

# Melanie Medina López

State College, PA | melaniemml98@gmail.com | Soil Microbiomes and Biocontrol

## Education

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| The Ohio State University<br>Ph.D. in <b>Plant Pathology</b>                                | December 2024 |
| The Ohio State University<br>M.S. in <b>Plant Pathology</b>                                 | May 2023      |
| University of Puerto Rico, Mayagüez Campus (UPRM)<br>B.S. in <b>Industrial Microbiology</b> | June 2018     |

## Research Experience

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### **Pennsylvania State University- University Park**

*Post-doctoral researcher – Roman-Reyna Lab* January 2026- Present

- Perform comparative genomic analysis of plant pathogenic bacteria.
- Design experiments for the analysis of plasmidomes in orchards.
- Execute metagenomic analysis of plant tissues and identify genetic profiles associated with disease states.
- Collaborate in the mentorship of graduate students.

### **Pennsylvania State University- University Park**

*Post-doctoral researcher – Bull and Kovac Labs* January 2025- January 2026

- Contribute to a multi-state research project conducting predator-ome and soil health surveys focused on the use of microbial predators for the co-mitigation of plant and human pathogens.
- Developed microcosm experiments to study the effect of different organic amendments on the survival and activity of micropredators in soil.
- Leverage molecular techniques to track bacterial plant diseases, and their viability in different matrices.
- Manage stakeholder relationships by developing extension activities for organic growers.
- Developed SOPs for PPQ 526 permit organisms.
- Prepare IRB submissions for exempt research with grower engagement.
- Acted as sustainability officer to ensure the lab entered compliance with My Green Lab® Certification standards

### **The Ohio State University- Wooster**

*Graduate Research Fellow – Benitez Ponce and Lopez- Nicora Labs* August 2020- December 2024

- Studied the spatial variation of fungal communities associated with soybean cyst nematode (SCN) at different scales.
- Analyzed changes in the SCN-associated fungal communities through time.
- Utilized amplicon sequencing to target bioprospecting efforts of soil fungi with biocontrol potential against SCN.
- Generated a collection of over 600 fungal isolates from producer fields, of which at least 10 have been demonstrated to have biocontrol potential.
- Obtained a provisional patent for 10 strains of fungi with biocontrol potential against SCN.
- Coordinated the collection of over 200 soil samples in both research and producer plots.
- Applied short and long-read sequencing techniques to analyze fungal communities.
- Performed bioinformatic analysis using R, UNIX, cluster computing, and git for version control.

## University of Puerto Rico- Mayaguez

*Undergraduate Research Assistant – Alfaro Lab*

February 2018- December 2018

- Worked under the supervision of Dr. Monica Alfaro processing mesophotic reef sediment samples from the Caribbean. Separated and identified major groups of microcrustaceans for further genetic, taxonomical, and ecological analysis.

## The Ohio State University- Wooster

*Summer Research Opportunity Program intern*

June 2018- July 2018

- Completed an independent research project in Dr. Gourapura's lab about the performance of nano-vaccines for influenza using ELISA and HI assays.
- Delivered presentations on project outcomes in weekly meetings.
- Processed poultry and swine samples for the detection on antibodies.

## Grants

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### Principal Investigator

*OSU Internal Grant Graduate Program | \$5,000*

April 2023- October 2024

- Title: Examining the Taxonomic Resolution of Long-Read Amplicon Sequencing of Fungal Barcoding Genes

*Ohio Soybean Council Graduate Student Support Grants | \$10,000*

October 2022- October 2023

- Title: Spatial and temporal population dynamics of soilborne pathogens and other fungi in commercial corn and soybean fields

### Co-PI

*OHMC Shared Resource Grant | \$4,217.00*

June 2025- November 2025

- Title: Illumina Metagenome Library Preparation Shared Reagents

### Fellowships

*OSU Patrick S. Osmer Fellowship | Two years of support*

2021-2022 and 2023-2024

*OSU University Fellowship | One year of support*

2020-2021

## Teaching Experience

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### Pennsylvania State University

*Workshop helper*

August 2025

- One Health Microbiome Center KickStart Workshop- Intro to metagenomic analysis

### The Ohio State University

*Workshop helper*

August 2024, February 2025

- Intro to R, and version control with git

*Workshop instructor*

August 2024, February 2025

- Amplicon metabarcoding workshop sessions on differential abundance analysis with DESeq2 and Network analysis. Materials available at: [Amplicon Metabarcoding Workshop Website](#)

*Graduate teaching associate - SROP*

May 2023- July 2023

- Developed and taught a virtual course for the participants of the Summer Research Opportunity Program (SROP) for underrepresented minorities. The course focused on the scientific process from the conception of research questions to the delivery of scientific results.

