Dr. Sarah Refi Hind
Assistant Professor
Department of Crop Sciences, University of Illinois Urbana-Champaign
259 ERML | 1201 W. Gregory Ave. | Urbana, IL 61801
srhind@illinois.edu | 217-300-5981
https://publish.illinois.edu/cropsci-hindlab/
ORCID: 0000-0003-3090-0061

Education and Training

University of South Carolina	Biological Sciences	Ph.D. 2010
Concentration: Molecular, Cell, and Developmental Biology		
University of South Carolina	Biological Sciences	B.S. 2005
University of South Carolina	Russian	B.A. 2005

Research & Professional Experience

2024-present: Assistant Professor-Faculty Affiliate, Center for Digital Agriculture, University of Illinois Urbana-Champaign
2017-present: Assistant Professor, Department of Crop Sciences, University of Illinois Urbana-Champaign
2016-2017: Research Associate, Boyce Thompson Institute
2011-2016: Postdoctoral Associate, Boyce Thompson Institute
2010-2011: Postdoctoral Associate, Department of Biological Sciences, University of South Carolina

Summary of Teaching Activities

1. **CPSC 598: Seminar**. (1 credit hour; lead instructor with one co-instructor) Current research in crops, genetic engineering, plant protection and other topics relevant to Crop Sciences. **Fall 2018**
2. **HORT 466: Growth and Development of Horticultural Plants**. (4 credit hours) Factors affecting growth, development, and quality of horticultural crops, such as photoperiodism, growth regulators, and carbon dioxide levels. **Spring 2019, Summer 2020**
3. **IB 513: Discussions in Plant Physiology**. (1 credit hour; co-instructed with one other instructor) Current research in crops, genetic engineering, plant protection and other topics relevant to Plant Physiology. **Spring 2019**
4. **CPSC 486/IB 479: Plant Growth and Development**. (3 credit hours) Plant growth and development is a complex and highly regulated process that occurs over various spatiotemporal scales. This advanced interdisciplinary course integrates genetic, molecular, cellular, biochemical, anatomical, and physiological information in order to explore the life of a plant from its embryonic origins to its final death. **Fall 2020, 2021, 2022, 2023, & 2024; Online sections in 2022, 2023, & 2024**
5. **HORT 223: The Intelligent Behavior of Plants**. (3 credit hours) This course provides students with an introduction into the study of plant behavior, which focuses on how plants interact with and respond to the world around them. Topics include a basic overview of plant anatomy and physiology, a comparative examination of behavioral and communication mechanisms used by plants and animals, and an analysis of the controversial arguments regarding plant intelligence. This course satisfies the General Education Criteria for: Advanced Composition; Nat Sci & Tech - Life Sciences. **Spring 2021, 2022, 2023, 2024, & 2025; Campus Honors Program sections in 2023 & 2025**
6. **PLPA 403: Advanced Plant Pathology**. (3 credit hours; co-instructed with teaching 1/3 of the course) This course provides students with advanced knowledge of major plant pathogens, including fungi, oomycetes, bacteria, nematodes and viruses as well as major diseases they cause in plants. Lecture topics include taxonomy, etiology, pathogenesis, molecular biology, epidemiology and management. The underlying mechanisms associated with pathogenicity and the complex nature of plants and their pathogens will be presented. **Spring 2022, 2023, & 2025**

7. **Guest Lectures:** 3 lectures in *CPSC 452: Advanced Plant Genetics* (Fall 2017); 1 lecture in *CPSC 556: Plant Breeding Literature* (Spring 2018 & 2019); 1 lecture in *PLPA 509: Molecular Biology of Microbe-Plant Interactions* (Spring 2018 & 2020); 2 weeks of instruction in *CPSC 588: Plant Biochemistry* (Fall 2018); 1 lecture in *CPSC 102: Foundational Skills in Crop Sciences* (Fall 2018-2024); 1 lecture in *HORT 105: Vegetable Gardening* (Spring 2019); 1 lecture in *ACES 399: Honors Seminar* (Spring 2019 & 2020); 1 lecture in *FSHN 499: Nexus of Food, Environmental Sustainability, and Health* (Fall 2019 & 2020); 3 lectures in *HORT 100: Introduction to Horticulture* (Spring 2020); 2 lectures in *CPSC 466: Genomics for Plant Improvement* (Fall 2023)

