

## Phytopathology First Author Biography Series

# Rachel Gross Investigates *Globodera pallida* Novel Effectors and the Relationship Between Plants and Chronic Wasting Disease

Catherine Wram and Peter Abrahamian



The *Phytopathology* assistant feature editors are shining a light on some of the great graduate student researchers who have recently published in *Phytopathology* by featuring a series of student author

biographies in *Phytopathology News*. We are starting this series by highlighting the 2020 Best Student Paper awardee and honorable mentions.

**Rachel Gross** from the University of Idaho is the first student author in our series. She received an honorable mention for Best Student Paper for her first-author research article “[The \*Globodera pallida\* Effector GpPDI1 Is a Functional Thioredoxin and Triggers Defense-Related Cell Death Independent of Its Enzymatic Activity.](#)” At the time, Rachel was a Ph.D. student in the Plant Sciences Department at the University of Idaho, mentored by **Dr. Fangming Xiao**. Rachel, who is originally from Nampa, ID,

also completed her B.S. degree in sustainable crop and landscape systems at the University of Idaho.

Rachel’s Ph.D. research focused on the identification and characterization of novel effectors from *G. pallida* and a novel sub-unit of the chromatin-remodeling complex SWR1 in plants. Rachel was able to overcome many of the challenges faced when trying to characterize plant-parasitic nematode effectors, such as designing probes for in situ hybridization assays when the gene of interest has highly similar paralogs and patiently counting thousands of nematodes in root tissues, to successfully defend her Ph.D. in spring 2021. She recently accepted a position at Syngenta, where she will continue to pursue her research interests in generating end-use agricultural crops using biotechnology.

Beyond the scope of her Ph.D. research, Rachel is interested in the role plants play in transmitting prion molecules that cause chronic wasting disease to wildlife. She hopes to gain a greater understanding of how prions cause disease and how they are absorbed and transmitted by plants. You can read more about Rachel’s research in *Phytopathology* and *PLoS Pathogens*. When she is not in the lab,



you can find Rachel outside camping and mountain biking or in the kitchen baking an elaborate dessert. Connect with Rachel on [LinkedIn](#).

Stay tuned for the next issue of *Phytopathology News* to learn more about the next author in our series, another honorable mention for 2020 Best Student Paper. ■

## Call for Officer Nominations



APS is seeking individuals with leadership experience and a background of service to the society who are respected in the field of plant pathology and have a vision for APS to serve on APS Council for the 2022 election. The submission deadline is **December 1, 2021**.

**Full details are available online.** ■

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

# The Origin of Dutch Elm Disease?

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

In 1918 and 1919, a tremendously lethal disease of elm trees suddenly appeared in war-torn areas of northwestern Europe after WWI. Named Dutch elm disease (DED), it is a vascular wilt disease of numerous species of elm trees caused by an ascomycetous fungus, *Ophiostoma ulmi* (formerly *Ceratocystis ulmi*).

The disease, first noticed in the Netherlands and northern France, rapidly killed millions of native elm trees. It moved throughout the low countries during the 1920s but was most damaging in Holland. The name of the disease reflects where it was first identified, thoroughly studied, and characterized by a series of Dutch women plant pathologists (more details are provided in the December 2016 issue of *Phytopathology News*). The story of its origin, spread, and distribution is the rest of the story.

## Biology and Mechanism of Spread

After infection takes place through wounds, *O. ulmi* moves into the xylem vessels, blocking them and limiting the normal movement of water from the roots into the foliage. In addition, toxins, enzymes, and growth regulators are produced by the pathogen within the vascular system—all of which further contribute to the disease process.

The pathogen is transmitted and spread primarily by bark beetles. These insects are the perfect device for transmission. As the beetles invade and feed on diseased trees, the fungal spores stick to the insects' bodies and are introduced into the wounds created on other trees, where they rub off, germinate, and penetrate into the tree, initiating new disease and completing the cycle.

## History

Two distinct pandemics of DED are now recognized that have resulted in the death of an estimated 1 billion native elm trees in Europe and North America, as well as trees introduced into other areas of the world. For many years, it was thought that DED was caused by a single species, but in the early 1990s, another much more aggressive and virulent pathogen (*O. novo-ulmi*) was discovered. It appears that *O. ulmi* caused the first pandemic, beginning after WWI and continuing into the 1960s. The new pathogen was responsible for the second pandemic, beginning in the 1940s, and has been much more destructive than the first pandemic, moving into the United Kingdom through the importation of infected elm logs from Canada.

## Origin of the Pathogen?

The geographic origin of the pathogen has yet to be determined. Although it has long been presumed to be indigenous to China or eastern Asia due to the presence of highly resistant species of Asiatic elms, the pathogen has never been identified from this area. Newer studies suggest Japan as another possible source of the pathogen. According to



Bark beetle galleries on elm branch. (Photo: R. M. Harveson)



Dead American elm tree killed by the fungal pathogen *Ophiostoma ulmi*. (Photo: Joseph O'Brien, USDA Forest Service, and Bugwood.org)

Perplexing Past, continued on page 3

**C. M. Brasier**, this type of circumstantial evidence has contributed to an assumption that the pathogen spread to Europe from Asia. Although Brasier's comprehensive surveys failed to detect the pathogen in eastern or coastal China, he did find a species in the mountainous region of the northeastern Indian Himalayas that is thought to be another DED pathogen (*O. himal-ulmi*), but it has never been associated with an epidemic.

One of the more intriguing, but highly speculative, hypotheses on the genesis of DED is the wicker basket theory of **Edwin Butler**. This concept was initially addressed in a letter sent to **G. P. Clinton** and **F. A. McCormick** in 1934, which they published in 1936 in *Connecticut Experiment Station Bulletin* 389. **James Horsfall** and **Ellis Cowling** relayed this idea to us in 1978, stating that the pathogen was introduced into Europe by Chinese laborers brought to Europe to assist in the first world war via bark beetle-infested wicker baskets (made from Chinese elm) before proceeding to spread on elms throughout northwestern Europe. This supposition was cleverly refuted by **John Gibbs** in 1980 based on discrepancies between the timings of the laborers' arrival and the emergence of the disease.

