

# Ming-Yi Chou

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## EMPLOYMENT

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### **Assistant Extension Specialist** (April 2023 - present)

Rutgers, The State University of New Jersey, New Brunswick, NJ, USA  
Department of Plant Biology

- Developing turfgrass disease antagonistic biocontrol and biorational agents
- Optimizing disease predictive model performance and utility for turfgrass managers
- Providing education and services for turfgrass industry in the tri-state area
- Evaluating fungicide efficacy on the major turfgrass diseases in the Northeast

### **Associate Scientist** (May 2022 - present)

UNIVERSITY OF WISCONSIN, Madison, WI, USA  
Department of Plant Pathology

- Developing snow molds models in golf course turf to guide precision disease control
- Selecting *Clarithreedia* antagonistic microbes for biocontrol products development
- Investigating how turfgrass disease management programs affect turfgrass-associated microbiome, soil health, and their link to disease resurgence and ecosystem services

## POST-DOCTORAL EXPERIENCE

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### **Post-doctoral Research Associate** (March 2021 – April 2022)

Great Lakes Bioenergy Research Center, U.S. Department of Energy  
MICHIGAN STATE UNIVERSITY, East Lansing, MI, USA  
Department of Plant, Soil and Microbial Science

- Evaluated the efficacy of constructed plant beneficial bacteria and fungi community application in the field for enhanced switchgrass nutrient acquisition and biomass production
- Explored and selected beneficial plant root-associated microbiome for their effects on plant biomass production
- Investigated the role of plant root metabolites in rhizosphere microbial recruitment in switchgrass and sorghum

### **Post-doctoral Research Associate** (May 2019 – Feb. 2021)

UNIVERSITY OF WISCONSIN, Madison, WI, USA  
Department of Plant Pathology

- Studied non-target effects of different urban landscape management programs and their microbial mechanisms in resulting dollar spot resurgence
- Explored mechanisms of turfgrass disease suppressive soils and pathogen suppressing fungi and bacteria
- Deciphered the soil and microbial factors contributing to dollar spot development variation in golf course turfgrass
- Developed rapid turfgrass root-infecting fungal pathogen *Magnaporthiopsis meyeri-festucaae* detection procedure

## EDUCATION

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**Ph.D.**, CORNELL UNIVERSITY, Ithaca, NY, USA (Aug. 2014 - May 2018)  
 School of Integrative Plant Science, Horticultural Biology  
 Concentrations in Crop Physiology and Ecology/ Soil Science/ Viticulture and Enology

**M.Sc.**, ÉCOLE SUPÉRIEURE DE COMMERCE DE DIJON, France (Aug. 2011 - March 2013)  
 Wine Division

**B.S.A.**, NATIONAL TAIWAN UNIVERSITY, Taipei, Taiwan (Aug. 2006 - June 2010)  
 Department of Horticulture

## PUBLICATIONS

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### *Articles published in refereed journals*

- **Chou, M.Y.**, J. Luo, B.B. Clarke, J.A. Murphy, N. Zhang, P.L. Vines and P.L. Koch. 2022. Rapid detection of the recently identified turfgrass pathogen *Magnaporthiopsis meyeri-festucaae* using recombinase polymerase amplification. *Plant Disease*.
- Da Costa P.B., G.N. Benucci, **M.Y. Chou**, J. Van Wyk, M. Chretien and G. Bonito. 2022. Soil origin and plant genotype modulate switchgrass aboveground productivity and root microbiome assembly. *mBio*.
- Howe, A.C., Bonito G., **M.Y. Chou**, M.A. Cregger, J.L. Field, H.G. Martin, J.L. Labbe, M.E. Mechan-Llontop, T.R. Northern, A. Shade and T.J. Tschaplinski. 2021. Frontiers and opportunities in bioenergy crop microbiome research networks. *Phytobiomes Journal*.
- **Chou, M.Y.**, S. Shrestha, R.A. Rioux and P.L. Koch. 2021. Hyperlocal variation in soil iron and rhizosphere microbiome determines disease development in amenity turfgrass. *Applied and Environmental Microbiology*. 87(10).