Funding Relevant to Teaching & Undergraduate Research Activities

1. **Hind SR (PI)**, Schroeder N (co-PI), Lloyd C (co-PI). NSF Research for Undergraduates (REU) program. Collaborative Research: REU Site: MICRO-CCS: Microbial Interactions Create Research Opportunities for Community College Students. (2024-2027) $465,601
2. Schroeder N (PI), Bell A (co-PI), **Hind SR (co-PI)**. NSF Research for Undergraduates (REU) program. Collaborative Research: REU Site: Phenotypic plasticity research experience for community college students. (2020-2025) $347,408
3. **Hind SR (PI)**, Jamann T (co-PI), Lambert K (co-PI), Moose S (co-PI), Riechers D (co-PI), Schroeder N (co-PI), Studer A (co-PI). College of ACES Competitive Hatch program. Research Internship Experiences for Undergraduate Students program. (2022-2023) $100,000
4. **Hind SR (PI)**. Provost's Office Faculty Retreat Grant. Course Enhancement Grant for HORT 223. (2020-2021) $4,000

University and Campus Service (selected)

- Member, Campus General Education Board, 2024-present
- Member, Senate Committee on Educational Policy, 2024-present
- Senator, Senate of the Urbana-Champaign Campus, 2018-2019 and 2023-present
- Chair, Departmental Subcommittee on Curriculum Review for Plant Biotechnology degree program, 2024-present
- Member or Chair, College of ACES Marketing and Communications Committee, 2022-2024
- Member, Departmental Courses and Curricula Committee, 2019-2023
- Chair, Departmental Subcommittee on Curriculum Revision for Plant Biotechnology and Molecular Biology, 2018-2020 (resulted in a new degree program)
- Member, Faculty Search Committees, 2018 and 2024
- Member or Chair, Hiring Committees, 2017, 2018 (2), 2019 (3), 2022, 2023
- Member, Departmental Faculty Advisory Committee, 2019-2021

Educational Service Activities (selected)

- **Undergraduate student advising:** 4 students in 2018-2019; 5 students in 2019-2020; 5 students in 2020-2021; 7 students in 2021-2022; 4 students in 2022-2023; 3 students in 2023-2024; 3 students in 2024-2025
- **Peer Reviews of Course Design and Observations of Teaching:** 2 courses in 2023; 2 courses in 2024; 2 instructors in 2024
- **Professional Development:** National Center for Faculty Development & Diversity, 2020-2021; Teacher Scholar Certificate, 2023-2024; Master Course in Online Teaching, 2022-2024
- **Undergraduate Club Advising:** Academic Women in STEM (A-WIS) registered student organization, 2019-2023

Undergraduate Student Researchers & Projects

1. **Andy Chen** (2017-2018) Screening tomato and other Solanaceous plants for response to variants of the flagellin-derived flgII-28 peptide from different bacterial species.