## Disease in North America

DED is thought to have reached North America sometime in the late 1920s. It was first detected in Ohio in 1930 on shade trees, with another active focus center identified in the tri-state area in the vicinity of New York City in 1933. By 1938, more than 35,000 infected trees were found in New York, New Jersey, and Connecticut, and new reports continued to appear in Ohio, followed by consistent new reports from Maryland, Virginia, and West Virginia.

DED is now presumed to have spread into the interior of the North American continent from rail shipments of dead elm logs for use in the veneer industry. The shipments of timber were transported to lumber mills by rail on open flatcars. Via this system, at least 14 distinct terminal areas were exposed, along with more than 12,000 miles of railroad right-of-ways. Many of these logs must

have been harboring both the beetle vector and fungal pathogen, enabling spread whenever the beetles left the logs. This method of dispersal adequately explains the source and reason for the widely scattered locations where the disease eventually developed and became established.

## Conclusions

The origin of DED and its pathogen has still not been conclusively confirmed. What is certain is that the disease was not indigenous to North America and its native elms, and humans have played an unwitting, but major, role in distribution of both the pathogen and its vector from one location to another. DED is an excellent example of the serious and enduring consequences of a foreign pathogen being accidentally introduced into new areas. It has also taught us a valuable lesson, illustrating the dangers of transporting not just living plants but uninspected dead or inert plant products as well and demonstrating how these materials can serve as both a source of infection and an effective instrument for allowing entry of an exotic disease into a new location. Now you know the *rest of the story*.

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## Public Policy Board

# Public Policy Board Seeking Member Talent



Since its inception, the APS Public Policy Board (PPB) has significantly and positively advocated for the science of plant pathology, helped frame federal research and development priorities, influenced policy and funding decisions, and developed and nurtured APS' trusted relationships and dialogue with federal agencies, congressional staffers, and allied professional and learned society partners—key prerequisites for effective advocacy. While these have been the core priorities, PPB has also supported countless APS members by increasing their understanding of how the federal government and science agencies operate and how federal science priorities are established. PPB has hosted strategy sessions

with funding agency partners to provide insights on how to more effectively compete for federal funds, which has helped our members appreciate that our voices matter and understand how to use them to advocate for issues that we care about.

PPB has two positions available on the board:

- We are seeking one member, preferably who works in industry, to serve on the board for a 3-year term beginning August 7, 2021. Interested? Contact PPB Chair **Rick Bennett**.
- The second position is our EPA subject matter expert. A description of this role and instructions for applying for the EPA liaison position can be found [here](#). This position is a 2-year term. ■

# OPRO Meets the Auburn University F. S. Arant Entomology and Plant Pathology Club

Submitted by Oluwakemisola Olofintila, M.S. student, Department of Entomology and Plant Pathology, Auburn University

**Science outreach activity:** E.A.G.L.E. (Exploring Agriculture and Gaining Leadership Experience) Camp for junior and senior high school students.

**Type of event:** Classroom activity and booth.

**Intended audience:** K-12 students.

**Description of the activity:** The E.A.G.L.E. Camp was hosted by the club to instill interest for plant pathology in junior and senior high school students through exciting activities. Camp activities include the display of diseased plants and the observation of plant pathogens under a microscope. Through this activity students learn that plants get sick too, the disease cycle is explained, and spore dispersal is demonstrated using colored bubbles. Senior high school students also learn the basics of plant pathology and what plant pathologists do and take a Kahoot quiz and the Which Plant Disease Are You? personality test.

**Materials needed for this activity:**

- Which Plant Disease Are You? game from the [APS OPRO website](#).

- Microscopes.
- Bubbles.
- Supplies for coloring.
- Printed leaves for coloring.
- Diseased plants.

All other materials used are available upon request from [Oluwakemisola Olofintila](#).

**How will you modify or improve future offerings?** A smaller venue will be used in the future. There were four different booths, and the movement from one booth to another took a significant amount of time due to the large size of the field used.

**How many times has this activity been hosted?** The activity has been hosted twice.

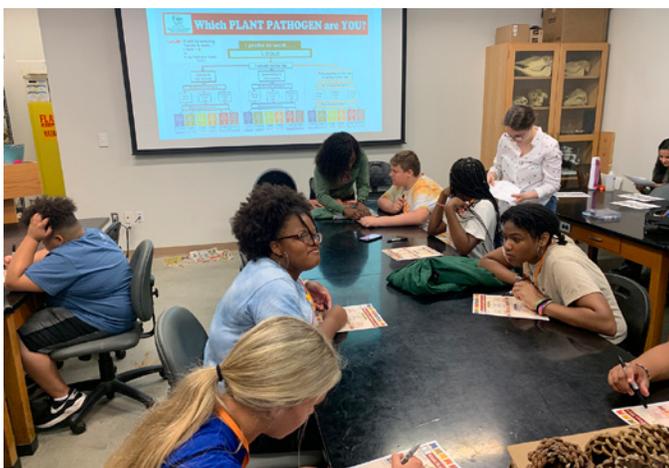
**In total, how many participants have been in attendance?** 40 people.

**How was the impact of this outreach activity evaluated?** Quizzes were given at the end of the activities, including individual quizzes for junior high school students and Kahoot quizzes for senior high school students. All students earned scores higher than 70%.

To have your science outreach activity or event featured in the “OPRO meets...” article series, please complete [this survey](#). ■



Junior high school students demonstrating spore dispersal using colored bubbles.



Senior high school students taking the Which Plant Disease Are You? personality test.



Participants of the Junior E.A.G.L.E. Camp held at Auburn University.

# Call for 2022 Award Nominations



APS regularly honors individuals who have made significant contributions to the science of plant pathology. We invite you to familiarize yourself with the various APS Awards and nominate someone you feel deserves special recognition. Award nominations for 2022 will be accepted through **December 1, 2021**. Please review the award guidelines and nomination instructions prior to submitting your nomination.

Full details are available online. ■

## APS Foundation



# Apply for 2022 APS Foundation Funding

Applications for the following awards are accepted from September 1 through December 1, 2021.

