The Vulnerability of Banana to Globally Developing Disease Threats</td>
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<td>• Understanding Mechanisms of Resistance and Resistance Costs to Improve Plant Yield</td>
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<td>The Two-for-One Deal: Mechanisms of Plant Cross-tolerance to Biotic and Abiotic Stresses</td>
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## Premeeting Events

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<td>• Effector-Detector Plants: Teaching and Research tools for Monitoring Pathogen Birulence Live</td>
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### 2018 APS Annual Meeting Exhibitor List

Representatives from leading industry suppliers will answer questions and share information about their products and services. (Exhibitors are listed as of June 21.)

- Agdia, Inc.
- APS Foundation
- APS Office of International Programs (OIP)
- APS Office of Public Relations and Outreach (OPRO)
- APS PRESS
- APS Public Policy Board (PPB)
- BASF Corporation
- Bio Chambers Incorporated
- BIOREA AG/Eurofins BioDiagnostics, Inc.
- British Society for Plant Pathology
- CABI
- Conviron
- Corteva Agriscience, Agriculture Division of DowDuPont
- CSP Labs, Inc.
- Dino-Lite Scopes
- Environmental Growth Chambers
- Fungicide Resistance Action Committee (FRAC)
- Gylling Data Management, Inc.
- International Congress for Molecular Plant-Microbe Interactions (IC-MPMI)
- International Society for Plant Pathology
- Microbiology International
- MONSANTO
- Nano Diagnostics, LLC
- New Phytologist Trust
- Ops Diagnostics
- OptiGene Limited
- PathSensors, Inc.
- Penn State Department of Plant Pathology and Environmental Microbiology
- Percival Scientific, Inc.
- PhytoAB, Inc.
- PhytoTechnology Laboratories
- Springer
- The Phytopathological Society of Japan
- U.S. Department of Agriculture (USDA)

Download the ICPP2018 App for the Program and More

The ICPP2018 mobile app is now available for your smartphone or tablet. Browse the program and exhibitor list, customize your schedule, connect with other attendees, or even make an appointment with a poster author. The ICPP Mobile App is a must if you will be attending! Download the app and start setting up your schedule ahead of time!
Awards

**Breanne Kisselstein** was selected as the 2018 recipient of Cornell University’s Early Career Exemplary Service Award. This award is presented annually to a student who has demonstrated exemplary service to the Cornell graduate and professional student community. It recognizes Breanne’s expansive advocacy work as it pertains to accessibility for students with disabilities and gender equality within the fields of science, technology, engineering, and mathematics (STEM). Breanne is a PhD student supervised by **David M. Gadoury** and **Lance Cadle-Davidson** in the plant pathology and plant-microbe biology section at Cornell’s Agricultural Experiment Station in Geneva. Her research is focused on the use of amplicon sequencing (AmpSeq) for the study of pathogen ecology, with particular reference to fungicide resistance and selective sweeps in powdery mildew pathogens.

**Melissa Munoz**, a graduate student in plant and environmental sciences at Clemson University, has received the prestigious 2018 Paul Eck Jr. Scholarship from the American Floral Endowment. Munoz is studying the effects of *Botrytis* spp. on roses shipped from Colombia to the United States under the guidance of **Guido Schnabel** and **James Faust**. She recently presented her research findings to a large group of industry representatives from ProFlora in Bogota, Colombia. Her research includes studies of resistance of *Botrytis* spp. to different chemical classes, use of weather information to understand disease pressure, and cultural practices related to spore density in greenhouses. She has been invited to make another presentation to flower industry representatives and research specialists under the auspices of SiFlor in Medellin, Colombia, in September. Munoz received her BS degree from the National University of Colombia at Medellin in 2016; she is currently completing work for her MS degree at Clemson.

