



Department News

Congratulations to the Recent PLPM Graduates!

Fernando Mauri:

Major: Plant Pathology, Ph.D.

Major Professor: Dr. Gary Munkvold

Research/Thesis title: “Nanoparticle encapsulation to enhance seed treatment efficacy against *Fusarium graminearum*”

Future plans: “I joined the Agronomy Dept as a Research Associate in Dr. Mark Licht’s program. I work directly with field and lab research supporting all his projects with corn, soybean, and cover crops.”

Joshua Budi:

Major: Sustainable Agriculture, Ph.D.

Research: “Crop rotation systems and soybean sudden death syndrome”

Future plans: International agricultural development research, engagement, and leadership

Comments: “Thank you so much to the PLPM family for being such a hospitable home throughout my time in ISU! You will be missed!”

Elizabeth Carino:

Major: Genetics and Genomics, Ph.D.

Research: “Decoding the translation initiation mechanism of maize chlorotic mottle virus”

Future Plans: Liz has landed a post-doc position in the lab of Anne Simon at the University of Maryland where she works on plant virus gene expression vectors. She hopes to find a more permanent research position in the government or private sectors.

Andrew Penney:

Major: Plant Pathology, with a minor in Crop Physiology, Ph.D.

Research: “Different Fungicide Applications & their Impact on Disease and Yield in Corn & The Impact of Fungicides on Dry Matter Accumulation in Corn”

Future plans: “I took a job as a technical agronomist with Bayer. I will get to stay in Ames and work from home, covering central and southwest Iowa.”

Comments: “I would like to say how lucky I feel to get to learn under such great teachers/people within the plant pathology department. I had a great time and everyone will be missed.”

Jefferson Barizon

Major: Plant Pathology, M.S.

Research: “Evaluating analogs and derivatives of constituents of plant essential oils for management of plant-parasitic nematodes”



Fernando Mauri



Joshua Budi



Elizabeth Carino



Andrew Penney



Jefferson Barizon

ASPB Plantae Website Features Pulkit Kanodia

Pulkit Kanodia (IGG, Miller Lab) was featured on the ASPB Plantae website: “Recognizing Plant Direct Authors: Pulkit Kanodia.” You can read the feature by following the link below.

<https://plantae.org/recognizing-plant-direct-authors-pulkit-kanodia/>

IPM YouTube Channel

Brandon Kleinke has developed a lot of new videos for the Integrated Pest Management (IPM) YouTube channel. You can check them out at the link below!

<https://www.youtube.com/channel/UC6YG9GzeczH2S8cZn10uDWdw/featured>

IPM Hosts Virtual Events for Youth

Maya Hayslett has planned and carried out multiple successful virtual events targeted at youth, with the 2020 Crop Scouting Competition for Iowa Youth serving as a great example which also featured multiple PLPM members as judges. You can learn more about this event at the link below.

<https://www.extension.iastate.edu/news/crop-scouting-competition-goes-virtual-youth-produced-videos>

Valeria Velasquez Zapata Renewed Faculty For the Future Fellowship

Valeria Velasquez Zapata, Ph.D. candidate in Bioinformatics and Computational Biology and who is currently doing her thesis in Roger Wise's lab, got a third renewal for the Faculty For the Future Fellowship from the Schlumberger Foundation for the 2020-2021 year. The Faculty for the Future program, launched in 2004, awards fellowships to women from developing and emerging economies to pursue PhD or Postdoctoral studies in science, technology, engineering and mathematics (STEM) disciplines at leading universities worldwide. The program's long-term goal is to generate conditions that result in more women pursuing scientific careers by lowering the barriers women face when entering STEM disciplines, thus reducing the gender gap. Let's congratulate Valeria on her achievement!

ISU Soybean Research Center Newsletter

The ISU Soybean Research Center newsletter features many stories about PLPM department members. Check out the most recent October 2020 edition of their newsletter at the link below.