### For Any Career Level:

- Books for the World
- Mathre Education Endowment

### For Undergraduate Students:

- Frank L. Howard Undergraduate Fellowship

### For Graduate Students:

- Browning Plant Medicine and Health Travel Award
- French-Monar Latin American Awards
- Student Educational Award
- Raymond J. Tarleton Student Fellowship

Learn more and apply. ■

# New Short Animated Film Focusing on Sub-Saharan Africa Plant Health Launched

A new 2-min animated film summarizing the contribution to food security brought to Sub-Saharan African countries by The CONNECTED Virus Network has been launched.

The film focuses on:

- The network's capacity-building through training and research funding.
- Enabling networking between researchers.
- The importance of the continuation of the network.

The film was made in collaboration with the University of The West of England (UWE), created by animation student **Sam Maxwell**, and narrated by **Pereko Makgothi**.

You can watch the film [online](#) now. It is also available on [Twitter](#) for retweeting. ■



# APS Offers New Research Ethics Course



Registration is now open for a new, exciting, comprehensive course offered by APS—Research Ethics!

The course is scheduled for every Tuesday, 4:30–5:30 p.m. U.S. Central Time, August 31–November 30, 2021.

Join your peers online to discuss unique case studies and learn from challenging conversations. Topics will focus on areas such as plagiarism, human and animal subjects, and authorship to help you avoid and manage ethical dilemmas. Scientific research has never been more important to society's well-being, and misconduct scandals undermine public support for science.

- As a *research group leader*, how can your leadership style or mentoring and coaching abilities set the tone for ensuring your group operates ethically?
- As a *research group member*, how can your behavior support a high standard of research conduct and encourage others to do the same?

It's no accident that responsible conduct of research (RCR) training is a required component of NSF, NIH, and USDA NIFA grant applications. Specifically for NIH grants, "acceptable [RCR training] programs generally involve at least eight contact hours."

Don't miss this opportunity to:

- Gain a certificate of completion to include in your RCR plan.
- Learn from your peers and build new relationships.
- Acquire educational materials you can refer back to when needed.
- Be guided through challenging ethical conversations by expert instructors **Mark Gleason** and **Leonor Leandro**, professors, Iowa State University Department of Plant Pathology and Microbiology. Both instructors have led this course at Iowa State annually for the past 13 years, using online and in-person formats.

Ready to sign-up? [Register today](#). ■

## 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.



### Dallice Mills

My first exposure to plant pathology was in **Al Ellingboe's** lab at Michigan State University, where my Ph.D. thesis was a study of somatic recombination in fungi. It was through coursework, seminars, and discussions with my lab mates who were studying various aspects of powdery mildew disease of cereal hosts that I became interested in plant pathology. I chose postdoctoral training in yeast genetics in **Hershel Roman's** lab in the Department of Genetics at the University of Washington, with guidance from molecular geneticist **Ben Hall**. My hope was that the new methods and techniques used in basic research with the yeast *Saccharomyces cerevisiae* would be applicable for studies of host–pathogen interactions. However, none of my colleagues at the time were involved in studies of plant diseases, and defining a suitable model system for these studies was important. My career was greatly enhanced by becoming an APS member and attending society meetings. It was at APS meetings that many ideas were spawned, friendships were established, and research collaborations were formed with scientists from the United States and abroad. Over the years, the [APS website](#) has evolved into a must-visit site for me to stay abreast of happenings important to our profession. To help ensure that our profession remains strong and expands, I am delighted to give back in support of the APS Foundation. Graduate student access to opportunities for scholarships, awards, travel to APS meetings, and published works from APS PRESS, as well as other initiatives, are crucial to the health of our profession.

*Dallice Mills is professor emeritus of genetics and plant pathology in the Department of Botany and Plant Pathology at Oregon State University and an APS Fellow.*



### Claudio Vrisman

I grew up on a vegetable farm in southern Brazil, and since early in life, I have had a desire to pursue a career in agriculture. While studying for my undergraduate degree in agronomy, **Dr. David de Souza Jaccoud Filho** and his industry collaborators gifted me with opportunities to attend professional meetings, and these opportunities helped tremendously with my academic and professional growth. David, through his generosity, even helped me pay for my first trip to the United States for an internship, where I was first introduced to The American Phytopathological Society! As a graduate student at The Ohio State University with **Dr. Sally Miller**, I continued my involvement with APS and presented at each annual meeting during my graduate training. At two of these meetings I was the recipient of the **Luis Sequeira Travel Award** from the APS Foundation, which supported my participation at APS Annual Meetings. In all my interactions at APS meetings, I have always felt welcomed and treated as a peer. The APS Foundation helped me expand my professional network, and many colleagues have graciously helped me organize tours at their sites. My professional success has been built largely upon the support of very generous people. I am extremely grateful to every single person who has contributed, directly and indirectly, to my professional development. Giving to the APS Foundation is a way for me to give back and to do for others what so many people have done for me, and I have truly enjoyed that!

*Claudio Vrisman is a biology characterization scientist at Corteva Agriscience, Indianapolis, IN. ■*

## People

### Award



**Qing Bai**, Ph.D. student in the Department of Plant Pathology, Washington State University (WSU), has received the Everett and Helen Kreizinger Scholarship from the WSU College of Agriculture, Human, and Natural Resource Sciences and Department of Plant Pathology for the 2021/2022 academic year. Bai received her B.S. degree in 2014 and M.S. degree in 2016 in plant protection from

Huazhong Agricultural University, Hubei, China. She has been studying for her Ph.D. degree at WSU since 2017. Her Ph.D. research is on genetic diversity, population structure, and virulence-associated secreted protein genes of the stripe rust pathogen *Puccinia striiformis* in the United States and other countries and is being conducted under the guidance of **Xianming Chen**.

*People, continued on page 7*

## Obituaries



**Tom Carroll** was born on August 22, 1932, in Los Angeles, CA. He spent most of his young life in Los Angeles and attended California State Polytechnic College, where he graduated in 1954 with a degree in horticulture. After serving in the U.S. Army for several years, he worked as an agricultural inspector for the California Department of Agriculture. He then enrolled in the University of California-Davis to pursue graduate work in plant

pathology, receiving his M.S. degree in 1962 and his Ph.D. degree in 1965. He then moved to Montana State University (MSU) in Bozeman as an assistant professor. He was initially involved in setting up the transmission electron microscope laboratory for the Department of Botany and Microbiology but later broadened his focus to plant virus diseases of cereals. During his career, he received the Sigma Xi Faculty Research Award, the Montana Ag Experiment Station Outstanding Research Award, and the Charles and Nora Wiley Faculty Award for Meritorious Research. Tom's teaching duties included an undergraduate course in cytology and graduate courses in electron microscopy and plant virology.

