

# Lucas Busta

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## Appointments

UNIVERSITY OF MINNESOTA DULUTH

**2020-present** Assistant Professor ..... Department of Chemistry and Biochemistry

UNIVERSITY OF NEBRASKA LINCOLN

**2018-2020** NSF Plant Genome Postdoctoral Research Fellow ..... Advisor: Edgar B. Cahoon

**2016-2018** Postdoctoral Research Associate ..... Advisor: Edgar B. Cahoon

## Education

UNIVERSITY OF BRITISH COLUMBIA

**2011-2016** Ph.D. Chemistry ..... Advisor: Reinhard Jetter

UNIVERSITY OF MINNESOTA DULUTH

**2007-2011** B.S. Chemistry, Biochemistry & Molecular Biology ..... Advisor: John F. Evans

## Selected Honors and Awards

**2025** Cottrell Scholar Award ..... Research Corporation for Science Advancement

**2024** Paul K. Stumpf Early Career Research Award ..... International Society of Plant Lipids

**2024** James P. Reihl Young Teacher Award .. UMD Swenson College of Science and Engineering

**2020** Early Career Award ..... The Plant Journal-Phytochemical Society of North America

**2019** SciFinder Future Leader Award ..... American Chemical Society CAS

**2018** Postdoctoral Research Fellowship in Biology ..... National Science Foundation

## Funding

PENDING, AS PRINCIPAL INVESTIGATOR

[1] Sorghum Grain: A Domestic Source Of High-Value Natural Waxes To Increase Harvest Value And Supply Chain Security. USDA NIFA ..... \$650000

FUNDED, AS PRINCIPAL INVESTIGATOR

**2025-present** [5] Using Artificial Intelligence to Predict Enzyme Products and Enhance Chemical Education. COTTRELL SCHOLAR AWARD PROGRAM.....\$120000

**2023-2024** [4] Bioengineered Yeast Strains To Produce Unique Flavors In Brewed Beverages. UNIVERSITY OF MINNESOTA ..... \$10000

**2023-2024** [3] Community-Engaged Phytoremediation to Remove Toxic Mercury from the St. Louis River. UNIVERSITY OF MINNESOTA ..... \$25000

**2020-2025** [2] Assistant Professor Start-Up Funds. UNIVERSITY OF MINNESOTA ..... \$250000

**2018-2020** [1] Genes Controlling Wax Biosynthesis In Sorghum Bicolor: Potential For Improving Crop Performance And Value. NSF PLANT GENOME RESEARCH PROGRAM ..... \$216000

## Publications

**Bold** indicates a Busta lab member or mentee.

PREPRINTS AND MANUSCRIPTS UNDER PEER REVIEW

[7] Davis Mathieu, Nicholas Schlecht, Marvin van Aalst, Kevin M. Shebek, **Lucas Busta**, **Nicole Babineau**, Oliver Ebenhoh, Bjoern Hamberger. “Rule-Based Deconstruction and Reconstruction of Diterpene Libraries: Categorizing Foundational Patterns & Unravelling the Structural Landscape”. BIORXIV, *preprint*, DOI: <https://doi.org/10.1101/2024.12.20.629783>

[6] **Nicole Babineau**, **Le Thanh Dien Nguyen**, Davis Mathieu, **Clint McCue**, Nicholas Schlecht, **Taylor Abrahamson**, Bjoern Hamberger, **Lucas Busta**. “A Molecular Representation System With A Common Reference Frame For Natural Products Pathway Discovery And Structural Diversity Tasks”. PLANT COMMUNICATIONS, *under peer review*, DOI: <https://doi.org/10.1101/2024.10.01.616173>

[5] Makenzie Gibson, Willian Thives Santos, Alan R. Oyler, **Lucas Busta**, Craig A. Schenck. “A New Spin On Chemotaxonomy Using Non-Proteogenic Amino Acids As A Test Case”. APPLICATIONS IN PLANT SCIENCE, *under peer review*, DOI: <https://doi.org/10.1101/2024.09.28.615597>

[4] **Rachel Knapp**, **Braidon Johnson**, **Lucas Busta**. “Advancing Plant Metabolic Research By Using Large Language Models To Expand Databases And Extract Labelled Data”. APPLICATIONS IN PLANT SCIENCE, *under peer review*, DOI: <https://doi.org/10.1101/2024.11.05.622126>