- **Chou, M.Y.** and J.E. Vanden Heuvel. 2019. Annual under-vine cover crops mitigated vine vigor in a mature and vigorous Cabernet Franc vineyard. *American Journal of Enology and Viticulture* 70(1), 98-108.
- **Chou, M.Y.**, J.E. Vanden Heuvel., T.H. Bell, K. Panke-Buisse and J. Kao-Kniffin. 2018. Vineyard under-vine floor management alters soil microbial composition, while the fruit microbiome shows no corresponding shifts. *Scientific Reports* 8(1), 11039. (**Top 100 in Microbiology selected by Scientific Reports in 2018**)
- France, J., **M.Y. Chou** and J.E. Vanden Heuvel. 2018. Palissage reduces lateral emergence and disease while increasing cluster rachis length when compared to hedging. *Catalyst* 2(2), 50-58.
- **Chou, M.Y.** and K.T. Li. 2014. Rootstock and seasonal variations affect anthocyanin accumulation and quality traits of ‘Kyoho’ grape berries in subtropical double cropping system. *VITIS* 53,193-199.

#### *Articles published in extension journals*

- **Chou, M.Y.**, K.R. Hockemeyer and P.L. Koch. Standard and experimental fungicides applications for the control of dollar spot at putting green height, 2020. *Plant Disease Management Reports*, 15:T015.

#### *Manuscripts in preparation for refereed journals*

(\* indicates the author contributed equally)

- Bonito, G., **M.Y. Chou**, T. Andersen, M. Mechan Llontop, N. Beculheimer, A. Sow, N. Moreno, A. Shade, B. Hamberger. Terpenes modulate bacterial and fungal growth and sorghum rhizobiome communities. *Microbiology Spectrum* (Submitted).
- Li, X.\*, **M.Y. Chou\***, R.L. Last, and G. Bonito. Switchgrass root metabolites and fungal interactions reveal potential rhizosphere fungal recruitment mechanisms. *Communications Biology* (In preparation).
- **Chou, M.Y.**, D. Pavlou, P.J. Rice, K.A. Spokas, D.J. Soldat, and P.L. Koch. Microbial diversity and soil health parameters associated with turfgrass landscapes and implications for ecosystem services. *Microorganisms* (In preparation).
- **Chou, M.Y.**, A.P. Patil and P.L. Koch. Dollar spot suppressive soil derived from antagonistic microbiome and is associated with reduced fungicide application. *mBio* (In preparation).
- **Chou, M.Y.** and P.L. Koch. Repeated agrochemical application resulted in plant disease resurgence in urban landscape. *Phytopathology* (In preparation).

- Gonzalez-Vazquez, A., **M.Y. Chou**, and P.L. Koch. Compositional Shifts in the Bacterial Community at Varying Environmental Conditions and its Impact on 2,4-D Degradation in Urban Soil Landscapes. *Science of the Total Environment* (In preparation).