**Sophien Kamoun**, a group leader at The Sainsbury Laboratory and an ICPP2018 plenary speaker, has been elected as a Fellow of the Royal Society. In a distinguished career, Professor Kamoun, who is also Professor of Biology at the University of East Anglia, has made major contributions to the understanding of plant diseases and plant immunity. Kamoun has pioneered genomics and molecular biology methods to reveal fundamental insights into the biology and evolution of plant pathogens. His inventive work in plant pathology has resulted in new approaches to mitigate some of the world’s most serious crop diseases. Kamoun received The American Phytopathological Society Syngenta Award in 2003, the Noel Keen Award in 2013, the Daiwa Adrian Prize in 2010, and the Kuwait Prize in 2016. He was elected to Academia Europaea in 2011 and EMBO in 2015, and he won successive European Research Council (ERC) Advanced Investigator grants in 2011 and 2017. The Fellowship of the Royal Society is made up of the most eminent scientists, engineers, and technologists working in the United Kingdom and Commonwealth. Past fellows and foreign members have included Isaac Newton, Charles Darwin, and Stephen Hawking. The Royal Society is a self-governing fellowship of many of the world’s most distinguished scientists drawn from all areas of science, engineering, and medicine. The society’s fundamental purpose, reflected in its founding charters of the 1660s, is to recognize, promote, and support excellence in its founding charters of the 1660s, is to recognize, promote, and support excellence in science, technology, engineering, and medicine.

**Xuefei Wang** completed the requirements for a PhD degree in plant pathology from Washington State University (WSU). Her PhD thesis was titled “Population Dynamics and Activities of Native Yeasts in Washington State Vineyards and During Alcoholic Fermentation.” **Dave Weller** was her major advisor, and **Pat Okubara**, **Tim Murray**, **Lee Hadwiger**, and **Charles Edwards** (Food Science, Viticulture, and Enology) were her committee members. Wang received her BS in bioengineering in 2010 and her MS...
in microbiology in 2013 from Huazhong Agricultural University, China. At WSU, she received a 2016 APS Pacific Division Graduate Student Travel Award and the 2017 American Society for Enology and Viticulture Traditional Scholarship. She will work as a senior engineer in China Haisheng Fresh Fruit Juice Co., Ltd.

Lindani Myo completed the requirements for a PhD degree in molecular plant sciences, an interdisciplinary program at Washington State University (WSU). His dissertation was titled “Tuber Necrosis—Causing Viruses of Potato: Genetic Diversity and Host—Pathogen Interactions.” and his supervisory committee included Hanu Pappu (chair), Patricia Okubara, Vidyasagar Sathuvalli (Oregon State University), and Kiwamu Tanaka.

Lindani received a Fulbright Fellowship and a Fulbright research grant award. He received competitive travel awards from the Washington State Crop Improvement Association, WSU molecular plant sciences graduate program, WSU Graduate and Professional Students Association, and The American Phytopathological Society—Pacific Division. Lindani holds an MS degree in applied microbiology and biotechnology, a postgraduate diploma in higher education, and BS (Hons) in applied biology and biochemistry—all from the National University of Science and Technology (NUST), Zimbabwe. Since 2011, he has held a research fellow position in the Department of Environmental Science and Health, NUST in Zimbabwe. Lindani will continue as a post-doctoral research associate in the WSU Department of Plant Pathology.

Graduate Student Spotlight: Lauri Lutes

Biography

STATUS: Third-year PhD! (just transitioned from MS) in botany and plant pathology at Oregon State University (OSU) (advisor: Dr. Jay W. Pscheidt). I am most interested in applied research, extension, and teaching. At OSU, I received a graduate certificate in college and university teaching.

HOMETOWN: Mill Creek, Indiana

APS INVOLVEMENT: I am the current vice chair of the Teaching Committee (2017–2018); led an Ideas Café on science communication at the 2017 meeting; served on the Diseases of Ornamental Plants Committee (2014–2017); gave an oral presentation at the 2016 Pacific Division Meeting; was an APS Foundation volunteer in 2017; have presented posters at the APS Annual Meetings in 2013, 2014, and 2017; and have been published in Plant Disease. I have received the Robert W. Fulton Student Travel Award (2017) and the Pacific Division Student Travel Award (2016).