[3] Caitlin Hughes-Perry, Elizabeth Boileau, Jennifer Moore, Carter Meland, Ian Halpaus, **Rory Westerman**, Chanda Blesi, Ella Schoeberl, Aubrie Ecker, Jessica Sieber, **Lucas Busta**. “Land with a capital L: Doing Interdisciplinary Research in the St. Louis River Watershed”. OPEN RIVERS JOURNAL, *under peer review*, DOI: NA

[2] Alan R. Oyler, **Lucas Busta**. “Small Language Model Enhances Literature Processing Workflow: An Example With Plants And Their Secondary Metabolites”. QUANTITATIVE PLANT BIOLOGY, *under peer review*, DOI: NA

[1] **Madison Larson**, Marshall Hampton, **Lucas Busta**. “Wax Bloom Dynamics On Sorghum Bicolor Under Different Environmental Stresses Reveal Signaling Modules Associated With Wax Production”. PHYSIOLOGIA PLANTARUM, *under peer review*, DOI: <https://doi.org/10.1101/2024.10.10.617702>

#### PEER-REVIEWED JOURNAL ARTICLES

2024 [33] **Le Thanh Dien Nguyen**, **Nicole Groth**, **Kylie Mondloch**, Edgar B. Cahoon, Keith Jones, **Lucas Busta**. “Project ChemicalBlooms: Collaborating with Citizen Scientists to Survey the Chemical Diversity and Phylogenetic Distribution of Plant Epicuticular Wax Blooms”. PLANT DIRECT, 8 (5) e588, DOI: <https://doi.org/10.1002/pld3.588>

2024 [32] Guillaume Chomicki, Gustavo Burin, **Lucas Busta**, Jędrzej Gozdziak, Reinhard Jetter, Beth Mortimer, Ulrike Bauer. “Convergence In Carnivorous Pitcher Plants Reveals A Mechanism For Composite Trait Evolution”. SCIENCE, 383 (6678) 108-113, DOI: <https://doi.org/10.1126/science.ade0529>

2024 [31] **Emma Fitzgibbons**, **Jacob Lastovich**, **Samuel Scott**, **Nicole Groth**, Amanda L Grusz, **Lucas Busta**. “Herbarium Specimens As Tools For Exploring The Evolution Of Fatty Acid-Derived Natural Products In Plants”. THE PLANT JOURNAL, 120 (1) 9-18, DOI: <https://doi.org/10.1111/tbj.16989>

2024 [30] **Lucas Busta**, Drew Hall, **Braidon Johnson**, Madelyn Schaut, Caroline M Hanson, Anika Gupta, Megan Gundrum, Yuer Wang, Hiroshi A Maeda. “Mapping Of Specialized Metabolite Terms Onto A Plant Phylogeny Using Text Mining And Large Language Models”. THE PLANT JOURNAL, 120 (1) 406-419, DOI: <https://doi.org/10.1111/tbj.16906>

2024 [29] Alex H. Crum, Lisa Philander, **Lucas Busta**, Ya Yang. “Traditional Medicinal Use Is Linked With Apparency, Not Specialized Metabolite Profiles In The Order Caryophyllales”. AMERICAN JOURNAL OF BOTANY, 111 (4) e16308, DOI: <https://doi.org/10.1002/ajb2.16308>

2023 [28] Yang Jianfeng, **Lucas Busta**, Reinhard Jetter, Sun Yingpeng, Wang Tianyu, Zhang Wenlan, Ni Yu, Guo Yanjun. “Diversified Chemical Profiles Of Cuticular Wax On Alpine Meadow Plants Of The Qinghai-tibet Plateau”. PLANTA, 257 (4) 74, DOI: <https://doi.org/10.1007/s00425-023-04107-1>

2023 [27] Jędrzej Gozdziak, **Lucas Busta**, Reinhard Jetter. “Leaf Cuticular Waxes Of Wild-Type Welsh Onion (Allium Fistulosum L.) And A Wax-Deficient Mutant: Compounds With Terminal And Mid-Chain Functionalities”. PLANT PHYSIOLOGY AND BIOCHEMISTRY, 198 (1) 107679, DOI: <https://doi.org/10.1016/j.plaphy.2023.107679>