<http://www.iowasoybeancenter.org/newsletters/Oct2020Vol7.pdf>

“New” Member for the Baum Lab

“The Baum lab has hired a temporary P&S Lab Assistant II staff member, Sam Clouse. Sam will be assisting us with two projects, one involving SCN effector characterization and another with bioinformatics of the SCN genome. Sam also just happens to be a former Undergraduate Research Assistant for us. He recently graduated with a B.S. in Biology and completed a Spring 2020 Semester Abroad Program in the UK. Upon his return amid the pandemic, he inquired about conducting research for the Fall 2020 semester. His future plans include entering graduate school in Spring 2021, likely at UC Davis.” Welcome back, Sam!



In the News: Dr. Boury Hosted a Digital Internship

CALS featured an article on their webpage detailing Dr. Boury's efforts in creating and hosting a digital internship. The internship had students annotate various episodes from the podcast “This Week in Microbiology” and provided a great opportunity for students who otherwise would have lost the ability to participate in internships due to COVID-19. You can read the CALS article below.

<https://www.cals.iastate.edu/features/2020/professor-provides-alternative-internships-microbiology-students>

In the News: Micro 265X

Dr. Nancy Boury's recently introduced (Fall 2019) class, Micro 246X: Predicting the Next Pandemic, was featured in a CALS news article. You can read the article at the link below!

<https://www.cals.iastate.edu/features/2020/iowa-state-class-introduces-students-science-predicting-pandemics>

American Society for Microbiology Conference for Undergraduate Educators (ASMCUE)

Dr. Nancy Boury chaired the first ever virtual ASMCUE meeting. 1100 biology and microbiology faculty from around the world attended the virtual AMSCUE meeting from July 8th to July 9th where she also presented “Interactive Journal Club for the Masses: Teaching Students to Read Primary Literature.” You can read an interview featuring Dr. Boury and Dr. John Buchner (University of Maryland) and more about the conference by following the link below!

<https://asm.org/Articles/2020/January/ASM-Conference-for-Undergraduate-Educators-ASMCUE>



The Department of Plant Pathology and Microbiology at Iowa State University announces in deepest sympathy the passing of Professor Forrest Nutter on September 12, 2020 at the age of 67. Dr. Nutter was our well-liked colleague from 1990 until his retirement in 2018. He joined our department as an associate professor after having served as assistant professor at the University of Georgia from 1984 to 1990. Dr. Nutter earned his B.S. from the University of Maryland, his M.S. from the University of New Hampshire followed by his Ph.D. from North Dakota State University. He was a world-renowned plant disease epidemiologist with a very large body of literature and a long and successful career as teacher and graduate advisor to his credit. Throughout his career, Dr. Nutter was a sought-after invited speaker at scientific congresses and was honored with many awards and recognitions including the prestigious American Phytopathological Society Excellence in Teaching Award. He also was recognized for his innovations in the development of educational training software. Forrest's teaching and research interests were in quantitative epidemiology and plant disease management using a system approach to optimize and integrate pest management tactics. His work also utilized global positioning systems (GPS), geographic information systems (GIS) and remote sensing technologies to better understand, quantify, and forecast the occurrence of plant disease epidemics and their impacts on crop yield. Dr. Nutter taught epidemiology to scores of students and has been a major figure in the field of epidemiology – a legacy that will live on in the many students and scientists that he trained.

Dr. Nutter was born in Plymouth, MA and grew up in Hyattsville, MD. He was the eldest of eight siblings. He married his wife Suzanna in 1972, and they became the proud parents of three children and grandparents to thirteen beloved grandchildren. Dr. Nutter and his wife recently had retired in North Carolina. Forrest will be greatly missed by his beautiful family as well as by his colleagues and friends at Iowa State University.

DEI- Student Spotlight: Stories of Connections

“*Kamusta?*” is the way you say “how are you” in Filipino. I’m hoping you’d answer all is well, amid Covid-19. I’m Julie Aiza Mandap from Philippines, a country with 7,641 islands in the Southeast Asia. It is, indeed, a paradise for ocean lovers and a famous summer destination; but because of the pandemic, seashores are currently taking a rest.