Research Focus

My research seeks to determine the host specificity and diversity of the nematode-transmitted tomato ringspot virus on tree and small fruits, with a focus on sweet cherry.

Rapid Fire Questions

How did you become interested in the field of plant pathology?

My journey to a career in plant pathology began as an undergraduate researcher studying the fungal pathogenicity of Glomerella sp. associated with a native woodland herb, the great waterleaf, in northern Indiana.

After graduating, I worked for a plant pathogen diagnostics company for nearly 5 years, an experience that ultimately led me to pursue a PhD in plant pathology.

What’s something interesting most people don’t know about you?

I cohost a radio show on OSU’s college radio station, KBVR 88.7 (also available as a podcast on iTunes), called “Inspiration Dissemination,” which was founded by a former OSU grad and a fellow plant pathologist, Dr. Zhian Kamvar and Joey Hulbert. Each week, we interview graduate students across disciplines at OSU about their research and journeys to graduate school. I love crafting—currently in the form of knitting and crocheting—and playing the piano. I am Mom to a spunky 7-year-old daughter and Puppy Mom to a 3-year-old bichon frisé.

What is your favorite pathogen/plant disease?

Prune dwarf virus: It produces some really—dare I say—beautiful foliar mosaics, and the disease isn’t (usually) severe.

Follow Lauri Lutes

Learn more about the APS Graduate Student Committee initiatives and student opportunities. Connect with the committee on Twitter @plantpathgrads and Facebook.
People, continued from page 87

Tanaka (chair), Hanu Pappu, and Debbie Inglis. DeShields received his BS degree in biology from Oregon State University (OSU) in 2015 and worked as a microbiologist for Stahlbush Island Farms in Corvallis, Oregon, from June to August 2016. He was responsible for surveying manufacturing equipment and company products for foodborne pathogens and for coordinating all external testing and ensuring compliance with customer quality-assurance requests. He was a research volunteer in Jeff Chang’s laboratory at OSU from June 2015 to September 2016. His duties included using and optimizing various subcloning strategies to efficiently produce gene knockouts in the bacterial pathogen *Rhodococcus fascians*. At WSU, DeShields was awarded second place at the College of Agriculture, Human, and Natural Resource Sciences 3-minute thesis competition for master’s students. He is currently seeking employment in the agricultural industry within the field of plant pathology or plant disease diagnostics—specifically in the southern Oregon region.

WSU Honors Plant Pathology Faculty and Staff

Washington State University (WSU) Showcase events honor the achievements of WSU faculty and staff. At this year’s Celebrating Excellence Banquet, Tobin Peever and Naidu Rayapati, in the Department of Plant Pathology, were recognized for promotion to professor. Cheryl Hagelganz, an administrative support staff member of the department, received the President’s Employee Award for Excellence.

Post-Doctoral Associate

A post-doctoral associate position is available at the Division of Agriculture, University of Arkansas–Fayetteville for an individual interested in virus epidemiology/virus–vector interactions and/or bioinformatics. Position responsibilities and duties include designing experiments, performing data analyses and management, publishing results in scientific journals, and working well as a team as well as independently. Skills required for this project include knowledge of bioinformatics and commonly used virology techniques (design and use of regular and qPCR assays, cloning, sequencing and sequence analyses, hybridizations, ELISA, etc.). The individual in this position will be expected to perform research and data analyses independently using scientifically appropriate procedures. Responsibilities also include conducting field trips for sample collection.

Requirements include a PhD in molecular biology, virology, bioinformatics, or a related field, as well as a strong demonstrated background in bioinformatics, molecular, and immunological techniques and demonstrated technical experience with viruses. The successful candidate will be expected to conduct research independently and have excellent written and oral communication skills. The applicant must demonstrate careful attention to detail, excellent record keeping, and the ability to organize his or her time effectively and manage multiple concurrent research projects. The applicant must hold a valid U.S. driver’s license.

