

Sherwood Fund Gets Off to Great Start at Plant Health 2023

David M. Gadoury, Chair, APS Foundation Board of Directors



Graduate student travel recipients staffing the APS Foundation booth at Plant Health 2023 were amazed at the generosity of donors who stopped by to “pay it forward.”

Earlier this summer, we announced the creation of a new fund to be administered through the APS Foundation. The goal of the new **Marie and John Sherwood Fund** for Engagement of Underrepresented Minorities in Plant Pathology is to markedly increase minority representation in U.S. graduate plant pathology programs and, ultimately, among the faculty of plant pathology departments of U.S. universities and the broader array of plant pathology careers. The initial fund was created through a

\$50,000.00 gift from **John Sherwood**, former president of APS. APS Foundation and APS Council have each pledged an additional \$20,000.00 (\$40,000.00) to match all additional contributions. Thus, if sufficient donations occur to use the total matching funds, the fund would total \$130,000.00. Our goal is to reach \$130,000 in less than 12 months. This would represent a new record for fundraising by APS, surpassing the record set just two years ago in raising \$100,000.00 for the newly established **Lafayette Frederick Diversity in Mentoring Fund**.

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Editor’s Corner

Could It Have Been Phytophthora Blight That Got the Great Pumpkin?

Robert C. Kemerait, Jr., University of Georgia, kemerait@uga.edu



As I write for this issue of *Phytopathology News*, I am sitting in an open foyer listening to the torrential fall of rain and watching as jeepneys splash through the rain-soaked roads of Batac, Ilocos Norte,

Republic of the Philippines. It is a challenge in this warm, humid environment to believe that cooler temperatures are just around the corner for much of the United States, but of course it is true. Autumn, largely ushered in with October, is my favorite season of the year for a number of reasons. I love the cool mornings, the blue skies, and the changing of the leaves. I love the smell of freshly dug peanuts that fills the air at night on country roads in Georgia. I love the sight of snowy

fields of cotton that are ready to pick. I love that another season of field plots is about to be finished. I love the harvest season.

As APS members, we are immersed in some activity pertaining to plant science and agriculture year round, whether in the field, lab, or classroom or while writing grants and papers and Extension bulletins. This is not the case for many of our fellow Americans. Most are far removed from the production of food and fiber and are blissfully ignorant of both the challenges to managing diseases today and the merit of scientific research that enables food security for tomorrow. However, during the month of October I believe we have the opportunity, perhaps more so than during any other month of the year, to capture their attention, not only regarding pressing issues in plant science and agriculture, but regarding plant pathology as well.

Why October? In my observation, many associate October more closely with agriculture than they do with any other month. October is not only the month of “falling leaves” but also of the “harvest” and the end of the growing season. The link between October, autumn, and the harvest have been

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PLANT PATHOLOGY'S PERPLEXING PAST: THE REST OF THE STORY

Mycoparasitism as a Biocontrol Mechanism

Robert M. Harveson, University of Nebraska, Panhandle REC, Scottsbluff

Several months ago (March 2023), I introduced mycoparasitism, a topic that has interested me for years. It also became the subject of my Ph.D. thesis by a purely accidental set of circumstances, thus it is also dear to my heart. A mycoparasite is simply an organism that has the ability to parasitize a fungus.

The concept of one fungus parasitizing another has been recognized for more than 150 years and, thus, is not really new. **Anton de Bary** described and acknowledged *Piptocephalis freseniana* and *Cicinnobolus cesati* as mycoparasites as early as the mid-1860s. Several other reports were later published on fungal parasitism, including *Trichothecium roseum*, first recognized as a facultative parasite by **H. H. Whetzel** in 1909. However, the early literature focused only on observations and descriptions of the taxonomic and morphological relationships between host and parasite.

The first documented example of a microbe working as an antagonist against a plant pathogen was published in 1932 by **R. Weindling**. As a result of his studies, he first noticed and suggested that the soil fungus *Trichoderma lignorum* could potentially serve as a biocontrol agent. Weindling's pioneering work on this theory is the rest of the story.

Weindling's Discoveries

In 1932, Weindling was a technical assistant in plant pathology at the University of California, Riverside, Citrus Experiment Station. He was studying a very serious damping-off disease of citrus seedlings and noted fast-growing *Rhizoctonia solani* isolates consistently appeared with the affected seedlings and determined that they were the cause of the disease. Another secondary fungus was repeatedly observed in constant association with the highly virulent *R. solani* isolates found in the diseased roots and was identified as a strain of *T. lignorum*.

During the course of a series of experiments, Weindling demonstrated that this strain attacked the pathogen host and abruptly stopped its growth. The hyphae of *T. lignorum* were seen wrapping around the *Rhizoctonia* hyphae, penetrating and disintegrating the host's cytoplasm and destroying the fungal colonies. In 1934, Weindling reported isolating a substance from the original strain of *T. lignorum* that was excreted into the surrounding medium. This substance was proven to be the mode of action for parasitizing hosts, and he first called it the "lethal principle."

By 1941, Weindling had further characterized this compound and demonstrated that it was not only toxic to *R. solani*, but would also parasitize several other soilborne plant pathogens, such as species of *Phytophthora*, *Pythium*, *Rhizopus*, and *Sclerotium rolfsii*. Additional tests also determined that this fungus was nonpathogenic to citrus seedlings. Based on his results, he claimed that *T. lignorum* was an excellent candidate for utilization as a biocontrol agent of *R. solani* due to its strong parasitic ability.

Weindling later named his "lethal principle" substance, gliotoxin. Today, we now know the original fungus that produced the gliotoxin was not *T. lignorum*, but *Gliocladium virens*, which has now been renamed *T. virens*.

Trichoderma

Various strains of *Trichoderma* do not possess any known sexual stage in their life cycle. However, all are rapid colonizers, invasive, and opportunistic, and some are avirulent, often forming a symbiotic relationship with plants. In pathogen-contaminated soils, they not only attack and kill pathogen hosts, but can also improve plant growth.

Trichoderma is now well-known for secreting secondary metabolites into its habitat that affect a wide spectrum of fungal groups, particularly pathogenic fungi. At least one of these chemicals is now assumed to be Weindling's "lethal principle." About 35 species of *Trichoderma* are currently recognized on the basis of morphological and molecular data. However, *T. harzianum*, *T. virens*, and *T. viride* are the three most well-known and cited species of *Trichoderma* used for biological control of plant diseases.

Plant Pathology's Perplexing Past, continued on page 3

ingrained in us since childhood. For some it is the time to pick apples, make cane syrup, or pull corn. Here in the Southeast it is the time to dig peanuts, pick cotton, and harvest soybeans. By far, however, October is the month of pumpkins.

The tie that binds pumpkins to October is strong. There is an association of pumpkins to the harvest. There are jack-o'-lanterns and Halloween. With the advent of autumn, we are immersed in "pumpkin spice." Whether in lattes, cookies, or milkshakes, pumpkin spice is everywhere. Pumpkins end up in pies, soups, curries, and breads. Nothing says "October" like pumpkins say "October."

For me there is no greater reference to pumpkins than the sight of Linus Van Pelt as he kept his lonely vigil awaiting the arrival of the Great Pumpkin. I watched *It's the Great Pumpkin, Charlie Brown* every year during my childhood; now that I have children of my own and videos, I've watched it like a half a million times. As children Perrine and Jimmy always waited, along with Linus, for the Great Pumpkin to appear. I tried telling them once that the Great Pumpkin wasn't coming this time either, but the looks of scorn they gave to me kept me quiet.

Plant Pathology's Perplexing Past, continued from page 2

Concluding Remarks

No "wonder drugs" have yet been found to be associated with *Trichoderma* spp., as was the case with the discoveries of penicillin and *Penicillium* spp. Nevertheless, the potential for *Trichoderma* species to produce enzymes or toxins that may inhibit or harm plant-pathogenic fungi has attracted attention and stimulated major research efforts pertaining to biological control of plant diseases. **R. S. Mehotra** and colleagues appropriately stated that "Weindling's work laid the firm foundation toward biological control of plant pathogens." Now you know *the rest of the story*.

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Have you ever wondered why the Great Pumpkin never appeared despite Linus' faith? Some would argue that there never was a Great Pumpkin in the first place and that is why. For me, I'm not so sure. Linus was a pretty smart guy. I'm thinking there may be another reason and I am pretty sure I know what it is. Have you ever seen what *Phytophthora capsici* can do to a field of pumpkins? I'm not saying it happened, but I wouldn't be surprised to learn that the reason the Great Pumpkin has never appeared is because it was taken out by *Phytophthora* blight. October is our chance to let more people know about this disease; I'm sure they would want to know, even if my now-grown children do not care.

So, as the rain falls and darkness approaches here on the northern edge of the Philippines, I wonder again what it is about October that brings the American people to agriculture. Because it is so closely identified with the harvest, perhaps we have an opportunity to educate people on harvest losses, on the efforts required to protect the harvest, on organic production and the judicious use of fungicides, and on breeding efforts for disease resistant varieties. Maybe, just maybe, if the creator of *Peanuts*, **Charles Schultz**, was still alive, we could travel with Linus to the pumpkin patch to find out what really happened to the Great Pumpkin. ■

Call for APS Officer Nominations



This is your opportunity as a member of APS to nominate colleagues or indicate your own interest in service to APS for vice president or councilor-at-large on the APS Council. Candidate qualifications, officer job descriptions, and details on the nomination process are available on the [APS website](#).