Graduate teaching associate - Advanced Phytobacteriology Laboratory

July 2022- October 2022

- Prepared materials and led practical portion of laboratory.
- Assisted graduate students in learning aseptic techniques and bacteriology methods.

Graduate teaching associate - SROP

June 2021- July 2021

- Taught students virtually and in person during the Summer Research Opportunity Program (SROP) for underrepresented minorities about academic writing, scholarly presentations, and navigating the graduate school admission process

### Guest lectures

PLNTPTH 3001 – SCN-soybean pathosystem and topics in plant nematology research

November 2023

## Mentoring Experience

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### Pennsylvania State University

Roman-Reyna Lab

- Graduate student: Goraya Mankanwal

Bull Lab

- Undergraduate students: Lindsey Mann, Cameron Smith

### The Ohio State University

Benitez-Ponce Lab

- Undergraduate students: Ananiah Cohen, Alex Taylor, Keegan Smith

PPGSA near peer mentoring program

- Graduate student: Annika Pratt

### Científico Latino Graduate School Mentorship Initiative

- Undergraduate students: Colin Henneberry, Maria Belen Balta

### Semillas de Triunfo: STEM girl ambassadors program

- Middle School student: Joliany Solis

## Publications

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### Published

1. Alex D. Vompe, Mozhde Hamidzade, [Melanie Medina López](#), Eoin O'Connor, Livleen Kaur, Kevin L. Hockett, Carolee T. Bull. Translational microbiomes in agriculture: Microbial communities as tools to effect host and system health for improved crop production. *Appl. Environ. Microbiol.* 2026.
2. [Medina López M](#), Lopez-Nicora H, Benitez Ponce MS. Soybean Cyst Nematode Reproduction and Soybean Biomass: The Legacy of Soil Cropping Histories. *PhytoFrontiers™*. 2025.
3. [Medina López M](#), Lopez-Nicora H, Benitez Ponce MS. Fungal communities shift with plant parasitic nematode abundance in soils. *Phytobiomes Journal*. 2024.
4. Frey T, Huo D, [Medina López M](#), Ritter BC, Lindsey L, Benitez Ponce MS. Fungal communities associated with corn in a diverse long-term crop rotation in Ohio. *PhytoFrontiers™*. 2024

## Illustrations published in

1. Lopez-Nicora, H. D., Costa Silva, E. H., & d'Errico, G. Importance and Principles of Nematode Disease Complexes. In *Nematode Disease Complexes in Agricultural Crops*. pp 35, 40. CABI. 2025.

## Work Experience

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### Battelle Memorial Institute

*In-vitro assay technician*

September 2019- August 2020

- Provided technical support for standard in-vitro assays including, but not limited to ELISA, PCR, and cell-based assays.
- Worked in compliance with GLP standards and documentation for use of CDC select agents following protocols and general biosafety for BSL-2 and BSL-3+ labs.

### Chegg Inc

*Science and Spanish online tutor*

July 2018- September 2019

- Tutored students of diverse scholarly levels in Spanish and science-related subjects like Biology, Microbiology, Food Science, and Math among others through an online platform.

## Presentations

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### Poster Presentations

1. Timothy S. Frey, Melanie Medina López, Ananiah Cohen, Angelica Rebollar García, Olivia Humbert, Horacio Lopez-Nicora, M. Soledad Benitez Ponce. *Beneficial and pathogenic fungi associated with high soybean cyst nematode infestation and their response to plant sugars*. APS-NC. Brookings, SD. June 2025
2. Ananiah Cohen, Melanie Medina López and Soledad Benitez Ponce. *Bioprospecting fungal antagonists of soybean cyst nematodes*. MSA. Ontario, CA. June 2023
3. Melanie Medina López, Timothy I. Ralston, Horacio D. Lopez-Nicora, and Soledad Benitez Ponce. *Soybean cyst nematode (SCN) is associated with changes in fungal community composition in the agricultural soils of Ohio*. ASM Microbe. Houston, TX. June 2023
4. Melanie Medina López. *Soil dwelling nematodes as plant allies and adversaries*. PPGSA Spring Symposium. Wooster, OH. May 2023
5. Timothy S. Frey, Daowen Huo, Melanie Medina, Laura Lindsey, M. Soledad Benitez-Ponce. *Impacts of increasing diversity in crop rotations on soil fungal communities growing under corn in Ohio*. APS Plant Health. Pittsburg, PA. August 2022
6. Melanie Medina López, Soledad Benitez Ponce, and Horacio D. López-Nicora. *Soybean cyst nematode (SCN) increased seedling biomass of soybean grown in soils with different cropping histories*. APS Plant Health 2022. Pittsburg, PA. August 2022
7. Melanie Medina López, Junaid Abdullah, and Soledad Benitez Ponce. *The fungal communities associated with Soybean cyst nematode (SCN) in Ohio*. SACNAS NDiSTEM. Online. October 2021
8. Melanie Medina López and Soledad Benitez Ponce. *The fungal communities associated with Soybean cyst nematode (SCN) in Ohio agricultural fields*. Ohio Soybean Council board meeting. Wooster, OH. August 2021