2023 [26] Juan Betancurt Cardona, Sajjan Grover, **Lucas Busta**, Scott E Sattler, Joe Louis. “Sorghum Cuticular Waxes Influence Host Plant Selection By Aphids”. PLANTA, 257 (22) pp. 1–7, DOI: <https://doi.org/10.1007/s00425-022-04046-3>

2023 [25] Juan Betancurt Cardona, Sajjan Grover, Michael J Bowman, **Lucas Busta**, Gautam Sarath, Scott E Sattler, Joe Louis. “Sugars And Cuticular Waxes Impact Sugarcane Aphid (Melanaphis Sacchari) Colonization On Two Different Developmental Stages Of Sorghum”. PLANT SCIENCE, 330 (0168-9452) 111646, DOI: <https://doi.org/10.1016/j.plantsci.2023.111646>

- 2022 [24] **Lucas Busta**, Kent D Chapman, Edgar B Cahoon. “Better Together: Protein Partnerships for Lineage-Specific Oil Accumulation”. *CURRENT OPINION IN PLANT BIOLOGY*, 66 (1) pp. 102191, DOI: <https://doi.org/10.1016/j.pbi.2022.102191>
- 2022 [23] **Lucas Busta**, Ismail Dweikat, Shirley J Sato, Haolin Qu, Yong Xue, Bangjun Zhou, Lu Gan, Bin Yu, Thomas E Clemente, Edgar B Cahoon, Chi Zhang. “Chemical And Genetic Variation In Feral Cannabis Sativa Populations Across The Nebraska Climate Gradient”. *PHYTOCHEMISTRY*, 200 (1) pp. 113206, DOI: <https://doi.org/10.1016/j.phytochem.2022.113206>
- 2022 [22] Patricia Santos, **Lucas Busta**, Won Cheol Yim, Edgar B Cahoon, Dylan K Kosma. “Structural Diversity, Biosynthesis, and Function of Plant Falcarin-type Polyacetylenic Lipids”. *JOURNAL OF EXPERIMENTAL BOTANY*, 11 (1) pp. 1–12, DOI: <https://doi.org/10.1093/jxb/erac006>
- 2022 [21] **Samuel Scott**, Edgar Cahoon, **Lucas Busta**. “Variation on a Theme: The Structures and Biosynthesis of Specialized Fatty Acid Natural Products in Plants”. *THE PLANT JOURNAL*, 11 (4) pp. 954–965, DOI: <https://doi.org/10.1111/tpj.15878>
- 2021 [20] **Lucas Busta**, **Elizabeth Schmitz**, Dylan K Kosma, James C Schnable, Edgar B Cahoon. “A Co-opted Steroid Synthesis Gene, Maintained In Sorghum But Not Maize, Is Associated With A Divergence In Leaf Wax Chemistry”. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 118 (12) pp. 1–12, DOI: <https://doi.org/10.1073/pnas.2022982118>
- 2021 [19] Xuefeng Zhang, Yu Ni, Daixiang Xu, **Lucas Busta**, Yu Xiao, Reinhard Jetter, Yanjun Guo. “Integrative Analysis Of The Cuticular Lipidome And Transcriptome Of Sorghum Bicolor Reveals Cultivar Differences In Drought Tolerance”. *PLANT PHYSIOLOGY AND BIOCHEMISTRY*, 163 (6) pp. 285–295, DOI: <https://doi.org/10.1016/j.plaphy.2021.04.007>
- 2021 [18] Craig Schenck, **Lucas Busta**. “Using Interdisciplinary, Phylogeny-guided Approaches To Understand The Evolution Of Plant Metabolism”. *PLANT MOLECULAR BIOLOGY*, 109 (1) pp. 1–13, DOI: <https://doi.org/10.1007/s11103-021-01220-1>
- 2020 [17] **Lucas Busta**, Sabrina E Russo. “Enhancing Interdisciplinary And Systems Thinking With An Integrative Plant Chemistry Module Applied In Diverse Undergraduate Course Settings”. *JOURNAL OF CHEMICAL EDUCATION*, 97 (12) pp. 4406–4413, DOI: <https://doi.org/10.1021/acs.jchemed.0c00395>
- 2020 [16] Henry V Jakubowski, Nicholas Bock, **Lucas Busta**, Matthew Pearce, Rebecca L Roston, Zachery D Shomo, Cassidy R Terrell. “Introducing Climate Change Into The Biochemistry And Molecular Biology Curriculum”. *BIOCHEMISTRY AND MOLECULAR BIOLOGY EDUCATION*, 49 (2) pp. 167–188, DOI: <https://doi.org/10.1002/bmb.21422>
- 2020 [15] **Lucas Busta**, Olga Serra, Ok Tae Kim, Marisa Molinas, Irene Pere-Fossoul, Merce Figueras, Reinhard Jetter. “Oxidosqualene Cyclases Involved In The Biosynthesis Of Triterpenoids In Quercus Suber Cork”. *SCIENTIFIC REPORTS*, 10 (1) pp. 1–12, DOI: <https://doi.org/10.1038/s41598-020-64913-5>
- 2019 [14] Tao Feng, Ya Yang, **Lucas Busta**, Edgar B Cahoon, Hengchang Wang. “FAD2 Gene Radiation And Positive Selection Contributed To Polyacetylene Metabolism Evolution In Campanulids”. *PLANT PHYSIOLOGY*, 181 (2) pp. 714–728, DOI: <https://doi.org/10.1104/pp.19.00800>