Nominations for the 2024 election are accepted through **December 1, 2023**. ■

Nominate a Colleague for a 2024 APS Award



We invite you to familiarize yourself with the various APS Honorary Awards and nominate a colleague whom you feel deserves special recognition and is reflective of the overall diversity within APS. Nominations for the 2024 awards are accepted through **December 1, 2023**.

[Learn more about the various awards and submit your nomination today!](#) ■



Former APS President **Larry Madden**, APS CEO **Amy Hope**, and former APS President **John Sherwood** looking pleased with the outcome of the fundraising auction held at the Presidents Reception in Denver.

The announcement of the Marie and John Sherwood Fund for Engagement of Underrepresented Minorities in Plant Pathology occurred just before, and during, the opening sessions of Plant Health 2023 in Denver. The response from the APS membership was im-

mediate and generous. We are still tallying the online and in-person donations, but they likely total more than \$10,000.00—perhaps much more—all of which would be matched 1:1.

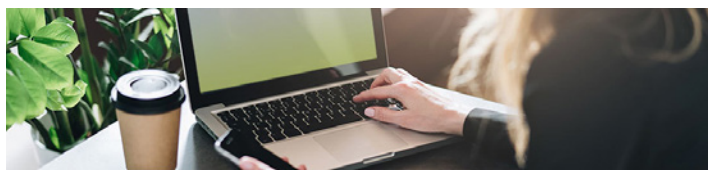
Things got a little crazy during a special fundraising auction held during the Presidential Reception. On hand were several presidents of APS, past and present, including John Sherwood. Auction items included the original sign from 3340 Pilot Knob Road (our old headquarters building), a brick from the aforementioned building, and two bottles of wine donated for the auction. When the bidding ended, the sign had sold for \$1,801.00, and the brick (*yes, the brick*), had sold for \$2001.00. The bottles of wine went for \$611.00 and \$389.00 and then were donated back to the foundation to sell again for an additional \$902.00. When the dust had settled, the amount donated to the Sherwood fund was \$6,004.00, which was matched 1:1 by APS Foundation and APS Council, generating a total of \$12,008.00.

Thus, at this time, the total funding of the Marie and John Sherwood Fund for Engagement of Underrepresented Minorities in Plant Pathology is somewhere north of \$72,000.00, more than halfway to its goal, after only five days of fundraising. It also means that there may be as much as \$24,000.00 in matching funds on the table and available to double the impact of any donation made to the fund. If you want to maximize the impact of your gift, this is the time to make your donation.

We are hopeful that the fund will soon be fully funded and intend to announce the first activities to be supported by the fund early in 2024. ■

Webinar and Listening Sessions: The Endangered Species Act and Its Implications for Pesticide Registrations

Carl Bradley, University of Kentucky (APS Public Policy Board Liaison with EPA); Julia Crane, Valent BioSciences (APS Public Policy Board Regulatory Issues Fast Response Team Chair); Lia Murty, Compliance Services International (APS Chemical Control Committee Chair); Madeline Wade, Brumidi Group (APS Public Policy Board)



The Endangered Species Act (ESA) was passed by the U.S. Congress in 1973 with a purpose to conserve endangered and threatened species and their ecosystems. As part of its role in implementing the ESA, the Environmental Protection Agency (EPA) ensures that the use of pesticides is not likely to jeopardize federally threatened or endangered species or destroy or adversely modify their critical habitats. As part of this process, the potential ecological risks from the use of pesticides must be assessed when new pesticides are being registered or when registrations of currently used pesticides are being reviewed.

Due to recent litigation, the EPA developed an ESA Workplan that outlines new steps that it will be taking to better protect federally threatened or endangered species. These steps in the pesticide registration (and registration review) process include consultations

with the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, as appropriate, to evaluate potential effects of the pesticide on endangered and threatened species and their critical habitats. Depending on the outcome of its assessments, the EPA may require the pesticide registrants to include specific mitigation measures on product labels to minimize unintentional harm to endangered and threatened species and their critical habitats.

A webinar that will provide an introduction to the ESA and its implications for pesticide registrations is being offered for members of APS. This webinar will be presented by **Bernalyn McGaughey** with Compliance Services International on November 6, 2023, at 1:00 p.m. central time. To learn more and to register for the upcoming webinar, visit the [APS website](#).

An interactive listening session is being planned the week following the webinar to allow discussion on the ESA between APS members and APS's public policy partner, the Brumidi Group. More details will follow.

For more information visit the [EPA-Endangered Species website](#). Register for the upcoming webinar today! ■



Thank you for making
Plant Health 2023
an unforgettable experience!



"Plant Health provides a fantastic place to meet potential collaborators in academia, government, and industry. All plant pathologists need to attend and join this welcoming family of fellow scientists!"



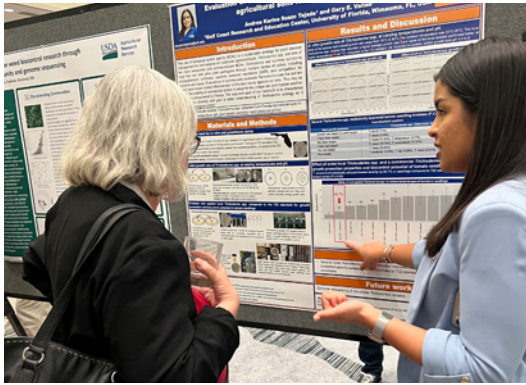


Volunteers from APS collected 330 gallons of debris along the S. Platte River Trail during the volunteer opportunity field trip.



“On behalf of the entire team here at Denver Parks and Recreation, we truly appreciate your gift of time, energy, and enthusiastic support of our mission and programs.”

“I was so impressed with the research presented by graduate students and postdocs! Keep up the awesome work, and thank you for putting yourself out there to present!”





“Plant Health conferences bring together scientists from across the globe who are working on a single goal: improving our quality of life”





"Plant Health is a unique opportunity to share data, plant pathology stories, emerging and pressing issues, and future challenges."



**We'll see you
in Memphis on
July 27–31 for
Plant Health
2024!**



Apply for APS Foundation Funding

Numerous [funds](#) from the APS Foundation's portfolio provide financial support to APS members through grants and fellowships. Applications for the following grants are accepted through **February 1, 2024**.

For Any Career Level

- [Books for the World](#): Helps scientists, educators, Extension personnel, and other agriculturalists in developing countries acquire educational materials from APS PRESS.
- [Lafayette Frederick Diversity in Mentoring Grant](#): Provides support for mentored experiences in plant pathology for students and postdocs from underrepresented minority groups.
- [Mathre Endowment for Education](#): Provides support to plant pathology education and outreach programs.

For Undergraduate Students

- [Frank L. Howard Undergraduate Fellowship](#): Provides support to undergraduate research projects in plant pathology.

For Graduate Students

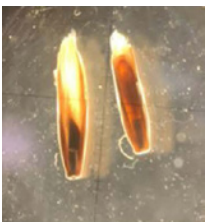
- [Browning Plant Medicine and Health Travel Grant](#): Supports travel of an APS student member in a doctor of plant medicine, doctor of plant health, and similar programs to attend a professional society meeting in any of the plant health and plant protection disciplines.
- [French-Monar Latin American Grant](#): Provides financial support for APS members who are Latin American graduate students and early-career plant pathologists in a variety of ways.
- [APS Student Education Grant](#): Provides support to further an APS student member's education outside of the APS Annual Meeting to develop skills and/or to network with other scientists.
- [Raymond J. Tarleton Student Fellowship](#): Provides support to APS graduate student members in plant pathology to encourage them to further their careers in plant pathology.

[Learn more and apply today for funding!](#) ■

New! Discover the “Regulations Hub” on *Grow: Plant Health Exchange*



Keep up to date on dynamic agricultural regulations with the help of the new, open access [Regulations Hub on *Grow: Plant Health Exchange*](#)—designed to benefit growers and those who advise them.



The first webcast available in this hub, presented by **Hannah Rivedal** and **Inga Zasada**, describes seed gall nematodes and their relationship to grass species grown for seed. Because exported seed can be rejected if evidence of nematodes is detected, the survey and identification methods presented in this webcast will highly benefit those who work with grasses grown for seed. Viewers will gain an understanding of the *Anguina* seed gall nematode life cycle, methods for surveying fields, and best practices for either nematode extraction or molecular testing of plant materials.

Watch this [free presentation](#) in the new Regulations Hub on *Grow: Plant Health Exchange* and share your ideas for future regulatory webcasts by emailing focuson@scisoc.org. ■

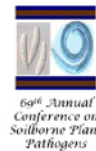
Be an Ethics Leader—Register for Our Research Ethics Course

Online Every Wednesday, January 17 to April 24, 2024



Learn to model and advocate for high ethical standards during this interactive, discussion-based course. Expert instructors **Mark Gleason** and **Leonor Leandro** of Iowa State University will guide you through challenging conversations and case studies in this one-of-a-kind interactive course. You'll gain valuable insights and new perspectives on how to avoid and manage ethical dilemmas. [Learn more and register today.](#) ■

Save the Date!