9. Melanie Medina López, Ninoshkaly Feliciano-Ruiz, Santosh Dhakal and Renukaradhya J. Gourapura. *Antibody response to liposome nanoparticle-based swine influenza virus vaccine in pigs administered through different routes*. SROP student symposium. Columbus, OH. July 2018
10. Melanie Medina López, Alejandra Robles, Maranyelis Soto. *Development of flavored marshmallows using produce as flavoring agents*. Food Science and Technology Department student product development competition. Mayaguez, PR. November 2018

### Oral Presentations

1. Melanie Medina López, Ananiah Cohen, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Soil Fungi and the Soybean Nematode in Ohio Soybean Fields: Soil Micro-Predators for Sustainable Management*. One Health Microbiome Center Seminar Series. State College, PA. February 2025
2. Melanie Medina López, Ananiah Cohen, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Within field spatial variability of soil fungal communities and soybean cyst nematode interactions*. Phytobiomes Alliance Meeting. St. Louis, MO. November 2024
3. Melanie Medina López, Ananiah Cohen, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Within field spatial variability of soil fungal communities and soybean cyst nematode interactions*. Soil Ecology Society Biennial Meeting. Grand Rapids, MI. May 2024
4. Melanie Medina López, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Fungal communities shift with soybean cyst nematode abundance in agricultural soils*. University of Nebraska- Lincoln Plant Pathology Seminar Series. Lincoln, NE. November 2023
5. Melanie Medina López, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Heterodera glycines is associated with shifts in fungal community composition in Ohio agricultural soils*. Society of Nematologists annual meeting. Columbus, OH. July 2023
6. Melanie Medina López, Timothy Ralston, Horacio D. López-Nicora and Soledad Benitez Ponce. *Soybean cyst nematode infestation is associated with changes in fungal community composition in agricultural soils of Ohio*. Midwest Microbiome Symposium. Columbus, OH. May 2023
7. Melanie Medina López, Soledad Benitez Ponce, Horacio D. López-Nicora and Timothy Ralston. *Characterization of fungal communities associated with soybean cyst nematode (SCN) infested fields using synthetic long-read amplicon sequencing*. Phytobiomes conference. Denver, CO. September 2022
8. Melanie Medina López and Soledad Benitez Ponce. *The fungal communities associated with Soybean cyst nematode (SCN) in Ohio*. Plant Pathology Students Spring Symposium. Online. May 2021
9. Melanie Medina López, Soledad Benitez Ponce, Timothy Frey. *Meet the Benitez lab*. Center for Applied Plant Science Seminar Series. Online. April 2021
10. Melanie Medina López, Ninoshkaly Feliciano-Ruiz, Santosh Dhakal, and Renukaradhya J. Gourapura. *Antibody response to liposome nanoparticle-based swine influenza virus vaccine in pigs administered through different routes*. SROP student symposium. Columbus, OH. July 2018

### Extension Presentations

1. Melanie Medina López and Kendall Martin. *Soil Properties: From the field to the lab*. Hunting for healthy soils: Quarterly Q&A session. November 2026

2. Melanie Medina López and Carolee Bull. *Soil Microbial predators for biocontrol in organic systems*. Hunting for healthy soils: Quarterly Q&A session. April 2025
3. Melanie Medina López, Soledad Benitez Ponce, Timothy Frey. *Why should we compost?*. Boy Scout field trip. Ohio Composting and Manure Management Facility. May 2023
4. Melanie Medina López, Edwin D. Navarro, Taylor Klass. *Master Gardener Training: Major plant pathogen groups*. OSU Morrow County's extension master gardener training program. Mt. Gilead, OH. March 2022

## Outreach

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### Presentations

1. Melanie Medina López, Edwin D. Navarro. *Mentoring up workshop*. PPGSA Spring Symposium. Wooster, OH. May 2023
2. Melanie Medina López, Edwin D. Navarro. *La microbiología en la producción agrícola*. UPRM Microbiology Student Association webinar series. Online. February 2023
3. Melanie Medina López. *The power of good filenames*. OSU Research Internship Program seminar series. Wooster, OH. May 2022
4. Melanie Medina López. *Personal Statements and Program Interviews*. OSU's Graduate School Belong@OSU Webinar Series. Online. October 2021