- 2019 [13] Gianfranco Diretto, Sarah Frusciante, Claudia Fabbri, Nicolas Schauer, **Lucas Busta**, Zhonghua Wang, Antonio J Matas, Alessia Fiore, Jocelyn KC Rose, Alisdair R Fernie. "Manipulation Of  $\beta$ -Carotene Levels In Tomato Fruits Results In Increased ABA Content And Extended Shelf Life". *PLANT BIOTECHNOLOGY JOURNAL*, 18 (5) pp. 1185 - 1199, DOI: <https://doi.org/10.1111/pbi.13283>
- 2018 [12] Ok Tae Kim, Yurry Um, Mei Lan Jin, Jang Uk Kim, Daniela Hegebarth, **Lucas Busta**, Radu C Racovita, Reinhard Jetter. "A Novel Multifunctional C-23 Oxidase, CYP714E19, Is Involved In Asiaticoside Biosynthesis". *PLANT AND CELL PHYSIOLOGY*, 59 (6) pp. 1200–1213, DOI: <https://doi.org/10.1093/pcp/pcy055>
- 2018 [11] Yanjun Guo, Jia Jun Li, **Lucas Busta**, Reinhard Jetter. "Coverage And Composition Of Cuticular Waxes On The Fronds Of The Temperate Ferns *Pteridium aquilinum*, *Cryptogramma crista*, *Polypodium glycyrrhiza*, *Polystichum munitum* And *Gymnocarpium dryopteris*". *ANNALS OF BOTANY*, 122 (4) pp. 555–568, DOI: <https://doi.org/10.1093/aob/mcy078>
- 2018 [10] Xiangjun Li, Alicen M Teitgen, Asghar Shirani, Juan Ling, **Lucas Busta**, Rebecca E Cahoon, Wei Zhang, Zaiyun Li, Kent D Chapman, Diana Berman. "Discontinuous Fatty Acid Elongation Yields Hydroxylated Seed Oil With Improved Function". *NATURE PLANTS*, 4 (9) pp. 711–720, DOI: <https://doi.org/10.1038/s41477-018-0225-7>
- 2018 [9] **Lucas Busta**, Won Cheol Yim, Evan William LaBrant, Peng Wang, Lindsey Grimes, Kiah Malyszka, John C Cushman, Patricia Santos, Dylan K Kosma, Edgar B Cahoon. "Identification Of Genes Encoding Enzymes Catalyzing The Early Steps Of Carrot Polyacetylene Biosynthesis". *PLANT PHYSIOLOGY*, 178 (4) pp. 1507–1521, DOI: <https://doi.org/10.1104/pp.18.01195>
- 2018 [8] **Lucas Busta**, Reinhard Jetter. "Moving Beyond The Ubiquitous: The Diversity And Biosynthesis Of Specialty Compounds In Plant Cuticular Waxes". *PHYTOCHEMISTRY REVIEWS*, 17 (6) pp. 1275–1304, DOI: <https://doi.org/10.1007/s11101-017-9542-0>
- 2018 [7] Tongjun Sun, **Lucas Busta**, Qian Zhang, Pingtao Ding, Reinhard Jetter, Yuelin Zhang. "TGACG-BINDING FACTOR 1 (TGA 1) And TGA 4 Regulate Salicylic Acid And Pipelicolic Acid Biosynthesis By Modulating The Expression Of SYSTEMIC ACQUIRED RESISTANCE DEFICIENT 1 (sard 1) And CALMODULIN-BINDING PROTEIN 60g (CBP 60g)". *NEW PHYTOLOGIST*, 217 (1) pp. 344–354, DOI: <https://doi.org/10.1111/nph.14780>
- 2017 [6] **Lucas Busta**, Daniela Hegebarth, Edward Kroc, Reinhard Jetter. "Changes In Cuticular Wax Coverage And Composition On Developing Arabidopsis Leaves Are Influenced By Wax Biosynthesis Gene Expression Levels And Trichome Density". *PLANTA*, 245 (2) pp. 297–311, DOI: <https://doi.org/10.1007/s00425-016-2603-6>
- 2017 [5] Yanjun Guo, **Lucas Busta**, Reinhard Jetter. "Cuticular Wax Coverage And Composition Differ Among Organs Of *Taraxacum officinale*". *PLANT PHYSIOLOGY AND BIOCHEMISTRY*, 115 (1) pp. 372–379, DOI: <https://doi.org/10.1016/j.plaphy.2017.04.004>
- 2017 [4] **Lucas Busta**, Reinhard Jetter. "Structure And Biosynthesis Of Branched Wax Compounds On Wild Type And Wax Biosynthesis Mutants Of *Arabidopsis thaliana*". *PLANT AND CELL PHYSIOLOGY*, 58 (6) pp. 1059–1074, DOI: <https://doi.org/10.1093/pcp/pcx051>
- 2016 [3] Pingtao Ding, Dmitriy Rekhter, Yuli Ding, Kirstin Feussner, **Lucas Busta**, Sven Haroth, Shaohua Xu, Xin Li, Reinhard Jetter, Ivo Feussner. "Characterization Of A Pipelicolic Acid