Tom's early work in virology centered on *Barley stripe mosaic virus* (BSMV), a seedborne virus, and its association with the infected cell. He first observed that the virus was associated with microtubules and spread through cells undergoing meiosis and mitosis. This work was published as his first paper in *Science* (September 13, 1974, Vol. 185, Pages 957-958). He also followed the path of BSMV during pollen transmission by observing thin sections of pollen, pollen tubes, and barley ovules. He was instrumental in the barley seed certification program in Montana, to certify seed as free of BSMV, developing an SDS disk test and later an ELISA test to determine the presence of the virus in harvested seed lots.

Tom and his graduate students also worked extensively on *Barley yellow dwarf virus* and its importance to Montana. They conducted annual surveys to determine the isolates present, the severity of the disease, and the presence of its aphid vectors. With the help of an aphid specialist, they determined that the vector *Rhopalosiphum maidis* karyotype  $2n=10$  preferred barley and wheat, whereas the  $2n=8$  karyotype preferred corn. Tom and barley breeder **Gene Hockett** spent time on the development of resistant varieties.

During the 1980s, MSU was involved in a USAID grant to develop barleys for the Middle East. As such, Tom visited a number of countries in the Middle East to interact with local plant pathologists and barley breeders. He also was involved with training a number of graduate students from those countries at MSU.

In the mid-1980s a new disease of barley was noted in northcentral Montana. Tom and graduate student **Nancy Robertson** determined that this was an entirely new type of plant virus. Years of research were conducted, and the disease was proven to be transmitted by the brown wheat mite, even passing from mite to mite through red eggs laid in summer and white overwintering eggs. The report of this new virus ended up as a cover story in *Science* (May 27, 1988, Vol. 240, Pages 1188-1190).

Tom retired from MSU in 1996 and moved to Gig Harbor, WA. He passed away on June 3, 2021, and is survived by his wife **Earlene** and four daughters, numerous grandchildren, great-grandchildren, and two great-great-grandchildren.

**Dr. Roger Lawson** (1937–2021), former research plant pathologist and national program leader with USDA-ARS, passed away on

April 30, 2021. He received his education at Oregon State University, with a bachelor's degree in floriculture (1960) and a Ph.D. degree in plant pathology (1963), and was then awarded a Fulbright Fellowship to study in the Netherlands at the Laboratory for Flower Bulb Research in Lisse. He began his ARS career in September 1964 at the Florist and Nursery Crops Laboratory in Beltsville, MD, where he became acting research leader and then research leader for about 15 years. In 1993 the Florist and Nursery Crops Laboratory was merged with the Research Unit of the U.S. National Arboretum, and Dr. Lawson became the research leader of the combined Floral and Nursery Plants Research Unit. In 1994 he moved to the National Program staff as National Program leader for horticulture and sugar crops, a position now divided between two program leaders. After retiring in January 2001, he continued to work part-time with the program staff for a few years.

Dr. Lawson was involved in ornamental horticulture from a young age, cultivating tuberous begonias at the age of 8 and becoming the youngest person to hold a nursery license in Oregon when he was 11 years old. During his research career, he examined virus and virus-like diseases of many different ornamental plants, including especially viruses of orchids, chrysanthemum stunt viroid, *Carnation etched ring virus*, and both *Tomato spotted wilt virus* and *Impatiens necrotic spot virus*, which affect a wide range of ornamentals, as well as agronomic crops. He facilitated the introduction of new techniques, including the first application of monoclonal antibodies to plant viruses, and through a collaborative agreement with Agdia, Inc., the patenting of a monoclonal antibody as the first commercial USDA product under the Technology Transfer Act.

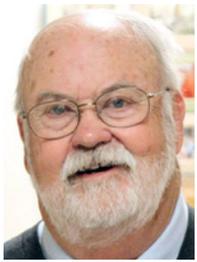
In 1986 Dr. Lawson initiated the USDA New Crops Program, introducing new species and varieties of ornamental plants under a public-private partnership with multiple universities and nursery businesses—the first such public-private partnership under the 1985 Technology Transfer Act. The success of the public-private New Crops Program led to the creation of the Floral and Nursery Research Initiative (FNRI) Program in 1998, of which he was the primary architect.

Dr. Lawson was very supportive of the scientists in his laboratory. He was soft-spoken but highly influential and played a leadership role in international symposia on viruses of ornamental plants organized by the International Society for Horticultural Science (ISHS), serving as chair of the Ornamentals Virus Working Group. He strongly supported microbial germplasm collections. He initiated development of financial support for a national program in plant virology at the American Type Culture Collection (ATCC) and served on and chaired the ATCC Board of Trustees for several years.

Dr. Lawson was a longtime member of APS, serving as associate editor and senior editor of *Phytopathology* and as the APS representative to ATCC; he served on the APS Virology Committee, and chaired the Collections and Germplasm Committee. He also chaired the National Work Conference on Microbial Collections of Major Importance to Agriculture, supported by APS, which aided development of germplasm conservation policy by the National Institutes of Health.

Dr. Lawson was named a Fellow of The American Phytopathological Society in 1987; he was also an honorary life member of the American Orchid Society and a Fellow of the Washington Academy of Sciences. In 1989, he was recognized as an ARS Outstanding Scientist of the Year.

Dr. Lawson is survived by his wife of 63 years, **Mary**, son **Jeff**, daughters **Janet** and **Nancy**, and four grandchildren.



**Jack D. Rogers**, age 83, regents professor emeritus at Washington State University (WSU), died peacefully at his home in Pullman, WA, on June 14, 2021, after a long illness.

Dr. Rogers was a nationally and internationally renowned mycologist, dedicated and inspirational educator, avid hunter and fly fisherman, wonderful humorist, and most of all a dedicated husband to his wife **Belle** and father to his twin daughters **Rebecca Ann (Hines)** and **Barbara Lee (Cooper)**. He will be sorely missed by his family and international network of colleagues, friends, and former students.