### *Abstracts/Proceedings*

- **Chou, M.Y.**, E. Braithwaite, B. McDonald, A. Kowalewski and P.L. Koch. 2023. Developing risk predictive models for Microdochium patch in amenity turfgrass with machine learning algorithms to optimize fungicide use. American Phytopathological Society Annual Meeting, Denver, CO, USA. (Submitted)
- Li, X., **M.Y. Chou**, A.D. Jones, G. Bonito and R.L. Last. 2023. Diversity and Antifungal Activity of Specialized Metabolites in Ecotypes of the Bioenergy Crop Switchgrass (*Panicum virgatum* L.). American Society for Mass Spectrometry Annual Meeting, Houston, TX, USA. (Submitted)
- Li, X., **M.Y. Chou**, A.D. Jones, G. Bonito and R.L. Last. 2022. Documentation of saponin diversity and anti-fungal activity in the biofuel crop switchgrass (*Panicum virgatum*) using metabolomics. GLBRC Annual Science Meeting, Lake Geneva, WI, USA.
- **Chou, M.Y.** and P.L. Koch. 2020. The plant-soil-microbe interactions mediate variation in dollar spot severity in turfgrass. American Phytopathological Society Annual Meeting, Online, USA
- **Chou, M.Y.** and P.L. Koch. 2019. Disruption of soil microbial communities by agrochemicals can result in plant disease resurgence in urban landscapes. Society of Environmental Toxicology and Chemistry, Special Symposium 14, Brussels, Belgium
- González Vázquez, A., **M.Y. Chou** and P.L. Koch. 2019. Impact of seasonal environmental variation on 2,4-D fate and metabolism in urban landscapes. Society of Environmental Toxicology and Chemistry, Special Symposium 14, Brussels, Belgium
- Brillante, L., C. Drake, M. Ramagli, **M.Y. Chou** and Anil Shrestha. 2019. Potential Use of High-Resolution, Remotely-Sensed Images from Unmanned Aerial Vehicles in Vineyard Weed Management. American Society for Enology and Viticulture National Conference, Napa, CA, USA
- Vanden Heuvel, J.E. A.D. Karl, **M.Y. Chou**, L.M. Jordan, M. Z. Centinari. Nov. 2017. The potential for using under-vine cover crops as an alternative to herbicides in cool climate vineyards. Group of international Experts for Cooperation on Vitivincultural Systems. Mendoza, Argentina

- Vanden Heuvel, J.E. A.D. Karl, **M.Y. Chou**, L.M. Jordan, M. Z. Centinari. June 2017. Under-vine cover crops: Above and below ground impacts. Organic Winegrowers of New Zealand Conference, Marlborough, New Zealand
- **Chou, M.Y.**, T. Bell, J. Kao-Kniffin and J.E. Vanden Heuvel. 2017. Under-vine floor management impacts the fungal community structure of soils, but not grapes and wine. American Society for Enology and Viticulture Eastern Section Conference, Charlottesville, VA, USA.
- **Chou, M.Y.**, D. Wiemann, S. Lerch and J.E. Vanden Heuvel. 2017. Under-vine cover crops mitigate excessive vine vigor and improve soil health in a cool climate mature Cabernet franc vineyard. American Society for Enology and Viticulture National Conference, Bellevue, WA, USA.
- **Chou, M.Y.**, T. Bell, J. Kao-Kniffin and J.E. Vanden Heuvel. 2016. Vineyard floor management impacts soil and grape microbial communities in a New York state Riesling vineyard. American Society for Enology and Viticulture Eastern Section Conference, St. Louis, MO, USA.
- **Chou, M.Y.**, W.J. Yang and K.T. Li. 2010. Rootstock affects anthocyanin and quality in Kyoho table grape berries. A poster presentation delivered to 2010 International Horticulture Congress, Lisbon, Portugal.

## PRESENTATIONS

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### *Academic presentations*

**Invited speaker.** Investigating Turfgrass Disease Suppressive Soil Microbiome – metagenomics, culturomics, and metabolomics. March 2023. Rutgers University, Turfgrass Research Center, New Brunswick, NJ, USA

**Seminar speaker.** Turfgrass dollar spot suppressive soil. Feb. 2023. University of Wisconsin-Madison, Dept. Plant Pathology, Madison, WI, USA

**Oral communication.** Dollar Spot Suppressive Soil Microbiome and the Association with Management Practices. Nov. 2022. ASA, CSSA, SSSA Annual Meeting, Baltimore, MD, USA

**Seminar speaker.** Harnessing the microbiome to improve disease control in turfgrass. Aug. 2022. Rutgers University, Dept. Plant Biology, New Brunswick, NJ, USA

**Seminar speaker.** Exploring switchgrass ecotypic specialized metabolites and their effects on

fungal growth. Feb. 2022. Department of Energy, Sustainable Meeting, online, USA

**Seminar speaker.** Harnessing the microbiome to improve disease control in turfgrass system. Dec. 2021. University of Maryland, Dept. Plant Science and Landscape Architecture, College Park, MD, USA