Join us March 26–28, 2024, in Corvallis, Oregon, for the joint meeting of the APS Pacific Division and

the 69th Conference on Soilborne Plant Pathogens! We hope to see you there.

For more information, visit the [APS Pacific Division](#) or [Conference on Soilborne Plant Pathogens](#) websites. ■

Read What Everyone Is Talking About

Stay on top of the latest APS and plant pathology mentions in the news by visiting our [News Room](#) or signing up for [News Release notifications](#).

APS Outstanding Volunteer Awardees Announced



The APS **Outstanding Volunteer Award** recognizes APS members for excellent service in furthering the **mission of APS** through their volunteer efforts. The 2023 awardees are **Stella Coakley** and **Sally Mallowa**.



Stella Coakley, professor emerita, Oregon State University, has made significant and impactful contributions to APS over several decades. She has served as a member and chair of three boards and one committee, as well as serving as the president of the APS Pacific Division. In her retirement, she continued to work with the APS Foundation Board and was a major force behind fundraising campaigns to fund student travel awards.

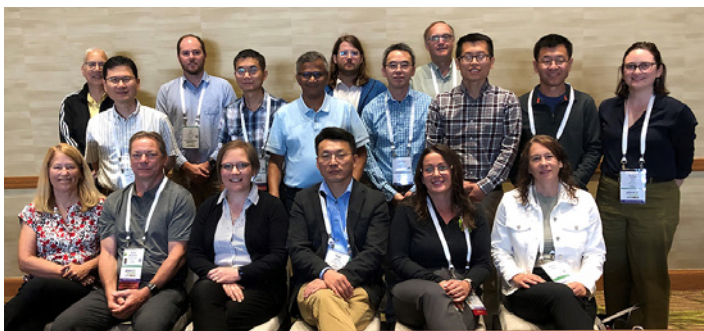


Sally Mallowa, Augustana University, has been a force for positive change regarding diversity, inclusivity, and accessibility. She has served on the Committee for Diversity, Inclusivity and Equity, the Family Friendly Committee, and the Black Lives Matter Task Force and has organized hot topics on subjects ranging from women in agriculture, to limitations for people of color in higher education.

Congratulations to both Stella and Sally, whose tireless volunteerism for APS has positively impacted so many! ■

Phytopathology Editorial Board Meets During Plant Health 2023

On August 13, 2023, the editorial board of *Phytopathology* met during Plant Health 2023 in Denver, CO. APS Publication Board Chair **George Sundin**, *Phytopathology* Editor-in-Chief **Nian Wang**, and senior and associate editors of *Phytopathology* discussed impactful papers published by *Phytopathology* and ways to improve *Phytopathology* and better serve the plant pathology community and different stakeholders. ■



2023 APS OIP Certificate of Achievement for International Plant Pathology Research

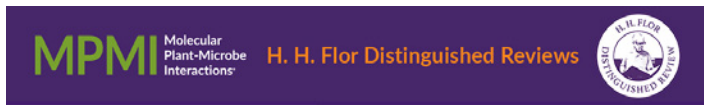


Dr. Febina Mathew, associate professor and oilseed crops pathologist in the Department of Plant Pathology at North Dakota State University (NDSU), received the 2023 APS Office of International Programs Certificate of Achievement for International Plant Pathology Research. Prior to joining NDSU, she was an associate and assistant professor at South Dakota State University in the Department of Agronomy, Horticulture and Plant Science. Dr. Mathew received her Ph.D. degree from NDSU in 2014 and was awarded the Early Career Award from the APS North Central Division in 2018. Her research program focuses on the biology of pathogens causing diseases of soybean and sunflower and how these organisms interact with their hosts to develop disease management strategies (fungicides and host resistance). Dr. Mathew is known nationally and internationally as one of the leading experts on pathogens belonging to the *Diaporthe* genus. As an example, her expertise in *Diaporthe* helped researchers in Argentina (Universidad Nacional de Mar del Plata and Advanta Seeds) to identify the pathogens causing Phomopsis stem canker of sunflower, among which *D. caulivora*, *D. kongii*, *D. longicolla*, and *D. sojae* were reported for the first time. Their collaboration resulted in three peer-reviewed publications, which also included a Spanish translation of the APS Plant Disease Lesson on Phomopsis stem canker of sunflower. In addition, she hosted research scholars from Instituto Nacional de Tecnología Agropecuaria (Argentina) at NDSU for training in identification of potential candidate genes conferring resistance to *Diaporthe* species. Currently, she is working on international projects to determine diversity of *Diaporthe* species causing seed decay of soybean (Brazil), as well as to evaluate fungicide efficacy and timing against *Diaporthe*-associated diseases of soybean (Brazil) and sunflower (Argentina). ■

Graduate Students: Apply to Be Featured in *Phytopathology News*!

The APS Graduate Student Committee encourages graduate student members to apply to be featured in a *Phytopathology News* **spotlight article**. Applicants are chosen based on their involvement in APS as student members and their expected graduation dates. **Submit your application** for consideration today.

Introducing H. H. Flor Distinguished Reviews: A Landmark Series from *MPMI* Advancing Our Knowledge of Molecular Plant-Microbe Interactions



A seminal figure in the study of plant pathology, **Harold H. Flor** used the agriculturally important *Melampsora lini*-flax interaction to develop the gene-for-gene concept in the mid-1900s, forever changing how we approach plant-microbe interactions. His pioneering model provided a framework that continues to influence the study of plant pathology and, specifically, molecular plant-microbe interactions.



Harold H. Flor in the field (Courtesy North Dakota State University Plant Pathology Department, provided by Tim Friesen. Photographer and date unknown.)

Flor's review describing the status of the gene-for-gene concept, published in 1971, has been cited more than 4,600 times and nearly 100 times in the first half of 2023 alone, indicating the long-standing relevance of this work. Flor was not privy to the molecular or biochemical aspects of the *M. lini*-flax interaction. However, his concept, based only on classical genetics—namely, that for each gene governing the host response, there is a corresponding gene in the pathogen—has proven true in the latest molecular and biochemical models describing NLR-effector gene interactions.

To honor both Flor's enduring legacy and the impact of current scientists who are persisting in making strides toward more scientific breakthroughs, *MPMI* has developed the [H. H. Flor Distinguished](#)

[Review manuscript category](#). The first two papers in this series—written by **Peter Dodds** and **Jijie Chai** et al.—have been published in the [August issue of *MPMI*](#).

The new review series, spearheaded by *MPMI* Editor-in-Chief **Tim Friesen** and his editorial board, presents invited papers written by leading scientists who have significantly changed our collective point of view in an area of molecular plant-microbe interactions.

Regarding the series' origin, in terms of familial consent, Friesen shares, "We reached out to Flor's grandchildren, and they were excited to have their grandfather's scientific legacy highlighted in the H. H. Flor Distinguished Review series. I personally spoke with Flor's granddaughter, Janet Moran, and she was excited to see this happen."

MPMI is equally excited to share this new series with the scientific community. In the dynamic world of plant-microbe interactions—where intricate relationships between plants and microorganisms shape ecosystems, agricultural systems, and even human health—the necessity of comprehensive reviews that summarize past research, explain current research, and guide future research is paramount.

"We hope the H. H. Flor Distinguished Review series will be a useful source of papers presenting landmark research within the *MPMI* field," Friesen comments. "These papers will provide a historical perspective of how this work developed over time, as well as how this work is impacting current thinking in each area."

Read the First Papers Published in This New Series

[From Gene-for-Gene to Resistosomes: Flor's Enduring Legacy](#)
Peter N. Dodds

[New Biochemical Principles for NLR Immunity in Plants](#)
Jijie Chai, Wen Song, and Jane E. Parker ■

Out Now! Read the *Phytobiomes Journal* Focus Issue on the Phyllosphere

A Formerly "Ecologically Neglected" Microbial Milieu Takes Center Stage



Editor-in-Chief **Johan H. J. Leveau** and Guest Editors **Gwyn A. Beattie**, **Steven E. Lindow**, and **Walter F. Mahaffee** are

pleased to present the [Phytobiomes Journal Focus Issue on the Phyllosphere](#). This focus issue celebrates the tremendous growth and impact of phyllosphere science as a discipline and includes 14 papers by nearly 100 authors from more than 40 institutions.

In 1956, **Dr. Jacoba Ruinen** published "Occurrence of *Beijerinckia* Species in the 'Phyllosphere'" (*Nature* 177:220-221), marking the first time that the term "phyllosphere" was used in the title of a publication. This work heralded the beginning of a new research discipline dedicated to the study of a unique and "characteristic

milieu which is conditioned by the leaf, and may be called, in analogy with the rhizosphere, the phyllosphere." Ruinen referred to the phyllosphere as "ecologically neglected."