The individual should submit an application that includes a curriculum vitae, cover letter/letter of application, and list of three professional references (name, title, email address, and contact number). Review of applications will begin right way and continue until a successful candidate has been identified. Contact Ioannis Tzanetakis for more information.

Research Plant Pathologist

The U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Foreign Disease–Weed Science Research Unit (FDWSRU) at Fort Detrick, Maryland, is seeking highly qualified candidates for a permanent, full-time research plant pathologist, GS-0434-12, with a salary range of $81,548 to $106,012 per year. The person in this position will conduct research aimed at using plant pathogens to control invasive weeds that threaten U.S. agriculture. Some research will be conducted in a Biological Safety Level 3 Plant Pathogen Containment Facility and will require completing a background investigation. To apply, see vacancy announcement ARS-D18E-0084 at the USAJOBS website; follow the application directions provided. Proof of U.S. citizenship is required. Applications must be received by July 9, 2018.

Faculty Position in Plant-Related Microbiology

The Institute of Plant and Microbial Biology (IPMB), Academia Sinica, Taipei, Taiwan, is inviting applications for a tenure-track, research-oriented faculty position. The research focus of IPMB include (1) mechanisms of plant functions and (2) plant–microbe interactions and bioresources. The applicant should hold a PhD degree and have postdoctoral training, with expertise in studies of plant-related microbiology or plant–microbe interactions. Preference will be given to applicants at the level of assistant research fellow (equivalent to assistant professor). The successful candidate will receive excellent starter funds and annual intramural support.

The application folder should include (1) a cover letter, (2) a curriculum vitae, (3) a statement of research accomplishments, (4) a statement of future research plans, and (5) reprints of five representative publications. The application folder (in PDF format) and, separately, three letters of recommendation should be sent via email to Dr. Erh-Min Lai, Chair of Search Committee, c/o Ms. Hsiao-Yun Wang, Institute of Plant and Microbial Biology, Academia Sinica 128, Sec. 2, Academia Road, Nankang, Taipei, Taiwan 11529. The review of applications will begin on August 15, 2018, and continue until the position has been filled.

Clean Stock and Plant Pathology Manager in China

The primary objectives of this position are to implement company-wide clean stock practices; obtain rapid disease and pest diagnosis using a variety of technologies and/or outside contract labs; support nursery, fruit production, and

Classifieds

Classified Policy

You can process your job listing at the APS Job Center. PLEASE NOTE: Your online job listing may be edited by newsletter staff to approximately 200 words for the print listing in *Phytopathology News*. Fees for posting online are $25 member/$50 nonmember for graduate or postdoc positions and $200 member/$250 nonmember for all other positions. To have your job listing included in *Phytopathology News*, simply select the option on the online form (there is an additional $55 fee). If you have any questions, contact the APS Placement Coordinator.