**Seminar speaker.** Exploring the potential causes for Dollar spot disease variation on turfgrass. Feb. 2021. University of Wisconsin-Madison, Dept. Plant Pathology, Madison, WI, USA

**Seminar speaker.** Integrated orchard management strategies development in Iowa. Feb. 2020. Iowa State University, Dept. Horticulture, Ames, IA, USA

**Selected speaker.** Under-vine floor management impacts the fungal community structure of soils, but not grapes and wine. July 2017. American Society for Enology and Viticulture Eastern Section Conference, Charlottesville, VA, USA

**Oral communication and poster presentation.** Under-vine cover crops mitigate excessive vine vigor and improve soil health in a cool climate mature Cabernet franc vineyard. June 2017. American Society for Enology and Viticulture National Conference, Bellevue, WA, USA

**Oral communication.** Investigating under-vine cover crops in Finger Lakes to eliminate herbicide use and reduce management costs in vigorous Cabernet franc vineyards – continued project. Oct. 2016. Toward Sustainability Foundation, Ithaca, NY, USA

**Oral communication and poster presentation.** Vineyard floor management impacts soil and grape microbial communities in a New York state Riesling vineyard. July. 2016. American Society of Enology and Viticulture Eastern Section Annual Conference, St. Louis, MO, USA

**Oral communication.** Floor management impacts on microbial communities in a Riesling vineyard and wines. Nov. 2015. Cornell Recent Advances in Viticulture and Enology, Ithaca, NY, USA

**Oral communication.** Investigating under-vine cover crops in Finger Lakes to eliminate herbicide use and reduce management costs in vigorous Cabernet franc vineyards. Oct. 2015. Toward Sustainability Foundation, Ithaca, NY, USA

**Poster presentation.** Floor management impacts on microbial communities in a Riesling vineyard and wines. Sept. 2015. Cornell Institute for Food System Global Summit, Cornell University, Ithaca, NY, USA

### *Extension presentations*

**Seminar speaker.** Implementing The Smith Kerns Dollar Spot Model at Your Facility. Dec. 2021. University of Maryland, Dept. Plant Science and Landscape Architecture, College Park, MD, USA

**Video presenter.** Fungicide applications and dollar spot resurgence. Sept. 2020. Wisconsin Turfgrass Virtual Field Day, Madison, WI, USA

**Invited speaker.** Repeated fungicide applications lead to Dollar spot resurgence. Jan. 2020. Wisconsin Turfgrass Research Day, Sun Prairie, WI, USA

**Invited speaker.** Groundcover management for cold climate hybrids. March 2016. Northeast New York and Vermont Winter Grape School, Lake George, NY, USA

**Invited speaker.** Under-vine cover crops as an alternative to herbicides in vineyards. Dec. 2015. New England Fruit and Vegetable Grower's Meeting, Manchester, NH, USA

**Invited speaker.** Floor management impacts on microbial communities in a Riesling vineyard. Nov. 2015. Cornell Recent Advance in Viticulture and Enology, Ithaca, NY, USA

## TEACHING EXPERIENCE

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### *Teaching assistant*

#### **Cornell University, Ithaca, NY (2014-2018)**

PLSCI 1101 Plant Science and Systems

VIEN 1104 Introduction to Wines and Vines

VIEN 2204 Principles and Practices of Growing Grapes and Making Wines

VIEN 2205 Growing Grapes and Making Wines Laboratory

VIEN 2810 Wine Culture

PLSCI 4980 Plant Science and Systems (undergraduate TA training)

### *Guest Lecturing*

#### **Cornell University, Ithaca, NY (2014-2018)**

Cultural pairing of food and wine, May 2018

The evolving role of sommelier, March 2018

Introduction to viticulture, Feb. 2018

Wine appreciation methods and techniques, Oct. 2017 and Oct. 2016

Commercially important crop series – tea, apple, cherry, vanilla, coconut and *Indigofera*, 2016