Six decades later, it is fair to say that the phyllosphere is neglected no more. Research on the (micro)biology of the phyllosphere, i.e., plant leaves (and generally including other aboveground parts of plants as well, such as flowers, fruit, buds, petioles, stems, twigs, branches, and trunks) as a habitat for micro- and other organisms, is recognized as having significant implications for ensuring food safety and security, as well as ecosystem processes, on a global scale and for its various contributions to a fundamental understanding of microorganisms, plants, and their interactions.

Phytobiomes Focus Issue, continued on page 12

To mark the 66th anniversary of Ruinen's seminal publication and to celebrate the growth and contributions of phyllosphere microbiology, *Phytobiomes Journal* has published the Phyllosphere Focus Issue, presenting papers that collectively highlight the status of the field and offer ideas for future directions. The papers explore topics related to phyllosphere biodiversity, community assembly and dynamics, and the adaptive capacity of species, populations, and communities on leaf surfaces and other phyllosphere compart-

ments. The papers also delve into the multipartite relationships that phyllosphere colonizers have with each other and with their hosts, along with issues of global concern such as food security, food safety, and climate change. This collection of papers illustrates the international, transdisciplinary, and collaborative nature of phyllosphere science, the challenges that the discipline faces, and the importance of recruiting and training the next generation of phyllosphere scientists.

[Read this special focus issue today!](#) ■

Call for Papers Deadline Extended! Publish in the Special *Phytopathology* Issue on Key Challenges in Plant Pathology

Submission deadline: October 31, 2023



Publish alongside many of our leading scientists in a special *Phytopathology* issue: Key Challenges in Plant Pathology

The editorial board of *Phytopathology* is inviting papers for potential publication in a special issue

addressing the key challenges in plant pathology that face us in the next 10 years. This issue will also include invited reviews by several leading scientists from relevant fields.

Top Key Challenges Identified in an APS Survey

- Climate change impact on individual components of the disease triangle and outcomes (including epidemiology and outbreaks) and disease management
- Crop resistance mechanisms, breeding disease-resistant plant varieties, resistance gene identification, cloning and implementation, pathogens overcoming plant resistance, effects of climate change and abiotic stress on plant resistance, and resistance against multiple pathogens
- Mechanisms, epidemiology, and management of challenging plant diseases, including citrus huanglongbing
- Environment-friendly disease management practices, including biocontrol, how to improve their efficacy in the field, and investigating their mechanisms
- Fungicide and antimicrobial resistance mechanisms, how to overcome fungicide and antimicrobial resistance, and develop alternatives
- Biotechnological applications in plant disease management, including genome editing, transgenic approaches, and RNAi
- Early detection, identification, diagnosis, surveillance, and forecasting of emerging and reemerging plant diseases and econom-

Phytopathology Focus Issue, continued on page 13

Increase Awareness of Mycology in K–12 Classrooms with a Free, Bilingual Lesson Plan

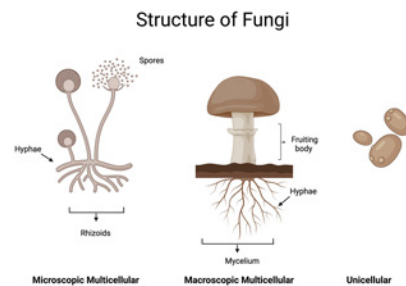


Fungi are essential for many biological processes, contributing to earth's biodiversity and ecosystem functioning. **Nicole Colón**

Carrión developed the lesson plan “*Micología en Ruedas*” (*Mycology on Wheels*)—recently published in *The Plant Health Instructor*—introducing students to mycology through a hands-on laboratory activity that follows the experiential learning theory. Exposing

students to the field early on increases their knowledge and awareness of mycology, and educators can better motivate them to pursue advanced degrees in STEM fields.

The lesson plan defines mycology and its importance; discusses the roles of fungi in our environ-



ment and daily lives; identifies representative fungal organisms and their parts; and describes careers available in the field of mycology.

This open access lesson plan is available in both Spanish and English to increase accessible education in diverse communities.

Publish Your Own Teaching Materials!

If you're interested in submitting a teaching paper for publication in *The Plant Health Instructor*, visit the online [APS Educator Center](#) for information and contact [Editor-in-Chief Brantlee Spakes Richter](#) with any further questions. ■

ically important plant disease, including rapid, sensitive, specific, dependable, portable, economical, and accurate diagnostics, development and application of new technologies, and global surveillance

- Understanding plant-microbe interactions in the natural setting
- Mechanism of disease susceptibility, susceptibility genes, and their utilization
- Omics in plant pathology
- Artificial intelligence applications in plant pathology research, epidemiology, and disease management
- Mechanisms, epidemiology, and management of insect-borne plant pathogens

- Effectors of pathogens
- Plant immunity
- Microbiome impact on individual components of the disease triangle and outcomes (including epidemiology and outbreaks), and disease management, including engineering microbiome
- Mycotoxins
- Mechanisms, epidemiology, and management of understudied plant pathosystems

If you are working on these key challenges, publish alongside many of our leading scientists in the “Key Challenges in Plant Pathology” *Phytopathology* Focus Issue! For more information on the scope of this issue, please contact *Phytopathology* Editor-in-Chief **Nian Wang**. ■

Highlights from the 100th APS Southern Division Meeting

APS SD Executive Committee

The Southern Division of The American Phytopathological Society held its 100th annual meeting from February 13 to 16, 2023, in Durham, NC, in conjunction with the Southern Plant Diagnostic Network and the Emerging Viruses in Cucurbits Working Group. Approximately 150 people registered for the meeting, which included student research competition sessions, a poster session, a technical session, the Careers 101 Workshop, a graduate student business meeting and social, a business meeting, an awards banquet, special symposia, and a tour.

The Careers 101 Workshop series, “Networking Skills,” was led by APS Divisional Councilor **Nicole Gauthier**, with the assistance of experts from academia and industry. Students and postdocs participated in discussion groups that included tips on how to break the ice to start a conversation and make an impression to gain full employment and/or maintain professional relationships. The workshop included a set of dynamics for practicing group and face-to-face conversations and a lunch sponsored by Corteva Agriscience.

One of the highlights of the APS Southern Division Meeting has always been the Graduate Student Research Competition. Thirty students, representing many states within the Southern Division, presented their research in the competition. **Matthew**

Cullen, University of Florida, placed first in the competition for the presentation “Why So Picky: Gene Profiles and Evolutionary Genomics Provide Insights into Watermelon Variety-Specific Virulence of *Fusarium oxysporum* f. sp. *niveum*.” **Renata Belisario**, University of Kentucky, placed second for the presentation “A Nonpathogenic Signal Peptidase Mutant of the Maize Anthracnose Fungus *Colletotrichum graminicola* Secretes Cell Wall Degrading Enzymes Normally.” **Renzo Ramirez**, University of Florida, placed third for the presentation “First Survey of Pathogenic *Xanthomonas* on Florida Brassicas Identifies *X. euvesicatoria* pv. *perforans* Strains Causing Black Rot.” Honorable mentions were awarded to **Juanita Gil**, University of Arkansas, for the presentation, “*Rhizoctonia solani* AG1-IA Genetic Variability in Arkansas, Louisiana and Texas” and to **Jingya Yang**, University of Florida, for the presentation “Characterization of *Fusarium oxysporum* f. sp. *lycopersici* Strain JY67, a Potential Novel Race of Fusarium Wilt on Tomato in Florida.”

Southern Division Meeting, continued on page 14



Southern Division Vice President Gary Vallad (2022–2023) and Southern Division President Lindsey Thiesen (2022–2023) with the 2023 Southern Division Graduate Student Research Competition award recipients.



Southern Division Vice President Gary Vallad (2022–2023) and Southern Division President Lindsey Thiesen (2022–2023) with the 2023 Southern Division Graduate Student Poster Competition award recipients.

Ten students participated in the Student Poster Competition. **Kayla Sullins**, Auburn University, placed first for the poster “Effects of Plant Growth-Promoting Rhizobacteria and Nitrogen Fertilizer on Forage Biomass and Quality and Soil Health in Bermudagrass Hay Fields.” **Amanda Mainello**, North Carolina State University, placed second for the poster “Monitoring Emerging *Phytophthora ramorum* and *P. kernoviae* in Rhododendron.” **Bhawana Ghimire**, Tennessee State University, placed third for the poster “Investigating the Growers’ Perceptions on Boxwood Blight Disease Management in the U.S. Nursery Industry.”

An additional 23 technical and 18 poster presentations were delivered. All oral student and technical sessions were moderated by graduate students or postdoctoral researchers. Poster viewing was done alongside the welcome reception.

APS Southern Division Travel Awards to attend the 2023 Southern Division Meeting were awarded to **Milan Panth**, Clemson University; **Qiorong Fan**, University of Florida; **Juanita Gil Bedoya**, University of Arkansas; **Livleen Kaur**, Auburn University; **Bhawana Ghimire**, Tennessee State University; and **Christina Jennings**, Tennessee State University.

Judging travel award applications, research presentations, and posters is no easy task, especially when so many are deserving of an award. Many thanks go out to our judges: Nick Dufault, Bhabesh Dutta, Jeff Jones, Heather Kelly, Bob Kemerait, Marcus Marin, Raj Singh, Cansu Oksel, Kevin Ong, Kenny Seebold, Gary Vallad, Hehe Wang, and Marty Wigglesworth.