Rogers was born September 3, 1937, to **Jack Rogers (Youkobis Uzskuriatis)** and **Thelma Rogers (née Coon)**, both school teachers in Point Pleasant, WV. After graduating from Point Pleasant High School in 1955, Rogers attended Davis and Elkins College (West Virginia) in a 5-year cooperative program with Duke University (North Carolina) and earned a B.S. degree from Davis and Elkins and an M.S. degree in forest management from Duke. He went on to earn his doctorate in plant pathology from the University of Wisconsin-Madison, in 1963.

At the start of his junior year at Davis and Elkins, Rogers met fellow student **Belle Clay Spencer**, daughter of University of Virginia chemistry professor **Dr. Hugh M. Spencer** and **Thomasia Spencer (née Hancock)**. They married in June 1958 at Belle's family home in Charlottesville, VA, and began a 63-year-long devoted marriage. They were blessed with twin daughters, Rebecca and Barbara, in June 1964.

In 1963, Dr. Rogers joined the faculty of the WSU College of Agriculture, beginning an educational career in the Plant Pathology and Forestry Departments that spanned half a century. He taught forest tree pathology and advanced mycology and served as a major professor and adviser for graduate and postgraduate students. He rapidly rose through the ranks to become a full professor and served as chair of the Department of Plant Pathology from 1985 until 1999. An international authority on xylariaceous fungi, he authored and co-authored more than 230 scientific papers and 2 mycological books. He traveled the world on mycological research and specimen-collecting trips, but far and away his first priority and passion was teaching his students. His many awards for educational and scientific excellence included the R. M. Wade Award for Instruction (1967); serving as president of the Mycological Society of America (1978); the Sahlin Faculty Excellence Award for Research, Scholarship, and Arts (1986); and the Mycological Society of America Weston Award for Teaching Excellence (1992). In 2004, he was honored with the Mycological Society of America's Distinguished Mycologist Award. Additionally, he received the Library Excellence Award for Service to WSU Libraries in 2005. Dr. Rogers received the WSU Eminent Faculty Award in 2006 and was promoted to regents professor in 2007. He was the subject of a book of tributes from colleagues edited by former student and retired WSU Professor **Dean A. Glawe**.

In addition to Dr. Rogers' professional accomplishments, he was also an enthusiastic outdoorsman, a friend to many, and a legendary humorist. He particularly enjoyed hunting pheasant and quail on the breaks of the Snake River and fly fishing in rivers and lakes across the Pacific Northwest. He was a regular at his two coffee groups, as well as the Pullman Presbyterian Church's Men's Bible Study, and enjoyed visiting with his many colleagues and friends. Dr. Rogers loved a good joke or humorous story and had the rare ability to remember and retell every entertaining anecdote he ever heard. Whenever he said, "That reminds me of a story..." it indi-

cated that whoever he was with would soon be laughing until their sides ached.

Dr. Rogers is survived by Belle, his loving wife and constant companion of 63 years, and his daughters and their families: Becky and husband **Warren** of Papillion, NE, with twin grandsons **Ethan** and **Gareth**; and Barbie and husband **Brad** of Martinez, CA. He is also survived by his sister **Mary Ann Mansour** and husband **George** of Lansing, MI; his sister **Nancy Sanders** and husband **Larry** of Williamsport, PA; and many nieces and nephews.



**Donald Lee Stuteville**, professor emeritus in the Department of Plant Pathology at Kansas State University, died June 9, 2021, at age 90.

He was born September 7, 1930, on the family farm near Okeene, OK. In 1942, his family moved to a farm near Parsons, KS, where Don attended a one-room school and met his future wife. He graduated from Parsons High School in 1948, where he was active in 4-H and FFA. He served as FFA chapter president and earned the State FFA Degree. He further served as secretary of the Kansas FFA Association. Don attended Parsons Junior College, graduating in 1950. On September 7, 1952, he married **Lorene J. Dringenberg**.

While farming, Don worked at the Kansas Ordinance Plant near Parsons and later at the Missouri-Kansas-Texas Railroad Shops. He served 4 years in the U.S. Army Military Police Corp, 2 years at the Parsons Reserve Unit, and 2 years on active duty during the Korean War. During this service, Don developed lower back weakness that prevented him from driving a tractor and performing other farm work. He spent the summer of 1954 in the Wichita Veterans Hospital, where his back issues persisted, and he was advised to pursue a more back-friendly occupation.

Don returned to Parsons and took additional college preparatory courses at the junior college. He enrolled at Kansas State College in 1956, earning his bachelor's degree in agriculture, with high honors, in 1959. With success at judging in 4-H and FFA competitions, Don competed for membership on the KSU Poultry and Crops teams. Making both, they placed first and second, respectively, at the Chicago International Show. From 1959 to 1961, with the aid of a National Science Fellowship Award, Don earned a master's degree in agriculture at Kansas State, with research involving alfalfa pathology. Following his thesis seminar, faculty member **Dr. Leon Edmunds** asked Don his plans and suggested that he attend the University of Wisconsin-Madison to obtain a Ph.D. degree.

In 1964, Don received his Ph.D. degree in plant pathology under the direction of **Dr. Earle Hanson**. His dissertation was titled "Virus Diseases of Red Clover." That same year, he accepted an assistant professorship at Kansas State University. He was responsible for teaching and pathology research on turf, fruits, and vegetables. Later, Don was asked to join an alfalfa-improvement team composed of USDA Breeder **Edgar Sorensen** (Don's advisor for his master's research) and entomologists to develop pest- and disease-resistant cultivars and germplasms. Don worked at Kansas State for 39 years, retiring in 2003. During his career, Don authored and co-authored dozens of publications related to his area of specialization, alfalfa downy mildew. He co-authored and co-edited the first edition of the *Compendium of Alfalfa Diseases* published by APS PRESS. In 1991, he developed the *Standard Tests to Characterize Alfalfa Cultivars for Downy Mildew Resistance*. He frequently served as a reviewer for *Phytopathology*, *Plant Disease*, and

*Crop Science.* In retirement, Don was frequently seen in the department hallways as he continued to screen alfalfa germplasm lines for downy mildew resistance.