Biosynthesis Pathway Required For Systemic Acquired Resistance". THE PLANT CELL, 28 (10) pp. 2603–2615, DOI: <https://doi.org/10.1105/tpc.16.00486>

**2016 [2] Lucas Busta**, Jessica M Budke, Reinhard Jetter. "Identification Of  $\beta$ -Hydroxy Fatty Acid Esters And Primary, Secondary-Alkanediol Esters In Cuticular Waxes Of The Moss *Funaria hygrometrica*". PHYTOCHEMISTRY, 121 (1) pp. 38–49, DOI: <https://doi.org/10.1016/j.phytochem.2015.10.007>

**2016 [1] Lucas Busta**, Jessica M Budke, Reinhard Jetter. "The Moss *Funaria hygrometrica* Has Cuticular Wax Similar To Vascular Plants, With Distinct Composition On Leafy Gametophyte, Calyptra And Sporophyte Capsule Surfaces". ANNALS OF BOTANY, 118 (3) pp. 511–522, DOI: <https://doi.org/10.1093/aob/mcw131>

## Presentations

### INVITED PRESENTATIONS

**2025 [21]** "Citizen Science-Assisted Exploration Of Lineage-Specific Epicuticular Wax Blooms", Gordon Reserach Seminar on Plant Lipids. Pomona, California. Host: Cailin Smith . 35 minutes

**2024 [20]** "Citizen Science-Assisted Exploration of Lineage-Specific Epicuticular Wax Blooms", Center for Precision Plant Genomics, University of Minnesota. St. Paul, Minnesota. Host: Michael Smanski ..... 50 minutes

**2024 [19]** "Citizen Science-Assisted Exploration Of Lineage-Specific Epicuticular Wax Blooms", International Symposium on Plant Lipids. Lincoln, Nebraska. Host: Edgar B. Cahoon ..... 20 minutes