Classifieds, continued on page 89
food safety functions across the company; and develop methodology and procedures to ensure our plants and berries are free of economically significant diseases. Job duties may include but are not limited to the following: Administrative: Manage the Clean Stock Program, including preparing the budget; formulate Clean Stock Program planning, policy, and procedures; cooperate with Driscoll’s colleagues in global plant health and clean stock, as well as other business unit nurseries, to support China Professional; develop and implement clean stock and plant health plans and programs, including procedures and guidelines for nursery and fruit production; conduct regular surveys to identify and then manage plant health issues in production fields and nursery settings (greenhouses, fields) being caused by economically important pathogens; promote the company-wide major pathogen-free Clean Stock Program and provide technical advice for nursery, production, and food safety; analyze and identify potential risks to plants and production and provide recommendations for possible management solutions to existing problems; collaborate with internal and external pathology labs and perform laboratory diagnosis of plant diseases; maintains records and prepare reports and correspondence for nursery, production, and food safety; (ii) optimizing growth and productivity of replanted stone and nut orchards; (iii) examining interactions among soil and root microbial communities and chemical and physical soil properties as they affect key soil health problems that affect almond and other stone fruit orchards when they are replanted. Areas of focus could include (i) examining interactions among soil and root microbial communities and chemical and physical soil properties as they affect growth and productivity of replanted stone fruit and nut orchards; (ii) optimizing organic soil amendment-based strategies, including anaerobic soil disinfestation, for management of stone fruit and nut replant problems, especially Prunus replant disease (a Prunus-specific growth suppression mediated in part by soil microbial communities in successive stone fruit and nut plantings); and (iii) determining impacts of whole-orchard recycling (i.e., the process of incorporating old orchard residues into the resident soil before replanting, instead of removing or burning the residues) on soil microbial communities and replanted stone fruit and nut orchard growth. The research will involve an interdisciplinary, collaborative team with collective expertise in plant pathology, microbiology, horticulture, soil science, and bioinformatics. The successful candidate will need to work effectively as a team member in lab, greenhouse, and field settings. The lab is committed to development of sustainable, practical management strategies for soilborne diseases of fruit and nut trees. Priority will be given to qualified candidates that can start research in summer 2018. The initial appointment will be for 1 year, with the opportunity for renewal.

The position requires a recent PhD degree in plant pathology, soil microbiology, or a closely related field. Knowledge and experience with modern molecular methods used in environmental examinations (e.g., extraction and purification of nucleic acids from complex samples, PCR, microbial community analyses, metagenomics, metatranscriptomics, metabolomics, and proteomics) are required. The ideal candidate will have strong interpersonal, communication, and decision-making skills, as well as the ability to work well both independently and as part of a team. Motivation to solve complex agricultural problems is also essential.

Applicants must apply online. At the online application site, you will be asked to provide the following: your most recently updated curriculum vitae, a cover letter, a list of pertinent coursework, official or unofficial transcripts, 3–5 references (contact information only), and a statement of contributions to diversity. Diversity contributions documented in the application file will be used to evaluate applicants. Guidelines about writing a diversity statement and why one is requested are available online.

**Find the Latest Jobs in Plant Pathology**

Don’t forget, members can search online for new job opportunities in the field of plant pathology using the APS Job Center. View the latest postings online in the APS Job Center.
De Novo Transcriptome Study Identifies Candidate Genes Involved in Resistance to *Austropuccinia psidii* (Myrtle Rust) in *Syzygium luehmannii* (Riberry)


**Plant Disease**

The Use of Features from Fluorescence, Thermography, and NDVI Imaging to Detect Biotic Stress in Lettuce

M. Sandermann, R. Grosch, and J. Graef

Effect of Fusarium Head Blight Management Practices on Mycotoxin Contamination of Wheat Straw

K. M. Bissonnette, F. L. Kolb, K. A. Ames, and C. A. Bradley

Tank Mixing Fungicides for Effectiveness Against Eastern Filbert Blight of Hazelnut

J. W. Pechelt, S. Heckert, and S. A. Cluskey

**MPMI**

Molecular Insights into the Involvement of a Never Ripe Receptor in the Interaction Between Two Beneficial Soil Bacteria and Tomato Plants Under Well-Watered and Drought Conditions

P. Ibort, S. Molina, J. M. Ruiz-Zurdo, and R. Aroca

*Bacillus velezensis* CC09: A Potential ‘Vaccine’ for Controlling Wheat Diseases


Heterologous Expression of Rhizobial CelC2 Cellulase Impairs Symbiotic Signaling and Nodulation in *Medicago truncatula*


**Phytobiomes**

Cropping History Effects on Pathogen Suppressive and Signaling Dynamics in *Streptomyces* Communities