I finished my MS Plant Pathology program in ISU in December 2019, where I was advised by Dr. Gary Munkvold. I am also a recipient of the Fulbright-CHED scholarship program. I had been in the PLPM Department since Fall 2017. When I arrived in Iowa, I was so thrilled to see acres and acres of corn fields, since aside from the fact that I like to eat corn, my research study for my ISU years involved corn. I worked on *Aspergillus flavus* and insect interactions in stored non-*Bt* and *Bt* maize hybrids as my research project. I learned how the presence of *A. flavus* affected the insects and vice versa in relation to the presence of *Bt* proteins in maize. I’ve seen and counted numerous molds and insects at varying stages during almost my entire graduate student life. Believe me, that is an exceptional experience!



Checking out my molds!

While I enjoyed working in the lab, and in Seed Pathology Lab in particular, I found recreational activities in the Department and conferences a lot of fun too. Also, being part of the graduate student organization as a vice-president helped me hone some soft skills. Once we had the canoe/kayak race, which our lab has bragged about winning ever since. In conferences, getting to know fellow plant pathologists always fascinates me. Plant pathologists are few relative to other fields, but there’s a lot of careers that you can explore and navigate within this field. Being a grad student abroad certainly stretched my insights in plant pathology as a profession.



When Seed Path won the race

I flew back home in December 2019, and it had been only 3 months since I started back to work when the enhanced community quarantine (ECQ) was implemented due to Covid. I’m teaching plant pathology, with mycology and postharvest diseases as specialization, in the Institute of Weed Science, Entomology, and Plant Pathology, in the University of the Philippines Los Baños.

I’ve been excited to work again with my colleagues after 2 years of study leave and share my ISU experiences to my students; but then classes were suspended, and social distancing had to be observed.

Aside from making adjustments to shift our classes into online platforms, which is a real challenge in a developing country, I got involved in efforts such as raising funds and awareness related to Covid. To make sure that I wouldn’t just binge watch on Netflix during this lockdown and keep a sense of purpose, my friends and I decided to make do-it-yourself face shields. We managed to make a total of 700 face shields so far, that were then distributed to our local hospitals, municipal offices, police force and groups involved in the task-force against Covid.



Wearing my DIY face shield



After a cultural presentation of the Institute of Weed Science, Entomology, and Plant Pathology (IWEP)

Now that I’m back in my home country I often think of my experiences in ISU, people I’ve met, friends made, and stories heard. It’s very motivating to move forward when packed with these diverse connections from the past.

I leave you with this excerpt from a poem by Max Ehrmann that I find heathy to ponder on nowadays, “Go placidly amid the noise and the haste, and remember what peace there may be in silence... As far as possible, without surrender, be on good terms with all persons... Enjoy your achievements as well as your plans. Keep interested in your own career, however humble; it is a real possession in the changing fortunes of time. And whatever your labors and aspirations, in the noisy confusion of life, keep peace in your soul”.

-Aiza Mandap

DEI: Diversity, Equity and Inclusion Committee.
plpm-diversitycommittee@iowastate.onmicrosoft.com

Kanodia, P., Vijayapalani, P., Srivastava, R., Bi, R., Liu, P., **Miller, W.A.**, and Howell, S.H. (2020) Control of Translation during the unfolded protein response in maize seedlings: Life without PERKs. *Plant Direct* 4 e00241. doi: 10.1002/pld3.241

Kanodia, P., Prasanth, K.R., Roa-Linares, V.C., Bradrick, S.S., Garcia-Blanco, M.A., and **Miller, W.A.** (2020) A rapid and simple quantitative method for specific Detection of Smaller Co-terminal RNA by PCR (DeSCo-PCR): Application to the detection of viral subgenomic RNAs. *RNA* 26, 888–901 doi:10.1261/rna.074963.120