Award recipients were recognized at the Awards Banquet, which was celebrated in “style” with some members dressing as their favorite decade of plant pathology in honor of the 100th Southern Division meeting. This year, the division’s highest honor, Outstanding Plant Pathologist, was awarded to two deserving individuals: **Edward J. Sikora**, Auburn University, for his outstanding research contributions to developing, evaluating, demonstrating, and implementing integrated pest management practices in commercial production systems, monitoring and management of soybean rust, and fungal diseases of major crops; and **Chandrasekar S. Kousik**, USDA-ARS, for his significant contributions to vegetable disease management through development of disease-resistant cucurbits and peppers and significant contributions to APS leadership and APS PRESS. The Donald M. Ferrin Memorial Service Award was awarded to **Kevin Ong**, Texas A&M University, for his exemplary service to the Southern Division and APS.

Many thanks to APS SD President **Lindsey Thiessen**, USDA APHIS PPQ, and **Carolyn Young**, professor and department head, Department of Entomology and Plant Pathology, North Carolina State University, for welcoming everyone to the meeting, and to APS President-Elect **Niklaus Grunwald** for presenting an update from APS Council.



Southern Division Vice President Gary Vallad (2022–2023) and Southern Division President Lindsey Thiessen (2022–2023) with the 2023 Southern Division Travel Award recipients.

Many thanks also to our 2023 Southern Division Meeting sponsors whose support is critical for the variety and success of our meetings: BASF, BioSafe Systems, Certis Biologicals, Corteva Agriscience, Nichino America, Syngenta, Sakata, Valent USA, and the Southern Plant Diagnostic Network. An industry sponsors symposium was held for the fourth year in a row as a part of the meeting, and representatives from many of our sponsors participated and presented information about their companies and products.

A special symposium, 100 Years of Plant Pathology in the Southeastern U.S., was organized by **Lindsey Thiessen**. **Bob Kemerait**, University of Georgia, recognized the people and events that have built the APS Southern Division over the last 100 years of plant pathology; **Dave Ritchie**, North Carolina State University, explained how bacterial spot of pepper contributed to the development of plant pathology; and **Kevin Ong**, Texas A&M University, discussed a historical perspective of roses in North America. These presentations not only guided us through the research that has been conducted over the years but also the history that has been created.

At the end of the Awards Banquet, the APS SD Executive Committee officers transitioned to their new duties as part of the 2023–2024 Executive Committee: **Lindsey D. Thiessen**, USDA APHIS PPQ, immediate past president; **Dan Anco**, Clemson University, president; **Gary Vallad**, University of Florida, president-elect; and **Bhabesh Dutta**, University of Georgia, vice president. **Rebecca A. Melanson**, Mississippi State University; **Terry N. Spurlock**, University of Arkansas; and **Milan Panth**, Clemson University, will continue in their roles as secretary-treasurer, divisional forum representative for the Southern Division, and graduate student representative, respectively. **Elias Zuchelli**, University of Tennessee, joins the APS SD Executive Committee as a graduate student representative. Recognition also goes to **Shelly Pete**, University of Tennessee, for her service as a graduate student representative from 2021 to 2023.

Following two days of scientific programs, several meeting attendees participated in the Research Triangle Park Excursion, where attendees visited the Plant Sciences Building on the North Carolina State University Centennial Campus, followed up by a Q&A discussion with USDA APHIS PPQ, IR-4, and the North Carolina State University Department of Entomology and Plant Pathology. After lunch, attendees toured the AgBiome and BASF campuses to learn about some of the industry goals being pursued in the Research Triangle.

We look forward to and invite you to celebrate the 101st Southern Division Meeting with us next year in Columbia, SC!



Southern Division President Lindsey Thiessen (2022–2023) with the 2023 Southern Division Outstanding Plant Pathologists, Edward J. Sikora and Chandrasekar S. Kousik, and the 2023 Southern Division Donald M. Ferrin Memorial Service Award recipient, Kevin Ong.

Donors of Distinction



Meet some of the amazing people who support APS Foundation. Learn more about who they are and why they give their time and resources to support others.

Courtney Cameron Meeks



This year, I was supported by the Stella Melugin Coakley Travel Fund through the APS Foundation to attend the APS Annual Meeting. This was my first annual meeting, and as I reflect on those five days, I am left amazed. I was nervous that, since this was my first conference, I would experience it from the sidelines with just my fellow lab mates who also attended. However, from night one, I was quickly proven wrong. I never

found myself on the sidelines or twiddling my thumbs. I met many lovely pathologists, and with some, it felt like I had known them for years instead of a couple days. Everyone was warm, welcoming, and excited to hear about my research, story, and goals. Working at the Foundation Booth, I saw the generosity of fellow pathologists as they invested in the future of the profession. I think every person made a comment along the lines of how they wanted to give back because APS had given so much to them and/or their students. No one is alone in APS. If a student is deciding on whether to attend next year's annual meeting, do not hesitate. Travel to Memphis, TN, attend the First Timers Orientation, and gear up for a whirlwind of a time. The world is small, and I feel lucky that in my little world I was able to connect with the best people at this year's annual meeting. And hey, if I missed you this year, I hope to see you next time!

Courtney Cameron Meeks is a Ph.D. student with Dr. Leslie Holland in the Department of Plant Pathology at the University of Wisconsin, Madison.

Amanda Mainello-Land



It is a tremendous honor to have been selected for support from the William M. Brown, Jr. Student Travel Fund through the APS Foundation. One of my favorite parts of the annual meetings is reconnecting with colleagues and making new ones. It was truly special to be able to do this in person for the first time in my Ph.D. experience. In my brief six years as an APS member, I have learned a lot, gained colleagues and ideas, and garnered support and motivation from this society. The energy at our annual meetings is contagious, and it's something I look forward to being a part of for years to come. The wiser plant pathologists around me keep reminding me that the colleagues around us now may come to be our closest ones down the road, and it's sweet to already see those relationships forming. I hope other students are feeling that way as well. Being an active APS member means spending our resources (time, money, ideas, etc.) giving back or paying it forward to maintain this vibrant community. The success of our society helps each of us. I'm glad to donate what I can so others may benefit as much as I have.

Amanda Mainello-Land is a Ph.D. student working with Dr. Jean Ristaino in the Department of Entomology and Plant Pathology at North Carolina State University. ■

Donors of Distinction All

David M. Gadoury, Chair of the APS Foundation Board of Directors



Twenty-seven of thirty students receiving Named Student Travel Grant funds through the APS Foundation were able to attend a breakfast in their honor during Plant

Health 2023 in Denver this August. They were joined by members of the APS Foundation Board of Directors and APS President **Ron Walcott**. Two of the honorees in attendance (**Courtney Cameron Meeks** and **Amanda Mainello-Land**) are featured this month as part of the Donors of Distinction series that has been a regular part of *Phytopathology News* for the past five years.

No one expects a graduate student to donate large sums of money to APS Foundation, but they donate a lot of their time on our behalf. All of the honorees work at the Foundation Booth, meeting and greeting donors throughout the meeting, and they serve as advocates for APS Foundation and as witnesses to the benefits of being an engaged member of APS. They are the people who will review the applications of next year's honorees. Some of this year's honorees were present when "graduate students" from long ago stopped by and made astonishingly generous donations to one or more APS Foundation funds and heard firsthand exactly why they thought this was important. So, whether you donate time or money, thank you all for everything you've done for us. You are all donors of distinction. ■

APS Public Policy Update



As policymakers quickly approach the end of the first year of the 118th Congress, there are significant items on the congressional agenda. At the top of this priority list is to find an agreement around annual legislation—especially FY24 appropriations and the FY24 National Defense Authoriza-

tion Act. Furthermore, Congress has several other authorizations that are set to expire this year that must be passed or extended to allow for current funding to be maintained. This is especially true for the Farm Bill, which is reauthorized every five years. The Farm Bill provides funding allocations for all programs across the Department of Agriculture, ranging from nutrition to food supply to more.

Congressional Republicans and Democrats remained at odds over how to (or whether to) extend federal funding after current funding was set to expire on September 30. Prior to the recess, the House and Senate Appropriations Committees were able to advance almost all of their respective funding bills. On the Senate side, the committee officially completed its full appropriations process—clearing all 12 spending bills with overwhelmingly bipartisan support. Meanwhile, House Appropriations Committee Republicans cleared 10 of their 12 appropriations bills with only Republican support. A short-term extension was negotiated to maintain current funding until November 16.

Meanwhile, both the House of Representatives and the Senate have cleared their respective versions of the FY24 NDAA. While the House cleared its version on a party-line basis, the Senate version moved through with broad bipartisan support. Through the remainder of the year, the House and Senate will reconcile their varying versions of the package—it is likely that the final package will more closely reflect the Senate language, due to controversial provisions

that were added to the House version. It remains likely that a final package will be enacted by the end of the year, as is tradition with the NDAA.