**2023 [18]** "Preserved Plant Specimens As Tools For Exploring The Evolution Of Biosynthetic Pathways To Fatty Acid-derived Natural Products", Department of Biochemistry & Molecular Biology, Michigan State University. East Lansing. Host: Lucas Reist ..... 50 minutes

**2023 [17]** "Wax Bloom Dynamics in *Sorghum Bicolor*", Department of Horticulture, University of Minnesota. Virtual. Host: Matt Gullickson ..... 50 minutes

**2022 [16]** "Using Citizen Science To Communicate And Catalyze Plant Chemical And Genomic Research", Departments of Biology and Chemistry, College of St. Scholastica. Duluth. Host: Asst. Prof. Heather Brown ..... 50 minutes

**2022 [15]** "Chemical And Genetic Variation In Feral Cannabis Sativa Populations Across The Nebraska Climate Gradient", Polyphenols Applications. Valencia. Host: Fred Stephens ..... 25 minutes

**2021 [14]** "A Co-opted Steroid Synthesis Gene, Maintained In *Sorghum* But Not Maize, Is Associated With A Divergence In Leaf Wax Chemistry", Department of Biochemistry, North Carolina State University. Virtual Conference. Host: Josh Strable ..... 50 minutes

**2021 [13]** "Using Citizen Science To Communicate And Catalyze Plant Chemical And Genomic Research", Department of Biological Sciences, East Tennessee State University. Virtual Seminar. Host: Prof. Dharendra Kumar ..... 50 minutes

**2021 [12]** "A Co-opted Steroid Synthesis Gene, Maintained In *Sorghum* But Not Maize, Is Associated With A Divergence In Leaf Wax Chemistry", Meeting of the Botanical Society of America. Virtual Conference. .... 15 minutes

- 2021 [11]** “A Co-opted Steroid Synthesis Gene, Maintained In Sorghum But Not Maize, Is Associated With A Divergence In Leaf Wax Chemistry”, Plant Apoplastic Diffusion Barriers (mini session). Virtual Conference. Host: Sarah McKim ..... 50 minutes
- 2021 [10]** “A Co-opted Steroid Synthesis Gene, Maintained In Sorghum But Not Maize, Is Associated With A Divergence In Leaf Wax Chemistry”, UMN Plant Breeding Seminar Series. Virtual Seminar. Host: Prof. Eric Watkins ..... 50 minutes
- 2020 [9]** “Integrated Bioanalytical Chemistry: Quantitative And Structural Analyses Of Biomolecules Large And Small To Understand Metabolism”, Department of Chemistry and Biochemistry, University of MN Duluth. Duluth, Minnesota. Host: Prof. Erin Sheets 50 minutes
- 2020 [8]** “Integrated Bioanalytical Chemistry: Quantitative And Structural Analyses Of Biomolecules Large And Small To Understand Metabolism”, Department of Chemistry, Northern Michigan University. Marquette, Michigan. Host: Prof. Mark Paulsen ..... 50 minutes
- 2020 [7]** “Using Citizen Science To Communicate And Catalyze Plant Chemical And Genomic Research”, Plant and Animal Genome Conference XXVIII. San Diego, California. Host: Diane Okamuro (NSF Program Officer) ..... 25 minutes
- 2020 [6]** “Using Citizen Science To Communicate And Catalyze Plant Chemical And Genomic Research”, University of Minnesota Duluth Departmental Seminar. Duluth. Host: Venkatram Mereddy ..... 50 minutes
- 2019 [5]** “Fatty Acids: A Metabolic Starting Point For Plant Chemicals With Diverse Functions Both Above And Below Ground”, Department of Biochemistry, The University of Nebraska Lincoln. Lincoln, Nebraska. Host: Prof. Edgar Cahoon ..... 50 minutes
- 2019 [4]** “Analytical Chemistry In The Age Of Genomics: Quantitative And Structural Analyses To Understand Metabolism And Fuel A Bio-Based Economy”, Departments of Biology and Chemistry Joint Seminar, The University Of Minnesota Duluth. Duluth, Minnesota. Hosts: Prof. Steve Berry and Prof. Jennifer Liang ..... 50 minutes
- 2018 [3]** “Phytochemical Structures And Occurrence Across Plant Diversity As A Tool For Biosynthetic Pathway Discovery”, Department of Biochemistry, The University of Nevada Reno. Reno, Nevada. Host: Prof. Dylan Kosma ..... 50 minutes
- 2016 [2]** “The Diversity And Biosynthesis Of Cuticular Waxes”, The Boyce Thompson Institute. Ithaca, New York. Host: Prof. James Giovannoni ..... 50 minutes
- 2016 [1]** “The Diversity And Biosynthesis Of Waxes”, The Center For Plant Science Innovation. Lincoln, Nebraska. Host: Prof. Edgar Cahoon ..... 50 minutes