K. Gdanetz and F. Trail

The Wheat Microbiome Under Four Management Strategies, and Potential for Endophytes in Disease Protection

K. Gdanetz and F. Trail

**Plant Health Progress**

Effectiveness of Nontarped Broadcast Fumigation and Root Removal on Root Lesion Nematode and Fusarium and Pythium Species in a Red Raspberry System

L. W. DeVetter, S. Watkinson, I. A. Zasada, J. E. Weiland, C. Hesse, and T. W. Walters

Diagnostic Guide: Wheat Soil-Borne Mosaic


Target Spot-Incited Defoliation and Yields of Selected Cotton Cultivars as Influenced by Fungicide Inputs


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Submit Your Papers to *Phytobiomes* for Reduced APCs Celebrating Our First Year Of Open-Access Phytobiomes Research!

An NMRA-Like Protein Regulates Gene Expression in *Phytophthora capsici* to Drive the Infection Cycle on Tomato

J. Pham, R. Stam, V. M. Heredia, M. Csukai, and E. Huitema

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**Spotlight**

Twenty-Five Years of the Binary Power law for Characterizing Heterogeneity of Disease Incidence

L. V. Maddon, G. Hughes, W. Bucker Moraes, X.-M. Xu, and W. W. Turechek

A Review of a Century of Studies on South American Leaf Blight of the Rubber Tree

J. Guyot and V. Le Guen

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**Editors’ Picks**

Succession of Fungal and Oomycete Communities in Glyphosate-Killed Wheat Roots

D. C. Schlatter, I. Burke, and T. C. Paulitz

*Harald Scherm, Phytopathology editor-in-chief*

The *Agrobacterium* F-Box Protein Effector VirF Destabilizes the *Arabidopsis* GLABROUS1 Enhancer/Binding Protein-Like Transcription Factor VFP4, a Transcriptional Activator of Defense Response Genes

E. García-Cano, H. Hak, S. Magori, S. G. Lazarowitz, and V. Cirotsky

*John McDowell, MPMI editor-in-chief*

Evaluation of a Model for Predicting the Infection Risk of Squash and Cantaloupe by *Pseudomonas cubensis*

K. N. Neufeld, A. P. Keinath, and P. S. Ojiambo

*Alison Robertson, Plant Disease editor-in-chief*

**Trending**

Ranking Quantitative Resistance to *Septoria tritici* Blotch in Elite Wheat Cultivars Using Automated Image Analysis


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*apsjournals.apsnet.org*
Family Friendly APS

Family Friendly Offerings at ICPP2018

After a year of planning, the Family Friendly group is excited to share with you our planned offerings and events for ICPP2018! Building on last year’s success and taking into account your feedback from the 2017 APS Annual Meeting, we have set a schedule of events that includes a number of hands-on, interactive, and educational activities, in addition to a dedicated space for parents and caregivers to bring children for games, toys, coloring, and more. Read on to learn about the highlights of Family Friendly offerings at ICPP2018:

- **Sunday Lunch Playground Meet-Up and Kickoff**—Let’s get to know each other right away! We will host a playground meet-up with snacks and drinks at the Edgerly Road Playground (a 4-minute walk from the Hynes Convention Center) on Sunday, July 29, from 12:00 to 13:00. Obviously, kids accompanied by their parents or guardians are welcome, but adult family members attending without children are also encouraged to join as we meet each other, learn about plans for the week, and maybe even find new friends and make plans of our own!

- **Family Friendly Bulletin Board and Kid’s Corner**—Both will be available throughout the meeting. The bulletin board will be located near the registration area and have information about planned events and family friendly resources. Also, kids (and adults!) are invited to decorate the bulletin board with their own artistic flair! The Kid’s Corner will be a separate room located near the session rooms and will have coloring materials, toys and games for various ages, and more.