Separately, Agriculture Committees in both the House and Senate have spent much of the 118th Congress focused on reauthorization of the Farm Bill. However, these efforts have slowed considerably over recent months, with the biggest holdup being the Nutrition Title, especially the provisions around SNAP requirements. Republicans and Democrats hold very different positions on SNAP-related issues and have emphasized that there will need to be longer negotiations to reach an agreement given the far-reaching impacts of the program. Nevertheless, leaders from both Agriculture Committees have emphasized that they remain committed to advancing a Farm Bill reauthorization by the end of the year. The current Farm Bill authorities need to be extended by January 1, 2024, so this will remain a top priority for Congress—either through a complete reauthorization or a shorter-term extension.

Although legislative activity has been difficult, there have been consistent efforts from federal agencies to advance regulations that are relevant to plant health. The Agriculture Department's Plant Protection and Quarantine (PPQ) program recently highlighted its efforts to develop and update its modeling framework to comprehensively manage plant health risks—[Spatial Analytic Framework for Advanced Risk Information Systems \(SAFARIS\)](#). Additionally, the USDA National Institute of Food & Agriculture (NIFA) is holding two webinars in the next several weeks to discuss its ongoing programs: the [first](#) is focused on nutrition security in local and regional food systems, and the [second](#) is focused on rapid response to extreme weather events across agriculture systems. Finally, the National Fish and Wildlife Foundation has [announced](#) that it is requesting proposals for its 2023 Southern Plains Grasslands Program that would improve grassland ecosystem health and conservation practices to fight climate change (with approximately \$3 million in funding available). ■

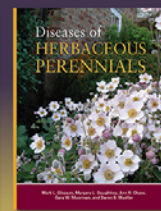
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Stay current on trends and hear from leading plant pathologists as they share their insights into emerging plant diseases, the latest research findings and methodologies, careers in plant pathology, and much more. [Check out the latest episode and dig into the archives](#) to explore the world of plant health and how our profession can contribute to a sustainable future. Subscribe wherever you listen to podcasts so you never miss an episode! ■

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Use promo code **ORNAMENTAL**. APS members save an extra 10%.



Buy now

Leader Spotlight

Phytopathology News is spotlighting members of the APS Leadership Institute who are serving in leadership roles within APS. This month get to know **Ron Walcott**.



Ron Walcott

Vice Provost for Graduate Education and Dean of the Graduate School; Professor of Plant Pathology
The University of Georgia

I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

—Maya Angelou

What is your job about?

In addition to being a professor of plant pathology, in my capacity as vice provost and dean, I am the chief academic and administrative officer for UGA's Graduate School. My team and I work closely with faculty and administrators across the University of Georgia, as well as with regional, national, and global partners to strengthen graduate education across all disciplines. This includes efforts to enhance the recruitment, retention, and success of graduate students.

When did you join APS?

I became a member of APS in 1994.

What has been your role as an APS leader?

I am currently a member of the APS Presidential Team; more specifically, the immediate past president. However, I have previously served on the Annual Meeting Board, as a senior editor for *Plant Disease* and as the chair of the Seed Pathology Committee.

What inspired you to be an APS leader?

I was inspired to be a leader in APS because I benefitted tremendously (both personally and professionally) from being a member, particularly in the early stages of my career. My undergraduate degree is in plant pathology, but it was only after I attended my first APS meeting that I truly appreciated the breadth and scope of the impact of plant pathologists. Active participation in APS reinforced my decision to pursue a career in plant pathology; this was especially important because I am a first-generation immigrant who had limited access to role models in this field when I was young. In addition to my mentors at Iowa State University and the University of Georgia, the networks that I formed through APS with well-established mentors and peers have served me extremely well throughout my career. My hope in being an APS leader is to help maintain a welcoming and inclusive society that effectively supports and nurtures the needs and careers of the next generation of plant pathologists.

What do you enjoy most about being an APS leader?

I really appreciate that the decisions we make as APS leaders have the potential to positively impact the careers of many of our early-stage members. If we are successful in attracting and retaining young, bright minds from diverse backgrounds and perspectives to our discipline, our future will be bright, and we will continue to have a positive impact on the thorny challenges to sustainable global plant health. I am always pleased when graduate students or post-doc members that I know successfully find the plant pathology-related careers that they want. When this happens through APS, it ensures that we will have committed, life-long members who will be the lifeblood of our society.

What advice would you give to APS members considering leadership positions in APS?

I would advise members considering leadership positions in APS to go for it! Leading in a volunteer-based society like APS requires a unique set of skills that complement the skills required for leadership in other types of organizations. However, I would advise interested members to start with a leadership role on subject matter committees that are directly linked to/aligned with their professional responsibilities and, as knowledge of the APS organizational structure grows, consider taking on roles with expanded levels of responsibility. This caution is intended to avoid challenges with time management and conflicts of commitment. ■



Make Things Happen, Engage in APS!

APS members who are looking for exceptional experiences that have the potential to enhance both the science of plant pathology as well as their personal leadership and networking skills should consider engaging with APS as a volunteer on a committee. [Volunteer Today!](#)

Degrees



Noah Ault completed all requirements for his M.S. degree in July 2023 in the Department of Plant Pathology at Washington State University (WSU) under the guidance of **Dr. Naidu**

Rayapati. His thesis was titled “Small RNA Profiling in a Red-Fruited Wine Grape Cultivar Infected with Grapevine Red Blotch Virus.” **Gary Grove** (WSU), **Roy Navarre** (USDA-ARS), and **Ramanjulu Sunkar** (Oklahoma State University) served on his graduate committee. He has recently been accepted into a Ph.D. program in the same department to continue his studies under the guidance of Dr. Rayapati. Noah was a recipient of the Walter J. Clore Scholarship from the Washington Wine Industry Foundation in 2020. He received his B.S. degree (summa cum laude) in biology from WSU in May 2020. As an undergraduate student, he worked as a research assistant under **Tanya Cheeke**, faculty member at the WSU Tri-Cities Campus.



Amber Loptien completed all requirements for an M.S. degree in August 2023 in the Department of Plant Pathology at Washington State University (WSU) under the guidance of

Dr. Naidu Rayapati. Her thesis was titled “Metabolomic Effects and Genetic Diversity of Tobacco Ringspot Virus in Grapevines.” **Gary Grove** (WSU) and **Lyndon Porter** (USDA-ARS) served on her graduate committee. Loptien has accepted a position at WSU as an associate in research in Porter’s lab. She received her B.S. degree in biochemistry and molecular biology from the University of Nevada–Reno (UNR) in May 2020. As an undergraduate student, she worked as a research assistant under **John Cushman**, a professor at UNR.

New Positions



Lindsey du Toit, professor and Extension plant pathologist, has been appointed chair of the Department of Plant Pathology at Washington State University, effective September 5,

2023. She replaces **Timothy Murray**, wheat pathologist. du Toit received a bachelors degree in plant pathology at the University of Natal-Pietermaritzburg in South Africa (now the University of KwaZulu-Natal), and M.S. and Ph.D. degrees in plant pathology from the University of Illinois at Urbana-Champaign. Her first position after obtaining her doctorate was as a plant diagnostician at the WSU Puyallup Plant & Insect Diagnostic Lab. In 2000, she joined the Department of Plant Pathology as an assistant professor and Extension plant pathologist, based at the WSU Mount Vernon Northwestern Washington Research and Extension Center. Over the past 23 years, her vegetable seed pathology program has focused on research and Extension studies on the etiology, epidemiology, and management of diseases affecting important vegetable and vegetable seed crops in the Pacific Northwest and around the globe. Growing up in Durban, South Africa, du Toit came to the field of plant pathology through an undergraduate course in plant pathology that opened her eyes to how science can help people. The instructor of that course took students to farms, forests, and NGOs. Seeing diseases impacting individuals and communities and witnessing the intersection of science and community, led du Toit to switch her major to plant pathology. du Toit is an APS Fellow, past president, former councilor-at-large, and current chair of the Nominations and Seed Pathology Committees.



Amit Kumar Kesharwani joined the Department of Plant Pathology, Irrigated Agriculture Research and Extension Center, Washington State University (IAREC-WSU),

Prosser, as a postdoctoral research associate in July 2023 with **Dr. You Fu Frank Zhao**. Kesharwani is also a member of the Diversity, Equity, and Inclusion (DEI) Committee of IAREC WSU Prosser. His research focuses on phytopathological diseases such as fire blight and X diseases of orchards like apple and diseases of pear caused by Gram-negative *Erwinia* and phytoplasma.

Jana U’Ren joined the Department of Plant Pathology, Washington State University (WSU), in July 2023 as an assistant professor of mycology and the director of the Shaw Mycological Herbarium. U’Ren received her B.A. degree in biological sciences from the University of Missouri-Columbia and her Ph.D. degree in plant pathology



from the University of Arizona. She was the lead postdoctoral researcher on the NSF Dimension of Endophyte Biodiversity Project with **Betsy Arnold** at the University of Arizona, which

addressed the diversity and evolution of endophytes of phylogenetically diverse plants and lichens across the endangered boreal biome. From 2017 to 2023, U’Ren was an assistant professor of ecosystem genomics at the University of Arizona in the Department of Biosystems Engineering and BIO5 Institute. U’Ren’s research addresses the biodiversity, evolutionary history, and ecological functions of foliar fungal endophyte communities in both natural and agricultural ecosystems. At WSU, she will expand her research on the comparative genomics of fungi in the Xylariales, using genomics, transcriptomics, and metabolomics to address the evolutionary dynamics of secondary metabolite gene clusters and their impact on endophyte–plant interactions.