### Other Activities

1. Panelist. *Más allá del aula: Carreras en ecología*. Online. October 2025
2. Panelist. *Graduate student Q & A*. OSU Research Internship Program seminar series. Wooster, OH. July 2022
3. Panelist. *SROP alumni experiences panel*. Student Research Opportunities Program seminar series. Columbus, OH. June 2022
4. Coordinator. *APS-NC Graduate student networking series*. OSU Plant Pathology Department. Online. October 2021-April 2022
5. Content creator. *Video: Plant pathogens and the people who study them*. OSU's West Fest 2021. October 2021
6. Panelist. *The impact of a gap year graduate panel*. Student Research Opportunities Program seminar series. Online. July 2021
7. Moderator. *Alt- academic careers panel*. Student Research Opportunities Program seminar series. Online. July 2021
8. Volunteer. *Experiment: What does yeast like to eat?*. UNITE summer program. Online. June 2021

## Service

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### Scientific journal peer reviewer

*Plant Disease, Plant, Cell & Environment, BMC Microbiology, Phytobiomes Journal, Journal of Soil Science and Plant Nutrition, Discover Soil*

### Grant panel member

*2024 CFAES graduate internal grant program panel*

## Symposium organizing committee member

2024 PPGSA Spring Symposium, 2024 Plant Sciences Symposium, 2023 PPGSA Spring Symposium

## Departmental service

Greenhouse Manager Selection Committee, OSU Department of Plant Pathology 2021- 2022  
Academic Affairs Committee, OSU Department of Plant Pathology 2021- 2022

## Awards

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|------------------------------------------------------------------------|---------------|
| Phytobiomes alliance early career award                                | November 2024 |
| C.C. Alison Award for Outstanding Research and Service                 | April 2024    |
| Honorable Mention CoMS Travel awards                                   | April 2024    |
| PPGSA Travel Award                                                     | May 2024      |
| SROP Graduate Teaching Associate Travel Award                          | July 2023     |
| Edward J. Ray Travel Award                                             | May 2023      |
| IDI EEPH Trainee Travel Award                                          | May 2023      |
| ASM Future Leaders Mentoring Fellowship                                | March 2023    |
| Infectious Diseases Institute Microbial Community Program Travel Award | June 2022     |
| PPGSA Travel Award                                                     | June 2022     |
| OSC Graduate Scholarship                                               | February 2022 |
| SROP Graduate Teaching Associate Travel Award                          | July 2021     |
| SACNAS Registration Scholarship                                        | June 2021     |
| OSU University Fellowship                                              | August 2020   |
| Rafael Carrión, Jr. Academic Excellence Prize                          | August 2014   |

## Leadership

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### Plant Pathology Graduate Students Association

*President* June 2023- June 2024

- Overseeing the actions of the other elected officials.
- Serving as a liaison between students, faculty, and staff.
- Call and conduct graduate student meetings.

*Vice-President* June 2022- June 2023

- Assist in presidential duties and act as president when they are unavailable.
- Overseeing the graduate buddy system that pairs first-year graduate students with senior students who can provide them support to navigate their transition into graduate school.
- Coordinate the journal club for plant pathology graduate students on the Wooster campus.

*Outreach Committee Chair* June 2022- June 2023

- Find and organize outreach opportunities for the association to impact the local community in increasing interest in science and the field of plant pathology.
- Create engaging educational content for a general audience to share on the association's social media platforms.

### American Medical Student Association

*Director – Public Health, Equity and Diversity Committee* August 2017- May 2018

*Director – Public Health committee* August 2016- May 2017

*Director – Activities committee* August 2015- May 2016

*Member – Activities committee* August 2014- May 2015

## Professional Development

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|---------------------------------------------------|-------------------------|
| SACNAS MAS program                                | February 2024- May 2024 |
| MinION nanopore sequencing training               | January 2024            |
| NINJA: Nematode INdicator Joint Analysis workshop | July 2023               |
| AWS Workshop                                      | March 2023              |
| Culturally Responsive Mentoring Program           | May 2021- December 2022 |

## Internships

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| Summer Research Opportunities Program (SROP) – The Ohio State University | June 2018 |
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## Memberships

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|-----------------------------------------------------------------------------------------------|----------------------------|
| <b>SES</b> (Soil Ecology Society)                                                             | March 2024- Present        |
| <b>ASM</b> (American Society of Microbiology)                                                 | March 2023- Present        |
| <b>SON</b> (Society of Nematology)                                                            | February 2023- Present     |
| <b>APS</b> (American Phytopathological Society)                                               | August 2020- Present       |
| <b>SACNAS</b> (Society for Advancement of Chicanos/Hispanics and Native Americans in Science) | August 2020- Present       |
| <b>PPGSA</b> (Plant Pathology Graduate Student Association)                                   | August 2020- December 2024 |
| <b>AMSA</b> (American Medical Student Association)                                            | August 2014- December 2018 |
| <b>NSLS</b> (National Society of Leadership and Success)                                      | August 2016- December 2018 |