2. **Cory Green** (2017-2019) Identifying *fliC* alleles in four species of *Xanthomonas* that infect tomato. Co-author on two publications.
3. **Tanvi Majumdar** (2017-2019) Evaluating the relationship between mutations in flagellin and *Xanthomonas* motility in tomato plants. Received an undergraduate research support grant. Co-author on two publications.
4. **Amie Bott** (2017-2020) Evaluating the motility of strains from *Xanthomonas* species that infect tomato. Co-author on one publication.
5. **Kayla Vittore** (2018-2022) Screening *Xanthomonas cucurbitae* mutants for virulence-related phenotypes. Received a college research fellowship and two undergraduate research support grants. Co-author on one publication.
6. **Keirsten Kline** (2019) Construction of a Tn5 mutant library in *Xanthomonas cucurbitae*. Summer REU intern.
7. **Veronica Casey** (2019-2021) Characterizing copper resistant *Xanthomonas perforans* and *X. gardneri* strains from Illinois tomato fields. Received the SURF Fellowship from American Society of Plant Biologists.
8. **Leo D'Agostino** (2019-2021) Generating genetically transformed pumpkin (*Cucurbita spp*.) plants. Received an undergraduate research support grant.
9. **Daisy Patino** (2019-2023) Testing inoculation protocols of *Xanthomonas cucurbitae* for greenhouse-grown pumpkin fruit. Received a college research fellowship.
10. **Marie Shaffer** (2020-2021) Genotyping potentially transformed pumpkin plants. Received a college research fellowship.
11. **Nicole Hsu** (2021) Generating genetically edited pumpkin (*Cucurbita* spp.) plants. Summer REU intern.
12. **Aidan McSwiggan** (2021-2023) Evaluating genetically edited pumpkin (*Cucurbita* spp.) plants.
13. **Jonathan Mason** (2021-2022) *In silico* prediction of *Xanthomonas cucurbitae* virulence genes. Received a college research fellowship. Co-author on one publication.
14. **Elizabeth De LaTorre** (2021-present) Characterizing the copper resistance traits of *Xanthomonas* field isolates. Received a college research fellowship and two undergraduate research support grants.
15. **Mirai Inaoka** (2021-2022) Screening *Cucurbita maxima* germplasm for resistance to bacterial wilt disease. Received an undergraduate research support grant.
16. **Olivia Barrett** (2022) Analysis of squash floral volatiles. Summer REU intern.
17. **Kavya Puranam** (2022-2023) Evaluating parameters impacting pumpkin fruit infection by *Xanthomonas cucurbitae* and developing methods for *in silico* calculations of disease parameters.
18. **Emily Beger** (2023) Evaluating the enzymatic activity of transformed *Xanthomonas cucurbitae*. Summer REU intern.
19. **Valeria Suss** (2023) Developing UV-excitable GFP-expressing tomato Plants using hairy root transformation. Summer REU intern.
20. **Kevin Rattin** (2023-present) Developing UV-excitable GFP-expressing pumpkin and tomato plants using hairy root transformation. S-STEM scholar.
21. **Nathan Dowuonah** (2023-2024) Whole-genome sequencing and genotyping *Xanthomonas* isolates collected from Illinois tomato and pepper fields.
22. **Vanessa Salinas Tamayo** (2023-2024) Developing UV-excitable GFP-expressing tomato plants using *Agrobacterium*-mediated transformation. Visiting international student.
23. **Ellen Cha** (2023-present), Developing UV-excitable GFP-expressing tomato Plants using hairy root transformation.
24. **Elias Klingbeil** (2024), Assessing the cellulase activity present in *Xanthomonas cucurbitae* strains. Summer REU intern.
25. **Attia Dean** (2024), Identification of genomic safe harbor sites in the tomato genome. Summer REU intern.
26. **Allison Kokal** (2024-present), Isolation and characterization of *Serratia marcescens* from infected pumpkin fields.