## Teaching and Mentorship

### COURSES TAUGHT

CHEM5725	[7]	Advanced Analytical Chem I	.....	Average Enrollment: 10
CHEM4725	[6]	Data Analysis & Communication	.....	Average Enrollment: 26
CHEM4242	[5]	Instrumental Analysis	.....	Average Enrollment: 28
CHEM8720	[4]	Modern Mass Spectrometry	.....	Average Enrollment: 10
CHEM4720	[3]	Modern Mass Spectrometry	.....	Average Enrollment: 10
CHEM2222	[2]	Quantitative Analysis	.....	Average Enrollment: 66
CHEM2223	[1]	Quantitative Analysis Laboratory	.....	Average Enrollment: 71

### RESEARCH ADVISOR

2025-present	[26]	Allie Beyer	.....	Undergraduate Student
2025-present	[25]	Skylar Vargas	.....	Undergraduate Student
2024-present	[24]	Brianne Beebe (Major: Biochemistry)	.....	Undergraduate Student
2024-present	[23]	Rachel Knapp (Major: Biochemistry)	.....	Undergraduate Student
2024-present	[22]	Samantha Saenger (Major: Biochemistry)	.....	Undergraduate Student
2023-present	[21]	Jenna Fette (Major: Biochemistry)	.....	Undergraduate Student
2023-present	[20]	Jenny Ruliffson (Major: Chemistry)	.....	Masters Student
2023-present	[19]	Rory Westerman	.....	Masters Student
2023-present	[18]	Zachary Reuter (Major: Chemistry)	.....	Undergraduate Student
2022-present	[17]	Braidon Johnson (Major: Chemical Engineering)	.....	Undergraduate Student
2022-present	[16]	Kylie Mondloch	.....	Undergraduate Student
2022-present	[15]	Madison Larson	.....	Masters Student
2022-2024	[14]	Emma Fitzgibbons	.....	Masters Student
2022-2024	[13]	Taylor Abrahamson	.....	Masters Student
2021-2024	[12]	Nicole Babineau (Major: Biochemical Engineering)	.....	Undergraduate Student
2020-2024	[11]	Nicole Groth (Major: Biology)	.....	Undergraduate Student
2021-2023	[10]	Maddie Baregi (Major: Biochemistry)	.....	Undergraduate Student
2021-2023	[9]	Samuel Scott	.....	Masters Student
2021-2022	[8]	Amber McRae (Major: Biochemistry)	.....	Undergraduate Student
2021-2022	[7]	Clint McCue (Major: Biochemistry)	.....	Undergraduate Student
2021-2022	[6]	Noah Gorman (Major: Chemistry)	.....	Undergraduate Student
2020-2022	[5]	Jacob Lastovich (Major: Biology)	.....	Undergraduate Student
2020-2022	[4]	Le Thanh Dien Nguyen	.....	Masters Student
2020-2020	[3]	Alexis Salmon (Major: Biology)	.....	Undergraduate Student
2019-2020	[2]	Elizabeth Schmitz (Major: Biochemistry and Biology)	.....	Undergraduate Student
2018-2019	[1]	Evan Updike (Major: Biochemistry)	.....	Undergraduate Student