Obituary



Gareth Hughes passed away on April 30, 2023, after a long illness. He grew up in Manchester, England, and attended the University of York, where he received a B.A. degree in biology in

1972, and a Ph.D. degree in population genetics and ecology in 1978. He was a lecturer in biometrics at the University of the West Indies, Trinidad, from 1977 to 1981. He returned to the United Kingdom in 1981 as a systems analyst in the Crop Production Advisory and Development Department of the East of Scotland College of Agriculture, Edinburgh. In 1983, he accepted a faculty position at the University of Edinburgh in the Department of Agriculture, where he taught quantitative biology, biometrics, and crop science. He transitioned to the university’s Institute of Ecology and Resource Management in the mid-1990s. He was hired by the Scottish Agricultural College (SAC), now known as SRUC, in 2011, and promoted to professor in 2015. He retired from SRUC in 2018 but continued to be active in research right up to the time of his passing.

Hughes was a global leader in botanical epidemiology, crop loss assessment, model-

People, continued on page 19

ing, and risk assessment. He was responsible for major innovations in all these areas during three phases of his career.

His early career focused on crop ecology and the determinants of crop yield. His research led to the realization that the spatial pattern of crop plants, and their pests and diseases, were key determinants of yield loss. In pioneering studies, he established the fundamental relationships between yield and the spatial heterogeneity of pests and diseases using crop physiological and ecological principles and innovative modeling. In the 1980s, Hughes realized that existing descriptions of spatial patterns of plant diseases were inadequate both for understanding the spatio-temporal mechanisms of disease progress and for predicting crop loss in relation to disease intensity. The methodology used at that time had little relevance to the statistical properties of plant disease incidence. He, therefore, committed a major portion of his research effort for over two decades, the second major phase of his career, toward developing methodology for quantifying and interpreting patterns of disease incidence in multiple cropping systems.

In long-term collaboration with **L. V. Madden**, he first showed that the spatial pattern of disease incidence is characterized by the binary power law, consistent with the use of the beta-binomial probability distribution to describe patterns of disease incidence. He and colleagues showed that the spatial pattern of disease is fundamental for the determination of the proportion of sampling units that are diseased. They showed that the mean incidence and degree of aggregation present at one level in a spatial hierarchy could be used to predict the proportion of sampling units that are diseased

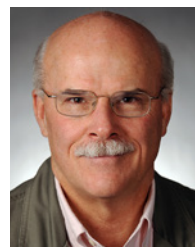
at another level without any curve-fitting. The latter point has immense implications for efficient sampling of large areas for disease incidence and in predicting rates of disease increase. Hughes and colleagues coined the term “hierarchical sampling” to describe the implementation of these methods that linked together methodology from group-sampling, statistical ecology, generalized linear and nonlinear modeling, and epidemiology. He worked with **T. Gottwald** to develop and test methods to predict incidence of citrus diseases using samples of groups of trees.

In a 2003 keynote paper at the ICPP in Christchurch, NZ, coauthored with **N. McRoberts** and **S. Savary**, Hughes introduced information theory to botanical epidemiology. For the last 20 years of his career, Hughes worked on synthesizing the widely scattered literature on information theory to evaluate and characterize the performance of diagnostic tests and disease forecasting systems. He introduced several novel methodological insights during this period that are applicable to plant and human epidemiology. Lengthy exchanges with his coauthors on the subject often drew on one of his passions outside of science—hard-boiled detective fiction—where the question of what the detective can infer from the available evidence provided a literary analogy to his research on information theory. These themes combined as the hunt for a cheap “two-bit forecaster.” At the time of his passing, Hughes was working on a final paper detailing the connections between Bayesian probability updating and the information gain inherent in accurate disease prediction.

In addition to numerous journal papers and book chapters, Hughes wrote the reference book *Applications of Information Theory to Epidemiology*, edited a special issue of the

journal *Entropy*, and cowrote the textbook *The Study of Plant Disease Epidemics* with Madden and **F. van den Bosch**. He was an active member of APS for several years, previously serving as a senior editor of APS PRESS and chair of the Plant Disease Losses Committee. He was an invited speaker at many venues around the world. He received the L. M. Hutchins Award in 2000. He is survived by his son Warren and daughter Lilian.

Retirement



Mark Gleason, a professor of plant pathology at Iowa State University (ISU), will retire in December 2023. A 38-year faculty member of the ISU Department of Plant Pathology, Entomol-

ogy, and Microbiology, Gleason started with a 100% Extension appointment focusing on disease management for all horticultural crops and commodities, then gradually added applied research and teaching. His research program dealt mainly with diseases of apples, strawberries, and cucurbit vegetables. He taught or cotaught eight different ISU classes, as well as an online research ethics course for APS. A former editor-in-chief of *Plant Disease*, Gleason was also a member of the APS Presidential Team (2018–2022). He and his wife, Winnie, will relocate to Virginia.

Seminars



Robert Brueggeman, associate professor of barley breeding/molecular genetics and Robert A. Nilan Endowed Chair in Barley Research and Education, Department of Crop and Soil Sciences,

Washington State University (WSU), was invited to present a seminar entitled *Rpt5, Rpg1, and rpg4/5: Characterizing Broad Resistance Against Important Necrotrophic and Biotrophic Fungal Pathogens of Barley* in the WSU Department of Plant Pathology on August 28, 2023. The seminar was attended by graduate students, postdocs, and faculty of the Department of Plant Pathology and other departments onsite and through Zoom. Brueggeman received his A.A. degree from Spokane Falls Community College, Spokane, WA, in 1994, and B.S. degree in genetics and cell biology, with minors in microbiology

BOOK of the Month

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FUSARIUM WILTS
of Greenhouse Vegetable and Ornamental Crops

Edited by
M. Lodovica Gulino, Jacek Katan, and Angelo Garbald

and molecular cell biology, from WSU in 1998. He received both M.S. (2004) and Ph.D. (2009) degrees from the Department of Crop Science under the direction of **Andris Kleinhofs**. Brueggeman was an assistant professor from 2010 to 2016, associate professor from 2016 to 2019, and Dr. Charles Mode Endowed Chair in Genomics Research in the Department of Plant Pathology at North Dakota State University. Since his return to WSU in 2019, Brueggeman has focused his breeding program on the development of high-quality spring and winter malting, food, and feed barley varieties that are widely adapted to diverse regions of Washington State. His basic research utilizes molecular genetics, genomics, and functional analysis tools to explore the genetic

and functional mechanisms underlying biotic and abiotic stress resistance and malt quality genes in barley.



Steve Klosterman, research molecular biologist of USDA-ARS Crop Improvement and Protection Research Unit, Salinas, CA, was invited to present a seminar titled Retrospective and Prospective Look at Discoveries from Verticillium Comparative Genomics in the Department of Plant Pathology, Washington State University (WSU), on September 11, 2023. The seminar was attended by graduate students, postdocs, and faculty of the department and other departments, onsite and

through Zoom. Klosterman did his graduate studies at WSU from 1996 to 2002 for M.S. and Ph.D. degrees in plant pathology under the direction of **Lee Hadwiger**. After four years of postdoctoral research on common smut of corn smut at the University of Georgia, Klosterman joined the USDA ARS research unit in Salinas in 2006. Since then, his research has focused on the genomics of *Verticillium* species, development of detection tools, and management of Verticillium wilt and other diseases, especially on vegetables. He has served on the International *Verticillium* Steering Committee since 2009, and is currently the editor-in-chief of *Phyto-Frontiers*. During his visit to the WSU Pullman campus, Klosterman visited Hadwiger and his family and interacted with graduate students, postdocs, and faculty. ■

Classifieds

Assistant/Associate/Full Professor National Chung Hsing University (Taichung, Taiwan)

Department of Plant Pathology, National Chung Hsing University, Taichung (NCHU), Taiwan, invites applications for two tenure-track faculty positions beginning August 1, 2024. We are looking for faculty members who have excellent oral and written communication skills and are willing to work in a team-oriented environment. He/she will be expected to participate in interdisciplinary research collaborations within and across departments/institutions. The incumbents are also expected to fulfill the following duties: 1) obtain external grants to support his/her research; 2) mentor graduate/undergraduate students and/or postdoctoral researchers;

3) publish in peer-reviewed journals; and 4) provide service to the department, institution, professional societies, growers, field operators, and policymakers.

Position 1 Plant Virology

The incumbent will develop externally funded, high-impact research programs associated with plant virology. The incumbent will be required to teach courses related to plant virology and plant pathology. The incumbent is required to offer at least one English-taught course. Applicants must have a Ph.D. degree in plant pathology, plant virology, or related disciplines and at least one year of postdoctoral training. Candidates with previous research experience in plant virology or transmission electron microscopy are highly desirable.