Graduate Student Advising

1. **Salisu Sulley** (2017-2021), Ph.D. student co-advised with M. Babadoost. Dissertation: Non-chemical methods for managing bacterial spot of cucurbits caused by *Xanthomonas cucurbitae*. Current Position: Postdoctoral associate at the University of Massachusetts, Cranberry Station.
2. **Sabin Khanal** (2017-2020), MS student co-advised with M. Babadoost. Thesis: Occurrence of bacterial spot disease in Illinois tomato fields, characterization of the causal agents, and management of the disease. Current Position: Postdoctoral associate at Texas A&M University.
3. **Maria Malvino** (2018-2021), Ph.D. student. Dissertation: Bacterial spot of tomato and pepper: insights into host-pathogen interactions. Current Position: Scientist at Bayer.
4. **Julius Pasion** (2018-2020), MS student. Thesis: Genomic characterization of *Xanthomonas cucurbitae* and using comparative genomics to predict novel microbe-associated molecular patterns in *Xanthomonas.* Current Position: Scientist at Gingko Bioworks.
5. **Iris Lee** (2022-present), MS student. Thesis (tentative): Characterization of Factors Impacting Pumpkin Infection by *Xanthomonas cucurbitae*. Anticipated Graduation: May 2025.
6. **Justin Larkin** (2023-present), MS student. Thesis (tentative): Characterization of the FLS3 Receptor in Pepper and Development of New Biotechnological Tools for Plant Sciences Research. Anticipated Graduation: December 2025.
7. **Ivan Mina Zavala** (2024-present), MS Student. Thesis (tentative): Characterization of *Serratia marcescens*, the Causal Agent of Cucurbit Yellow Vine Disease, and its Effects on Illinois Pumpkin Production. Anticipated Graduation: May 2026.

Postdoctoral Research Associate Advising

1. **Dr. Rikky Rai** (2018-2020). Project: Characterization of *Xanthomonas cucurbitae*. Current Position: Assistant Professor, University of Allahabad, India.

Journal Articles (undergraduate student authors underlined)

1. Degenhardt DC, **Hind SR**, Stratmann JW, and Lincoln DE. (2010) Systemin and jasmonic acid regulate constitutive and herbivore-induced systemic volatile emissions in tomato, *Solanum lycopersicum*. *Phytochemistry* 71(17-18):2024-2037. DOI: 10.1016/j.phytochem.2010.09.010.
2. **Hind S**, Malinowski R, Yalamanchili R, and Stratmann JW. (2010) Tissue-type specific systemin perception and the elusive systemin receptor. *Plant Signaling and Behavior* 5(1):42-44. DOI: 10.4161/psb.5.1.10119.
3. Stratmann JW and **Hind SR**. (2011) Gene silencing goes viral and uncovers the private life of plants. *Entomologia Experimentalis et Applicata* 140:91-102. DOI: 10.1111/j.1570-7458.2011.01147.x.
4. Dombrowski JE, **Hind SR**, Martin RC, and Stratmann JW. (2011) Wounding systemically activates a mitogen-activated protein kinase in forage and turf grasses. *Plant Science* 180(5):686-693. DOI: 10.1016/j.plantsci.2011.01.010.
5. **Hind SR**, Pulliam S, Veronese P, Shantharaj D, Nazir A, Jacobs N, and Stratmann JW. (2011) The COP9 signalosome controls jasmonic acid synthesis and plant responses to herbivory and pathogens. *The Plant Journal* 65(3):480-491. DOI: 10.1111/j.1365-313X.2010.04437.x.
6. Clarke CR, Chinchilla D, **Hind SR**, Taguchi F, Miki R, Ichinose Y, Martin GB, Leman S, Felix G, and Vinatzer BA. (2013) Allelic variation in two distinct *Pseudomonas syringae* flagellin epitopes modulates the strength of plant immune responses but not bacterial motility. *New Phytologist* 200(3): 847-860. DOI: 10.1111/nph.12408.
7. Veluchamy S, **Hind SR**, Dunham DM, Martin GB, and Panthee DR. (2014) Natural variation for responsiveness to flg22, flgII-28, and csp22 and *Pseudomonas syringae* pv. *tomato* in heirloom tomatoes. *PLoS One* 9(9): e106119. DOI: 10.1371/journal.pone.0106119.
8. Boyle PC, Schwizer S, **Hind SR**, Kraus CM, De la Torre Diaz S, He B, and Martin GB. (2016) Detecting N-myristoylation and S-acylation of host and pathogen proteins in plants using click chemistry. *Plant Methods* 12:38. DOI: 10.1186/s13007-016-0138-2.
9. **Hind SR**, Strickler SR, Boyle PC, Dunham DM, Bao Z, O'Doherty IM, Baccile JA, Viox EG, Clarke CR, Vinatzer BA, Schroeder FC, and Martin GB. (2016) Tomato receptor FLAGELLIN-