Bissonnette, K.M., Marett, C.C., Mullaney, M.P., Gebhart, G.D., Kyveryga, P., Mueller, T., and Tylka, G.L. Effects of ILeVo seed treatment on *Heterodera glycines* reproduction and soybean yield in small-plot and strip-trial experiments in Iowa. *Plant Disease*. <https://doi.org/10.1094/PDIS-06-19-1132-RE>

Harbach, C.J., Wlezien, E., and Tylka, G.L. A mechanistic approach to assessing the potential for cover crops to serve as trap crops for the soybean cyst nematode. *Plant Disease*. <https://doi.org/10.1094/PDIS-05-20-0964-RE>

Markell, S.G., **Tylka, G.L.**, Anderson, E.J., and van Esse, P. 2020. Developing public-private partnerships in plant pathology Extension: case studies and opportunities in the United States. *Annual Review of Phytopathology* 58:161-180. <https://doi.org/10.1146/annurev-phyto-030320-041359>

Hodgson, E.W., Licht, M.A., and **Sisson, A.J.** (Eds.). 2020. Field Crop Production Handbook: An Introduction to Farming Practices. Iowa State University Extension and Outreach. CROP 3162.

With contributions by: Daren Mueller, Alison Robertson, Greg Tylka, Ed Zaworski, Warren Pierson

Mueller, D.S., Wise, K.A., **Sisson, A.J.**, Allen, T.W., Bergstrom, G.C., Bissonnette, K.M., Bradley, C.A., Byamukama, E., Chilvers, M.I., Collins, A.A., Esker, P.D., Faske, T.R., Friskop, A.J., Hagan, A.K., Heiniger, R.W., Hollier, C.A., Isakeit, T., Jackson-Ziems, T.A., Jardine, D.J., Kelly, H.M., Kleczewski, N.M., Koehler, A.M., Koenning, S.R., Malvick, D.K., Mehl, H.L., Meyer, R.F., Paul, P.A., Peltier, A.J., Price, P.P., **Robertson, A.E.**, Roth, G.W., Sikora, E.J., Smith, D.L., Tande, C.A., Telenko, D. E. P., Tenuta, A.U., Thiessen, L.D., and Wiebold, W.J. 2020. Corn yield loss estimates due to diseases in the United States and Ontario, Canada, from 2016 to 2019. *Plant Health Progress*. 21(4):238-247. <https://doi.org/10.1094/PHP-05-20-0038-RS>

Mueller, D.S., Stewart, A., Clifford, R., **Iles, L.**, **Sisson, A.**, and Staker, J. 2020. Using Design Interventions to Develop Communication Solutions for Integrated Pest Management. *Journal of Integrated Pest Management* 11(1)10. <https://doi.org/10.1093/jipm/pmaa010>.

Selected for inclusion in the Journal of Integrated Pest Management Special Collection: Social and Economic Aspects of IPM in September 2020.

Sisson, A.J., Mueller, D.S., Poss, E., and Dear, D. 2020. Disease Severity and Defoliation Training Webtool. Crop Protection Network. [Doi.org/10.31274/cpn-20200722-0](https://doi.org/10.31274/cpn-20200722-0)

Arias, S. L., Block, C. C., Mayfield, D. A., Santillana, G., Stulberg, M. J., Broders, K. D., Jackson-Ziems, T. A., and **Munkvold, G. P.** 2020. Occurrence in Seeds and Potential Seed Transmission of *Xanthomonas vasicola* pv. *vasculorum* in Maize in the United States. *Phytopathology* 110:1139-1146.

Song, G., Montes, C., and Walley, J.W. Quantitative Profiling of Protein Abundance and Phosphorylation State in Plant Tissues Using Tandem Mass Tags. *Plant Proteomics. Methods in Molecular Biology*, vol 2139. https://doi.org/10.1007/978-1-0716-0528-8_11.