## Service

### AD HOC REVIEWER

2024-2024	Plant, Cell, and Environment	Total number of articles: 1
2024-2024	Trends in Biochemical Sciences	Total number of articles: 1
2023-2023	Industrial Crops and Products	Total number of articles: 1
2023-2023	Proceedings of the National Academy of Sciences	Total number of articles: 1
2022-2024	The Plant Journal	Total number of articles: 7
2022-2022	Phytochemistry Reviews	Total number of articles: 1
2021-2024	Nature Communications	Total number of articles: 2
2021-2023	New Phytologist	Total number of articles: 4
2021-2021	The Bryologist	Total number of articles: 1
2021-2021	The Plant Cell	Total number of articles: 1
2020-2024	Planta	Total number of articles: 2
2020-2022	Plant Direct	Total number of articles: 3
2020-2021	Frontiers in Plant Science	Total number of articles: 4
2020-2020	BMC Plant Biology	Total number of articles: 1
2020-2020	Metabolites	Total number of articles: 1
2019-2019	ACS Applied Materials and Interfaces	Total number of articles: 1
2019-2019	ACS Journal of Agricultural and Food Chemistry	Total number of articles: 1
2019-2019	Journal of Integrative Agriculture	Total number of articles: 1
2019-2019	Scientific Reports	Total number of articles: 1
2019-2019	The Plant Genome	Total number of articles: 1
2018-2023	Plant Physiology	Total number of articles: 6
2018-2021	Horticulture Research	Total number of articles: 2
2018-2019	Plant Physiology and Biochemistry	Total number of articles: 2
2018-2018	Functional Plant Biology	Total number of articles: 1
2018-2018	Lipids	Total number of articles: 1
2017-2017	Plant Cell Reports	Total number of articles: 1

### GRANT REVIEWER

2022-2024	(ad-hoc) Deutsche Forschungsgemeinschaft	Total number of proposals: 2
2021-2024	(ad-hoc) National Science Foundation	Total number of proposals: 5
2021-2023	(panelist) National Science Foundation	Total number of panels: 1
2021-2021	(ad-hoc) Binational Agricultural R&D Fund (BARD)	Total number of proposals: 1

### SCIENTIFIC SOCIETY MEMBERSHIPS

2022-present Awards Committee, Phytochemical Society of North America  
2019-present American Chemical Society  
2019-2022 Young Members Committee, Phytochemical Society of North America  
2018-2021 American Society of Plant Biologists  
2018-2020 Botanical Society of America  
2013-present Phytochemical Society of North America

### SOCIETY AND COMMITTEE SERVICE

2024-present Member, SCSE Outreach Committee  
2023-present Chair, Integrated Biosciences Admissions Committee  
2022-2022 Member, Ad Hoc SCSE Awards Committee

**2022-2022** Participant, General Chemistry For Majors “Chemical Bonding Events”  
**2022-2022** Chair, Graduate TA Microteaching Training Sessions  
**2022-2022** Member, SCSE Data Science Initiative  
**2022-2022** Judge, SURP Poster Session, Illenda Competition  
**2021-present** Organizer, Primary Organizer, #PhytochemTalks Virtual Seminar Series  
**2021-present** Member, Departmental Outreach Committee  
**2021-present** Advisor, Chemistry Club  
**2021-2022** Member, Integrated Biosciences Admissions Committee  
**2021-2021** Tour Guide, Video Creation, Admitted Students Days  
**2021-2021** Transitions Newsletter Contributor, Department of Chemistry and Biochemistry  
**2021-2021** 2021 Graduation Party Helper, Department of Chemistry and Biochemistry  
**2021-2021** Judge, SURP Poster Session, Illenda Competition  
**2020-present** Instrument Liaison, HCAMS 109 GCMS  
**2020-2021** Member, Graduate Studies Committee  
**2020-2021** Member, Physical Resources Committee  
**2020-2021** Minute Recorder, Department Meetings  
**2020-2020** Member, Physical Resources Committee  
**2018-2019** Secretary, University of Nebraska Lincoln Plant Science Student and Postdoc Society

#### INTERVIEWS AND SCIENCE COMMUNICATION

**2022** Podcast “Meet Your Professor”  
**2022** Virtual Alumni Tour “The UMD Plant Chemistry Laboratory”  
**2020** Twitch Stream “Drink and Think”  
**2020** Podcast “Evolution Eats”  
**2019** News Website Chemical and Engineering News  
**2018** Podcast In Defense of Plants