Cool and warm climate viticulture, Feb. 2015

History of grape growing, Feb. 2015

Introduction to wines of Burgundy, Oct. 2014

### *Mentoring*

#### **DOE-GLBRC, Michigan State University, East Lansing, MI (2021-2022)**

Direct supervision of two BS lab assistants, and one Ph.D rotational student

#### **University of Wisconsin, Madison, WI (2019-2021)**

Direct supervision of three BS, one MS lab assistants, and four Ph.D rotational students  
Informal supervision of one MS and two Ph.D students in the lab

**Cornell University, Ithaca, NY (2014-2018)**

Informal supervision of two MS and three BS students in the lab and field

***Teaching Workshop Attended***

Using Active Learning in Your STEM Course: Responding to and Evaluating Student Writing Effectively and Efficiently, UW-Madison, 2019

Using Active Learning in Your STEM Course: Designing Writing Activities to Solve Teaching and Learning Challenges, UW-Madison, 2019

Universal Design for Learning (inclusive pedagogy), UW-Madison, 2019

## AWARDS and GRANTS

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***Research grants***

Unraveling The Microbial Mechanisms That Mediate Disease Resurgence in Plants Following Fungicide Application. 2023-2026.

USDA-AFRI (A1402) (\$849,916)

PI: P. Koch

Co-PIs: Freedman, Z.B., **M.Y. Chou**, and J.D. Jones

Microbial communities associated with Dollar spot suppressive soils on golf courses. 2020-2021.  
Golf Course Superintendents Association of America (\$20,000)

PI: P. Koch

Co-PI: **M.Y. Chou**

Facilitating sustainable grape and wine production: Determining how under-vine management affects fruit microbial communities and the outcome of spontaneous fermentations. 2015-2017.

Lacroute, Kaplan, and Saltonstall endowments at the Cornell University New York State Agricultural Experiment Station in Geneva, NY, USA (\$21,509)

PI: J.E. Vanden Heuvel

Student-PI: **M.Y. Chou**

Investigating under-vine cover crops in Finger Lakes to eliminate herbicide use and reduce management costs in vigorous Cabernet franc vineyards. 2015-2016

Toward Sustainability Foundation (\$16,992)

PI: J.E. Vanden Heuvel

Student-PI: **M.Y. Chou**



### *Academic awards*

Professor Robert M. Smock Scholarship, Cornell University, 2017  
American Society for Enology & Viticulture Eastern Section Scholarship, 2016  
Presidential Award for Graduate, National Taiwan University, 2010

## OTHER EMPLOYMENT

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**Manager of Vineyard Technology** (June 2018 - Feb. 2019)  
St. Supery Vineyards and Winery, Rutherford, CA, USA

**Sommelier** (Jan. 2013 - March 2014)  
L'Atelier De Joel Robuchon, Taipei, Taiwan

**Platoon commander, Second Lieutenant** (Aug. 2010 - July.2011)  
Army, The Ministry of National Defense R.O.C., Taiwan

## SERVICE

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### **Cornell Orchard, Ithaca, NY (2015 and 2016)**

Organized and led Orchard Educational Program for Tompkins County, NY elementary and vocational school students (1,200+ attendees)

### **Cornell School of Hotel Administration, Ithaca, NY (2014-2018)**

Co-founded and captained CUVEE Wine Blind Tasting and Education Society

### **Journal and Grant Refereeing (2018-present)**

Eleven verified pre-publication reviews for journal *Microbiome*, *Plant and soil*, and *Frontiers in Cellular and Infection Microbiology*, *Plant Disease*, *Pythobiomes*, *Microbiology Spectrum*, *Environmental Science and Pollution Research*, and *Archives of Microbiology*.

Two grant proposal reviews for National Research Foundation, South Africa, and The US-Israel Agricultural Research & Development Fund.