Beruski, G.C., Del Ponte, E.M., Pereira, A.B., **Gleason, M.L.**, Cámara, G.M.S., Araújo Jr., I.P., and Sentelhas, P.C. 2020. Performance and profitability of rain-based thresholds for timing fungicide applications in soybean rust control. *Plant Disease*. <https://doi.org/10.1094/PDIS-01-20-0210-RE>

Meng, Y., Ren, Y., Wang, W., **Gleason, M.L.**, Sun, G.Y., and Zhang, R. 2020. A genome sequence resource for the geographically widespread anthracnose pathogen *Colletotrichum asianum*. *Plant Disease* DOI: 10.1094/PDIS-01-20-0034-A

Shang, P., Liang, X.F., Liu, G.L., Lu, Z.X., Zhang, R., **Gleason, M.L.**, and Sun, G.Y. 2020. Histological and ultrastructural characterization of the leaf infection events of *Colletotrichum fructicola* on *Malus domestica* ‘Gala.’ *Plant Pathology* DOI: 10.1111/ppa.13141

Rosli, H., **Batzer, J.C., Hernández, E.**, Beruski, G.C., Dixon, P.M., and **Gleason, M.L.** 2020. Precipitation impacts dissemination of three sooty blotch and flyspeck taxa on apple fruit. *Plant Disease*: <https://doi.org/10.1094/PDIS-11-19-2340-RE>.

Dai, P., Jiang, Y., Liang, X., **Gleason, M.L.**, Zhang, R., and Sun, G. 2020. *Trichothecium roseum* enters ‘Fuji’ apple cores through stylar fissures. *Plant Disease* 104:1060-1068.

Recent Grants

Walter Moss (BBMB), **W. Allen Miller (PLPM)**, Cathy Miller (VMPPM): “Analysis and Therapeutic Targeting of the SARS-CoV-2 Frameshift Element.” \$15,000. Funded by Office of the Vice President for Research COVID-19 Research Seed Grant program (CRSG)

Greg Tylka and Santosh Pandey (ISU Dept. Electrical & Computer Engineering): “Automated Instrument to Extract and Quantify Nematode Females from Roots of Agricultural Crops.” \$399,998. Funded by the Foundational and Applied Science Program of NIFA, 2020 – 2024.

Greg Tylka: “Evaluating Resistant Soybean Varieties and Seed Treatments to Help Iowa Farmers Maintain High Yields in SCN-infested Fields.” \$150,000. Funded by the Iowa Soybean Association, 2020 – 2021.

Roger Wise, Nancy Boury, and Nick Peters: “Temporal Control of Immunity to Powdery Mildew in Barley.” \$815,500. Funded by the joint NIFA/NSF Plant-Biotic Interactions (PBI) Program, 2020-2023

Dior Kelley and Justin Walley: “Roles of Auxin Pathways Driving Maize Root Growth.” \$450,000. Funded by USDA NIFA, 2020-2023.

Steve Whitham, Maria Salas-Fernandez, and Shuizhang Fei: “Virus-Mediated Gene Editing in Switchgrass and Sorghum.” \$300,000. Funded by USDA AFRI, 2020-2022.

Silvina Arias and Charles Block. “Validation study of a Real-Time PCR method for the detection of *Pantoea stewartii* subsp. *stewartii* (Stewart’s wilt) in maize seeds.” \$38,882. Funded by ASTA SSF, 2020-2021.

Recent Awards

Laura Iles, Regent’s Award for Staff Excellence

Greg Tylka, Morrill Professor

Gwyn Beattie, Fellow of the American Phytopathological Society

Nancy Boury, University Teaching Innovation Award

Workshop/Poster Presentations

Miller WA, Moss WN, Miller CL, Andrews R, **Xu W**, Bussiere L, **Carino E**, **Lozier Z**, and Peterson J. “Control of ribosomal frameshifting by SARS-CoV-2 RNA structure.” Cold Spring Harbor Meeting on Translational Control, Sept 1-4, 2020 (virtual).