- **Boston Children’s Museum Excursion**—Our own Isabel Munck has organized a trip to the Boston Children’s Museum for Wednesday, August 1 at 13:00, and our group is receiving a discounted price. This excursion offers a great chance for families to get away from the convention center and learn together!

- **Plant Pathology Games**—In collaboration with OPRO, we will have a space in the main exhibit hall during poster sessions to play fun, kid-friendly plant pathology-themed games, including a life-sized phytopathology version of Candy Land. Additional games will be available in the Kid’s Corner.

- **Coffee Break Story Times**—During the 10:00–10:30 coffee break on Monday and the 10:30–11:00 coffee breaks on Tuesday and Thursday, join some of our enthusiastic volunteers for snack and story time in the Kid’s Corner. Book selections will be plant or pathology related. These events provide great times to meet, relax, and learn.

- **Lunch Break Science Activities**—We’re planning two hands-on science activities: an outdoor scavenger hunt and an indoor microscope session. Both are scheduled during lunch breaks. Keep an eye on Twitter (@ APS2026PDF #FamilyFriendlyICPP) and the Family Friendly Bulletin Board for more specific days and times!

- **Impromptu Activities**—Is anyone up for an ice-cream meet-up? Maybe a bubble party? The Family Friendly group is still planning the best times and logistics for a few more fun activities.

- Be sure to check our Twitter hashtag (#FamilyFriendlyICPP) and the Family Friendly Bulletin Board for updates throughout ICPP2018. And please feel free to post and plan your own impromptu meet-ups with friends you make while in Boston! Looking forward to seeing you all soon!

Call for volunteers! Do you want to contribute to Family Friendly activities and events at ICPP2018? Contact Renee Rioux to get involved.

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### Calendar of Events

#### APS-SPONSORED EVENTS

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<tr>
<th>JULY 2018</th>
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<tbody>
<tr>
<td>29–Aug 3</td>
<td>ICPP2018—International Congress of Plant Pathology, Boston, MA</td>
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#### IMPORTANT APS DATES TO REMEMBER

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<thead>
<tr>
<th>JUNE 2018</th>
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<tr>
<td>30</td>
<td>Application deadline for OPRO graduate student board position</td>
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<tr>
<th>AUGUST 2018</th>
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<tr>
<td>6</td>
<td>Plant Health 2019: APS Annual Meeting Special Session, Workshop, and Field Trip Submission Opens</td>
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<tr>
<th>SEPTEMBER 2018</th>
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<tr>
<td>12</td>
<td>Webinar: How to Get or Write a Killer Letter of Recommendation. Presented by Carolee T. Bull, PhD</td>
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#### OTHER UPCOMING EVENTS

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<tr>
<th>AUGUST 2018</th>
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<tr>
<td>5–10</td>
<td>6th International Workshop on the Genetics of Tree Parasite Interactions: Tree Resistance to Insects and Diseases, Mount Sterling, OH</td>
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<td>3–7</td>
<td>17th World Fertilizer Congress, Shenyang, China</td>
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<td>4–7</td>
<td>8th ISTA Seed Health Symposium and 6th International Seed Health Conference, Poznań, Poland</td>
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<td>4–7</td>
<td>10th Australasian Soilborne Diseases Symposium—Paddock to Plates, Adelaide, South Australia</td>
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<td>30–Oct 4</td>
<td>The 15th Solanaceae Conference Communication Coordinator Team, Chiang Mai, Thailand</td>
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<th>OCTOBER 2018</th>
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<tr>
<td>24–26</td>
<td>33rd Annual Tomato Disease Workshop, Chincoteague Island, Virginia—Contact: Steve Rideout</td>
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<tr>
<th>NOVEMBER 2018</th>
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<tr>
<td>11–16</td>
<td>Cucurbitaceae Conference 2018, Davis, CA</td>
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<th>JULY 2019</th>
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<tr>
<td>14–18</td>
<td>IS-MPMI XVIII Congress, Glasgow, Scotland</td>
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<th>AUGUST 2019</th>
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