Don was a member of The American Phytopathological Society and secretary of the Central Alfalfa Improvement Conference. Other professional memberships included Phi Kappa Phi, Gamma

Sigma Delta, Alpha Zeta, Sigma Xi, and the Crop Science Society of America.

Don was extremely proud of the fact that he had the respect and friendship of all his students, including a few in the department who were incompatible with their original advisors. After taking on a student from Thailand, Don was asked to serve as a faculty advisor for the Thai Student Club, where he served for several years beyond his retirement. ■

## Graduate Student Spotlight: Lianna Wodzicki



### What type of degree program are you enrolled in?

Masters of Science, The Ohio State University.

### What year are you in graduate school?

I am in my second year, with an expected graduation date of December 2021.

### What is your academic department/section called at your institution?

Department of Plant Pathology, Fruit Pathology Lab.

### Who is your major professor?

Dr. Melanie L. Lewis Ivey.

### Are you an APS member?

Yes.

### How have you been involved in the APS organization?

I was a member of Borlaug's Army as an undergraduate student at Penn State. I attended my first Plant Health meeting in Cleveland in 2019 through Ohio State and presented a research on-demand poster last year at the Plant Health 2020 Online meeting. I also have a research on-demand poster to present for Plant Health 2021 Online.

### Please provide a brief description of your research.

I propose to validate the use of a laser-guided, intelligent sprayer for disease and insect management of grape and apple crops. Use of this sprayer would reduce the overall volume of pesticides applied by growers, creating safer working conditions for farmers, reducing the amount of money growers spend on pesticides, and decreasing the number of tank refill trips, which would save on labor costs. Overall, the intelligent sprayer has the potential to make apple and grape spray technology more environmentally and economically sustainable for growers.

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

My first job in high school was as a receptionist at a local Harley Davidson dealership! You can definitely say I knew more about motorcycles than the average high schooler!

### What are some of your interests outside of science?

I am a huge foodie! I love trying new foods and places to eat!

### What is your hometown?

Southington, CT, USA.

### What is your favorite pathogen/plant disease?

Cedar apple rust on the juniper host!

### If you know you are pursuing a specific career sector, what is it?

I would love to go into extension, preferably staying within specialty crops.

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

As an undergraduate student, I had a summer internship at the Plant Disease Information Office at the Connecticut Agricultural Experiment Station. I learned about plant disease diagnostics and fell in love with the discipline, as well as the close connection the scientists had with the public and growers. Once school started up again, I pursued a position with the plant disease clinic at Penn State as well.

### Do you have any social media handles that you want to share?

E-mail: [wodzicki.2@osu.edu](mailto:wodzicki.2@osu.edu)

Twitter: [@liannawod](https://twitter.com/liannawod) ■



Learn more about the [APS Graduate Student Committee](#) initiatives and student opportunities. Connect with the committee on Twitter [@plantpathgrads](#) and [Facebook](#).

### Assistant/Associate Professor University of Maryland-PSLA (College Park, Maryland)

Founded in 1856, University of Maryland, College Park is the state's flagship institution. Our 1,250-acre College Park campus is just minutes away from Washington, DC, and the nexus of the nation's legislative, executive, and judicial centers of power. This unique proximity to business and technology leaders, federal departments and agencies, and a myriad of research entities, embassies, think tanks, cultural centers, and nonprofit organizations is simply unparalleled. Synergistic opportunities for our faculty and students abound and are virtually limitless in the nation's capital and surrounding areas. The university is committed to attracting and retaining outstanding and diverse faculty and staff who will enhance our stature of preeminence in our three missions of teaching, scholarship, and full engagement in our community, the state of Maryland, and the world.

The University of Maryland (UMD) has made the safety of our students, faculty, and staff and our surrounding communities a top priority. As part of that commitment, the University System of Maryland (USM) recently announced that students, faculty, and staff on USM campuses this fall, including UMD, are required to be vaccinated against COVID. As a prospective and/or a new employee at UMD, you will be required to comply with the university's vaccination protocol. Proof of full vaccination will be required before the start of employment in order to work at any UMD location. Prospective or new employees may seek a medical or religious exemption to the vaccination requirement at [return.umd.edu](https://return.umd.edu) and must have an approved exemption prior to the start of their employment.

The Department of Plant Science and Landscape Architecture invites applications for a 12-month tenure-track position of Assistant Professor with a 50% extension, 40% research, and 10% teaching appointment. The tenure home is the Department of Plant Science and Landscape Architecture, College of Agriculture and Natural Resources, University of Maryland, College Park, MD. The department conducts research and extension activities and teaches curricula focusing on plant biology (turfgrass science, plant pathology, plant biology, and landscape management), agriculture science and technology (horticulture and agronomy), and landscape architecture. The University of Maryland, College Park, MD, is a land-grant institution with world-class research and extension components and is located in

suburban Washington, DC. The 1,300-acre campus has outstanding research libraries and Metrorail access to national and international research institutions, government agency and non-governmental organization headquarters, and significant cultural landmarks. There are excellent opportunities for collaboration across departments and colleges on campus. Further, proximity to Washington, DC, Baltimore, Annapolis, and Maryland's biotechnology corridor offers opportunities for interaction with a range of nearby agencies and research institutions, including the USDA, Smithsonian Institution, EPA, NPS, and NSF. The NSF-sponsored Socio-Environmental Synthesis Center associated with the UMD campus provides potential and resources for collaborative synthetic research integrating social and environmental science. Excellent field research, greenhouse, and laboratory facilities are available, and access to nearby field sites is unparalleled due to our location near myriad juxtaposed land uses, as well as to the 6,600-acre USDA Beltsville Agricultural Research Center and multiple University of Maryland Research and Education Centers located in different ecological provinces.

In addition, the Paint Branch Turfgrass Research Facility, located at the edge of campus, consists of 35 acres of land on USDA property. Approximately half of the research facility has an in-ground irrigation system. The facility possesses the capabilities to support nearly every aspect of turf research. The main office building contains a classroom, laboratory, conference room, and offices for faculty, graduate students, and support staff. Research support buildings include pesticide storage, plant prep, and equipment storage buildings.