SENSING 3 binds flgII-28 and activates the plant immune system. *Nature Plants* 2:16128. DOI: 10.1038/nplants.2016.128.
10. **Hind SR**, Hoki JS, Baccile JA, Boyle PC, Schroeder FC, and Martin GB. (2017) Detecting the interaction of peptide ligands with plant membrane receptors. *Current Protocols in Plant Biology* 2, 240-269. DOI: 10.1002/cppb.20053.
11. Bequette CJ, **Hind SR**, Pulliam S, Higgins R, and Stratmann JW. (2018) MAP kinases associate with high molecular weight multiprotein complexes. *Journal of Experimental Botany* 69(3); 643-654. DOI: 10.1093/jxb/erx424.
12. Roberts R, Mainiero S, Powell AF, Liu AE, Shi K, **Hind SR**, Strickler SR, Collmer A, and Martin GB. (2019) Natural variation for unusual host responses and flagellin-mediated immunity against *Pseudomonas syringae* in genetically diverse tomato accessions. *New Phytologist* 223(1): 447-461. DOI: 10.1111/nph.15788.
13. Mazo-Molina C, Mainiero S, **Hind SR**, Kraus CM, Vachev M, Maviane-Macia F, Lindeberg M, Saha S, Strickler SR, Feder A, Giovannoni JJ, Smart CD, Peeters N, and Martin GB. (2019) The *Ptr1* locus of *Solanum lycopersicoides* confers resistance to race 1 strains of *Pseudomonas syringae* pv. tomato and to *Ralstonia pseudosolanacearum* by recognizing the type III effectors AvrRpt2/RipBN. *Molecular Plant-Microbe Interactions* 32(8): 949-960. DOI: 10.1094/MPMI-01-19-0018-R.
14. Roberts R, **Hind SR**, Pedley KF, Diner BA, Szarzanowicz MJ, Luciano-Rosario D, Majhi BB, Popov G, Sessa G, Oh C-S, and Martin GB. (2019) Mai1 protein acts between host recognition of pathogen effectors and mitogen-activated protein kinase signaling. *Molecular Plant-Microbe Interactions* 32(11):1496-1507. DOI: 10.1094/MPMI-05-19-0121-R.
15. Grissett L, Ali A, Coble A-M, Logan K, Washington B, Mateson A, McGee K, Nkrumah Y, Jacobus L, Abraham E, Hann C, Bequette CJ, **Hind SR**, Schmelz EA, and Stratmann JS. (2020) Survey of sensitivity to fatty acid-amino acid conjugates in the Solanaceae. *Journal of Chemical Ecology* 46: 330-343. DOI: 10.1007/s10886-020-01152-y.
16. Roberts R, Liu AE, Wan L, Geiger AM, **Hind SR**, Rosli HG, and Martin GB. (2020) Molecular characterization of differences between the tomato immune receptors Fls3 and Fls2. *Plant Physiology* 183(4): 1825-1837. DOI: 10.1104/pp.20.00184.
17. Khanal S, **Hind SR**, and Babadoost M. (2020) Occurrence of copper-resistant *Xanthomonas perforans* and *X. gardneri* in Illinois tomato fields. *Plant Health Progress* 21(4): 338-344. DOI: 10.1094/PHP-06-20-0048-RS.
18. Khanal S, **Hind SR**, and Babadoost M. (2020) Occurrence of bacterial spot in Illinois tomato fields and characteristics of the causal agents. *HortScience* 56(1): 8-12. DOI: 10.21273/HORTSCI15215-20.
19. Rai R, Pasion J, Majumdar T, Green CE, and **Hind SR**. (2021) Genome sequencing and functional characterization of *Xanthomonas cucurbitae*, the causal agent of bacterial spot disease of cucurbits. *Phytopathology* 111(8): 1289-1300. DOI: 10.1094/PHYTO-06-20-0228-R.
20. Sulley S, Babadoost M, and **Hind SR**. (2021) Biocontrol agents from cucurbit plants infected with *Xanthomonas cucurbitae* for managing bacterial spot of pumpkin. *Biological Control* 163:104757. DOI: 10.1016/j.biocontrol.2021.104757.
21. Sulley S, Huang Y, **Hind SR**, and Babadoost M. (2021) Screening and identification of *Cucurbita* germplasm resistant to *Xanthomonas cucurbitae*, incitant of cucurbit bacterial spot. *Plant Pathology* 70(9): 2188-2196. DOI: 10.1111/ppa.13445.
22. Pasion J and **Hind SR**. (2021) Utilizing Tajima's D to identify potential microbe-associated molecular patterns in *Xanthomonas euvesicatoria* and *X. perforans*. *Physiological and Molecular Plant Pathology* 116: 101744. DOI: 10.1016/j.pmpp.2021.101744.
23. Rippner DA, Margenot AJ, Fakra, SC, Aguilera LA, Li C, Sohng J, Dynarski KA, Waterhouse H, McElroy N, Wade J, **Hind SR**, Green PG, Peak D, McElrone AJ, Fakra SC, Chen N, Feng R, Scow KM, and Parikh SJ. (2021) Microbial response to copper oxide nanoparticles in soils is controlled by land use rather than copper fate. *Environmental Science: Nano* 8: 3560-3576. DOI: 10.1039/D1EN00656H.