Position 2 Plant Nematology or Bacteriology

The incumbent will develop externally funded, high-impact research programs for plant protection and disease management, plant-associated nematodes, or bacteria. The incumbent will be required to teach courses in plant nematology or bacteriology, plant pathology, disease management, bioprotectants, and applied microbiology. The incumbent is required to offer at least one English-taught course. Applicants must have a Ph.D. degree in plant pathology, nematology, bacteriology, or related disciplines and at least one year of postdoctoral training. Candidates with previous research experience on plant-associated nematodes, bacteria, or plant pathology are encouraged to apply. Candidates with field experience are highly desirable.

To apply, candidates must provide 1) a curriculum vitae; 2) at least three letters of recommendation (one of which must be written by the applicant's Ph.D. advisor or one of the supervisors during his/her postdoctoral research); 3) transcripts of all undergraduate and graduate credits and a Ph.D. diploma; 4) a statement of teaching plans and course outlines; 5) a statement of research interests and plans; 6) a list of publications; 7) photocopies of the applicant's passport and ID. The application packet should be sent to **Dr. Kuang-Ren Chung**, Professor/Chair, Department of Plant Pathology, National Chung Hsing University, 145 Xinda Road, Taichung, 40227, Taiwan. Closing date: November 30, 2023.

**New from
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Classifieds, continued on page 21

Country Development Manager

San Group Biotech USA Inc (Vista, California)

SAN Agrow is the plant protection business unit of SAN Group. SAN Agrow contributes to sustainable agriculture by providing biotechnological crop protection, nutrients, and biostimulants. With successful products based on microorganisms or plant extracts, we contribute to more sustainable agriculture. Through in-house R&D, we gain new insights in the areas of microbial biocontrol agents, microbial fermentations, plant extracts, and bio stimulants, as well as plant nutrition. In this way we create new products for expanding our portfolio for conventional and organic farming.

Do you have the passion to grow within a global organization? If so, you've come to the right place. We are looking for a motivated, strong, self-driven Country Development Manager to join our Research & Development team.

Summary

The primary purpose of the Country Development Manager is to ensure the development activities that maintain the company's competitive position and profitability.

These Are the Tasks We Trust in You

- Identify new growth opportunities by providing innovative development ideas through market opportunities to further develop products and services.
- Manage the development of improving existing products, services, ideologies, territorial expansion, and/or development of new ventures for the company.
- Improve and support the development of existing and new products in order to demonstrate the efficacy of products and expand our product line.

- Work closely with all departments of the company to provide technical support, training, recommendations, and solutions on any product inquiries.
- Integrate information and insights on competitive products into our business strategy in order to develop innovative solutions.
- Develop relationships and partnerships with alliances and key influencers across the agriculture industry, such as county agents, farm advisors, crop consultants, or university researchers/Extension agents, which can lead to new technologies for the SAN Agrow market.

To Grow in This Position, It Requires the Following

- At least five years of relevant experience.
- Master's degree in agronomy or soil, microbiology sciences, plant pathology and Ph.D. degree (preferred).
- Strong biology/chemistry/agronomy background.
- Fluent in English.
- Self-motivated, with a "can-do" attitude.
- Seeing change as an opportunity and not as a threat.
- Curious, openminded, nondiscriminating.
- Energetic, flexible, and motivated.

We Have a SANTastic Culture, Means for You

- First-name terms from trainee to owner.
- No neckties and open doors.
- Small teams to root-in and grow.
- High degrees of freedom to create in a positive team atmosphere.
- Flexible work hours.
- Benefits such as team events, state-of-the-art work environment, internal and external development programs.

What Else to Know?

- You are rooted onsite in Vista, California.
- We appreciate your expertise for 40 hours/week.
- This position is available immediately; however, we are happy to consider your notice period or your desired start date.
- Based on your professional experience and your qualifications, we offer you an attractive total compensation package ranging from \$117,000.00 to \$170,000.00 annual base salary.

Our Competitive Benefits Include

- 100% employer contribution toward medical and dental plans.
- Voluntary plans, such as vision, life, and long/short-term disability plans.
- Flexible Spending Account (Medical and Dependent care).
- 4% match on 401K plan (after one year of employment).
- PTO/SICK hours.
- Paid holidays.
- Year-end target bonus.
- Company cell phone.

Are you ready to root and grow at SAN Agrow and SAN Group? We are looking forward to your application! ■

Calendar

APS-SPONSORED EVENTS

NOVEMBER 2023

[Webinar: The Endangered Species Act and Its Implications on Pesticide Registrations](#)

[MPMI Virtual Seminar: Manipulation of the Host Endomembrane System by Bacterial Effectors](#)

MARCH 2024

[APS Pacific Division Joint Meeting with the 69th Conference on Soilborne Plant Pathogens](#)

JULY 2024

[Plant Health 2024](#)



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Search online for new job opportunities in the field of plant pathology using the APS Job Center. Visit the [APS Job Center](#).



SPOTLIGHT

Access 115 New *Plant Disease Management Reports*

PDMR Volume 17, Issue 2, is now available online. Subscribers to *PDMR* may now instantly access 115 new reports for updated data encompassing conventional fungicides and nematocides; biological control substances and varieties; and cultural techniques used for plant disease management. Utilize these reports today or [subscribe](#) for access.

Coming Soon! A *Phytopathology Focus Issue on Plant Virus Epidemiology*

An upcoming issue of *Phytopathology* will focus on plant virus epidemiology and include papers originating from presentations made at the 15th International Symposium on Plant Virus Epidemiology held in June 2022. Watch for new papers from this forthcoming special issue.

Watch the Free Recording of a Recent *MPMI* Virtual Seminar

Sajjan Grover presented his [trending research](#) that revealed an unexpected, complex sorghum–aphid interaction. This recording is free to view and share with colleagues and students. ■



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TRENDING

Phytopathology

[🍃](#) [🔗](#) Whole Genome Sequencing-Based Tracing of a 2022 Introduction and Outbreak of *Xanthomonas hortorum* pv. *pelargonii*

F. Iruegas-Bocardo, A. J. Weisberg, E. R. Riutta, K. Kilday, J. C. Bonkowski, et al.

[🍃](#) [🔗](#) Prevalence, Identity, Pathogenicity, and Infection Dynamics of Botryosphaeriaceae Causing Avocado Branch Canker in California

H. F. Avenot, D. Vega, M. Lu Arpaia, and T. J. Michailides

Plant Disease

[🍃](#) [🔗](#) Seed and Pollen Transmission of Tomato Leaf Curl New Delhi Virus, Tomato Leaf Curl Taiwan Virus, and Tomato Yellow Leaf Curl Thailand Virus in Cucumbers and Tomatoes

H.-H. Chang, D. Gustian, C.-J. Chang, and F.-J. Jan

[🍃](#) [🔗](#) Optimal Timing of Fungicide Application to Manage Fusarium Head Blight in Winter Barley

C. Cowger, Q. D. Read, L. Clark, and Y. Dong

MPMI

[🍃](#) [🔗](#) FIRE Mimics a 14-3-3–Binding Motif to Promote *Phytophthora palmivora* Infection

E. Evangelisti, A. Guyon, L. Shenhav, and S. Schornack

[🍃](#) [🔗](#) Elucidating the Obligate Nature and Biological Capacity of an Invasive Fungal Corn Pathogen

J. S. MacCready, E. M. Roggenkamp, K. Gdanetz, and M. I. Chilvers

Plant Health Progress

[🍃](#) [🔗](#) In Vitro Fungicide Sensitivity and Effect of Organic Matter Concentration on Fungicide Bioavailability in Take-All Root Rot Pathogens Isolated from North Carolina

C. M. Stephens, T. W. Gannon, L. D. Thiessen, M. A. Cubeta, and J. P. Kerns

[🔗](#) Late-Season Decline: A New Bacterial Disease of Corn Identified in the Texas Panhandle

K. Obasa, M. Kolomiets, B. Reed, D. Coker, J. Bell, and K. Heflin

Phytobiomes

[🔗](#) Climatic Clustering and Longitudinal Analysis with Impacts on Food, Bioenergy, and Pandemics

J. Lagergren, M. Cashman, V. G. M. Vergara, P. R. Eller, J. G. F. M. Gazolla, et al.

[🔗](#) Contrasting Nitrogen Fertilization and *Brassica napus* (Canola) Variety Development Impact Recruitment of the Root-Associated Microbiome

Y. Li, S. L. Vail, M. M. Arcand, and B. L. Helgason

*PhytoFrontiers*TM

[🍃](#) [🔗](#) Evaluation of a Viable-Cell Detection Assay for *Xanthomonas fragariae* with Latent Class Analysis

W. W. Turechek and H. Wang

[🍃](#) [🔗](#) SODplex, a Series of Hierarchical Multiplexed Real-Time PCR Assays for the Detection and Lineage Identification of *Phytophthora ramorum*, the Causal Agent of Sudden Oak Death and Sudden Larch Death

A. Capron, P. Herath, D. I. O. Alayon, S. Cervantes, B. Day, et al. ■

[🍃](#) = Editor's Pick [🔗](#) = Open