#### Minimum Qualifications

##### Required:

- Ph.D. in a plant science, plant pathology, microbiology, or related discipline.
- Demonstrated expertise in plant disease etiology and epidemiology, traditional and molecular techniques used in plant pathology, fungal taxonomy, control strategies, and statistics.
- A demonstrated ability to publish original research in top-tier peer-reviewed journals.
- Ability to work effectively as a team member and possession of excellent written and verbal communication skills.

##### Preferred:

- Expertise working with diseases of turfgrasses would receive greater consideration.

- Experience in writing grant proposals and strong leadership skills.

#### Position Responsibilities Include

##### Research:

- Development of an internationally recognized, extramurally funded turfgrass pathology research program. This program should include both basic and applied research. Applied research should be directed toward identifying emerging turfgrass pathogen problems and developing integrated management practices to control turfgrass diseases.

##### Extension:

- Serving the Maryland turfgrass industry, which is comprised of a diverse clientele, including golf course superintendents, professional lawn-care companies, athletic field managers, sod producers, industry representatives, and government agencies.
- Writing and updating extension publications; presenting information at educational meetings; assisting in the coordination of existing and new educational events including an annual conference and biennial field day; developing training materials for pesticide recertification; and conducting in-service training for extension educators.
- Playing an active advisory role in state turfgrass organizations, including the Maryland Turfgrass Council, Mid-Atlantic and Eastern Shore Associations of Golf Course Superintendents, Turfgrass Producers of Maryland, and Mid-Atlantic Chapter of the Sports Turf Managers Association.

##### Teaching:

- The individual selected will be expected to teach one undergraduate course biennially in either turfgrass pathology or pest management strategies for turfgrasses.
- The incumbent will be expected to recruit and mentor graduate students.

##### Additional Duties:

- Faculty members are expected to serve the professional community through review of publications and participation on competitive grant panels, in national and international professional meetings, and other activities.
- It is also expected that this individual will participate in other duties and committees as required by the department, college, and university and interact with

*Classifieds, continued on page 11*

organizations representing their field in the state and region.

**Closing Date:** Open Until Filled. For best consideration, apply by September 1, 2021.

All candidates must apply online at <https://ejobs.umd.edu>. When applying, please submit cover letter, resume, copy of unofficial transcripts, and name and email address of three professional references.

#### Diversity Statement

The University of Maryland, College Park, an equal opportunity/affirmative action employer, complies with all applicable federal and state laws and regulations regarding nondiscrimination and affirmative action; all qualified applicants will receive consideration for employment. The university is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, national origin, physical or mental disability, protected veteran status, age, gender identity or expression, sexual orientation, creed, marital status, political affiliation, personal appearance, or on the basis of rights secured by the First Amendment, in all aspects of employment, educational programs and activities, and admissions.

#### USDA ARS Postdoctoral Research Associate USDA-ARS (Auburn, Alabama)

Two postdoctoral research positions, one in entomology and one in applied virology, are available at the USDA-ARS, Soil Dynamics Lab in Auburn, AL, in collaboration with Auburn University. The postdoctoral researchers will work with multidisciplinary and interdisciplinary teams at the Soil Dynamics Lab and Auburn University and with other collaborators at the USDA and land-grant universities to investigate the epidemiology and management of the aphid-transmitted *Cotton leafroll dwarf virus* (CLRDV) in cotton agroecosystems. The aims of these research programs are to generate knowledge about the epidemiology of CLRDV that will inform development of risk models and season-long, sustainable management programs for mitigating yield loss outcomes.

Support for these positions is available for up to 2 years at the GS11 level (~\$64,000), with a potential option to extend an addi-

tional 2 years. All federal benefits (i.e., health insurance, annual leave, retirement plans) are available for each position.

#### Duties and Responsibilities

- Entomologist postdoc will perform hypothesis-driven research about insect–virus–plant–environment interactions that will improve our understanding of virus spread and epidemiology, leading to practical solutions for problems facing the cotton industry in the state of Alabama and beyond.
- Applied virologist postdoc will perform hypothesis-driven research to investigate plant virology, including epidemiology, diagnostics, and population genetics that will lead to practical solutions for problems facing the cotton industry in the state of Alabama and beyond.
- Coordinate and lead research activities, including literature review and synthesis, research design, protocol development, execution of project activities, data collection, summarizing data, data analysis, and reporting.
- Mentor and work collaboratively with undergraduate and graduate students.
- Present research findings at scientific and stakeholder meetings.
- Write manuscripts for submission to high-quality, peer-reviewed journals and extension outlets.
- Work to create a safe and inclusive work environment.
- Work may include the ability to safely drive and perform work with a truck or SUV, some heavy lifting, and working outdoors where temperatures reach the upper 90s (°F).
- Travel will be required for field research activities and presentation of results at relevant research and conference meetings.

#### Qualifications

- A Ph.D. degree in entomology, plant pathology, or related discipline, with experience working with insect vectors/viruses.
- This project will require a strong and relevant research background, and experience conducting research on plant viruses transmitted by insects is highly desirable. This includes establishment/maintenance/containment of insect colonies and virus-infected plants. An

understanding of molecular genetics of viruses is also highly desirable.

- There is flexibility within the project, therefore, multiple skill sets could be successfully utilized. Candidates interested in applying their knowledge of vector biology, virology, plant science, molecular biology, virus detection and monitoring, genomics, ecology, population genetics, modeling, or precision agriculture tools to research epidemiology and management of CLRDV are encouraged to apply.
- Knowledge of experimental design of field-, greenhouse-, and lab-based experiments, critical thinking skills, and knowledge of standard statistical procedures (SAS, R, Python, etc.).
- Interested candidates need to be motivated, organized, and detail oriented and possess good record-keeping skills.
- The candidate must be collegial and have good interpersonal skills in individual and team settings to communicate effectively.
- Demonstrated excellent verbal and written communication skills.
- Demonstrated ability to work independently and in a group.