24. Sulley S, **Hind SR**, and Babadoost M. (2021) Survival of *Xanthomonas cucurbitae* in different cropping rotations, plant debris, and weeds in pumpkin fields. *Plant Health Progress* 22(4): 529-535. DOI: 10.1094/PHP-03-21-0069-RS.
25. Malvino M, Bott AJ, Green CE, Majumdar T, and **Hind SR**. (2022) Influence of flagellin polymorphisms, gene regulation, and responsive memory on the motility of *Xanthomonas* species that cause bacterial spot disease of solanaceous plants. *Molecular Plant-Microbe Interactions* 35(2): 157-169. DOI: 10.1094/MPMI-08-21-0211-R.
26. Powell AF, Feder A, Li J, Schmidt MHW, Courtney LE, Alseekh S, Jobson E, Vogel A, Xu Y, Lyon DA, Dumschott KE, McHale M, Suplice R, Bao K, Lal R, Duhan A, Hallab A, Denton AK, Bolger M, Fernie AR, **Hind SR**, Mueller LA, Martin GB, Fei Z, Martin C, Giovannoni JJ, Strickler SR, and Usadel B. (2022) A *Solanum lycopersicoides* reference genome facilitates insights into tomato specialized metabolism and immunity. *The Plant Journal* 110(6): 1791-1810. DOI: 10.1111/tpj.15770.
27. Hudson A, Mullens A, **Hind SR**, Jamann T, and Balint-Kurti P. (2024) Natural variation in the pattern-triggered immunity response in plants: investigations, implications and applications. *Molecular Plant Pathology* 25: e13445. DOI:10.1111/mpp.13445.
28. Rai R, Vittore K, Pasion J, Malvino M, Mason J, Liu Q, Sulley S, Babadoost M, Catchen J, and **Hind SR**. (2024) Comparative genomics of *Xathomonas cucurbitae* isolates collected from Midwestern US pumpkin fields. *Plant Pathology* 73(8): 2211-2223. DOI: 10.1111/ppa.13965.