#### How to Apply

Please email a CV, three references, and a cover letter to [Dr. Kip Balkcom](mailto:Dr.Kip.Balkcom) by COB, July 16, 2021, for consideration. Indicate your position interest by adding USDA-ARS Entomology postdoc or USDA-ARS Applied Virologist postdoc to the subject line of your email. Questions regarding specific job responsibilities should be directed to [Dr. Alana Jacobson](mailto:Dr.Alana.Jacobson) for the Entomology position or [Dr. Kassie Conner](mailto:Dr.Kassie.Conner) for the Applied Virologist position. ■

#### Calendar

##### APS-SPONSORED EVENTS

###### AUGUST 2021

[Webinar: Research Ethics Course](#)

###### SEPTEMBER 2021

[APS Caribbean Division Meeting](#)

[2022 APS Foundation Funding Opportunities](#)

###### DECEMBER 2021

[Deadline for APS Officer Nominations](#)

[Deadline for 2022 APS Award nominations](#)



#### FIND THE LATEST JOBS IN PLANT PATHOLOGY

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



## SPOTLIGHT

### Microgreens Is Back!

*Microgreens*, the official podcast of the *MPMI* journal, is back! The latest episode, “The *MPMI* Top 10 List,” transports listeners all the way back to the IS-MPMI Congress in Glasgow, Scotland, to share the story behind the selection of *MPMI*’s **Top 10 Unanswered Questions**. Listen to the podcast [here](#) or find *Microgreens* on your preferred podcast platform.

### 2021 *MPMI* Focus Issue on the Top Unanswered Question Now Available!

Guest Editors **Kathryn M. Jones**, **Dong Wang**, and **Alga Zuccaro** are pleased to present the 2021 *MPMI* focus issue: How do plants engage with beneficial microorganisms while at the same time restricting pathogens? The open access articles are available [here](#).

### Freely Available Webinar on Rapid Diagnostic Method for Insect-Transmitted Plant Pathogen and Insect Identification

In this webinar, **Karolina Pusz-Bochen-ska** presents the research behind a simple laboratory and field-adaptable DNA extraction method that reduces the time from collection of insects to positive identification of a pathogen from up to 2 weeks to less than 1 h. [Watch the webinar here](#) or [read the research](#) behind the method. ■



[apsjournals.apsnet.org](https://apsjournals.apsnet.org)



## TRENDING

### Phytopathology

🔗 Two Unique Prophages of ‘*Candidatus Liberibacter asiaticus*’ Strains from Pakistan  
X. Cui, K. Liu, S. Atta, C. Zeng, C. Zhou, and X. Wang

🔗 Pathogenesis and Immune Response in Resistant and Susceptible Cultivars of Grapevine (*Vitis* spp.) Against *Elsinoë ampelina* Infection  
R. Han, W. Yin, B. Ahmad, P. Gao, Z. Li, and X. Wang

🔗 Virus-Infected Melon Plants Emit Volatiles That Induce Gene Deregulation in Neighboring Healthy Plants  
C. López-Berenguer, L. Donaire, D. González-Ibeas, C. Gómez-Aix, V. Truniger, G. S. Pechar, and M. A. Aranda

🔗 Validation of a Decision Support System for Blueberry Anthracnose and Fungicide Sensitivity of *Colletotrichum gloeosporioides* Isolates  
A. B. Gama, L. G. Cordova, C. S. Rebello, and N. A. Peres

### Plant Disease

🔗 Bacterial Canker of Tomato: Revisiting a Global and Economically Damaging Seedborne Pathogen  
F. C. Peritore-Galve, M. A. Tancos, and C. D. Smart

🔗 Detection of Diverse Maize Chlorotic Mottle Virus Isolates in Maize Seed  
P. Bernardo, T. S. Frey, K. Barriball, P. A. Paul, K. Willie, M. Mezzalama, et al.

### MPMI

🔗 Interaction of Symbiotic Rhizobia and Parasitic Root-Knot Nematodes in Legume Roots: From Molecular Regulation to Field Application  
S. R. Costa, J. Liang Pin Ng, and U. Mathesius

🔗 *Proteobacteria* Contain Diverse flg22 Epitopes That Elicit Varying Immune Responses in *Arabidopsis thaliana*  
J. H. T. Cheng, M. Bredow, J. Monaghan, and G. C. diCenzo

🔗 Diazotrophic Bacteria and Their Mechanisms to Interact and Benefit Cereals  
V. C. S. Pankievicz, F. P. do Amaral, J.-M. Ané, and G. Stacey

### Plant Health Progress

🔗 Potential Threat of Bruchids on Soybean Production in Sub-Saharan Africa  
M. L. Pawlowski, D. M. Lagos-Kutz, M. da Fonseca Santos, N. Lee, G. Chigeza, C. Nachilima, et al.

🔗 Evaluation of Application Timing of Miravis Ace for Control of Fusarium Head Blight in Wheat  
L. Singh, T. Schulden, J. P. Wight, J. Crank, L. Thorne, J. E. Erwin, et al.

🔗 The Return of Asiatic Citrus Canker to Texas: Surveys and Eradication Efforts  
E. Perez, M. Kunta, V. Ancona, J. V. da Graça, C. Ayin, G. Santillana, and V. Mavrodieva

### Phytobiomes

🔗 Novel and Emerging Capabilities That Can Provide a Holistic Understanding of the Plant Root Microbiome  
E. Singer, J. P. Vogel, T. Northen, C. J. Mungall, and T. E. Juenger

🔗 The Effect of Incubation Temperature on the Species Composition of *Phytophthora*, *Phytophthium*, and *Pythium* Communities Associated with Soybean  
K. A. Navarro-Acevedo, S. Wijeratne, S. W. Culman, M.-S. Benitez, and A. E. Dorrance

🔗 Apple Blossoms from a Swiss Orchard with Low-Input Plant Protection Regime Reveal High Abundance of Potential Fire Blight Antagonists  
F. Gschwend, A. Braun-Kiewnick, F. Widmer, and C. Pelludat

### PhytoFrontiers™

🔗 Multi-omics Comparison Reveals Landscape of *Citrus limon* and *Citrus sinensis* Response to ‘*Candidatus Liberibacter asiaticus*’  
E. L. Chin, J. Ramsey, S. Saha, D. Mishchuk, J. Chavez, K. Howe, et al.

🔗 Effect of Ozone on Inactivation of Purified *Pepper mild mottle virus* and Contaminated Pepper Seed  
J. R. Stommel, J. M. Dumm, and J. Hammond ■

🔗 = Editor's Pick   🔗 = Open