Julian A. Liber

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EDUCATION

Duke University, Durham, NC — Aug 2021 – Expected May 2026
Doctor of Philosophy in Biology – Current GPA: 4.00

- Coursework: Systematic Biology, Microbial Pathogenesis, Plants and Climate Change, Science Communication, Biophysics Methods, Microbial Genetics, Exploring the Microbiome
- Proposed dissertation topic: Biosensor-based probing of the phyllosphere micro-environment to understand microbiome dynamics.

Michigan State University, East Lansing, MI — Aug 2018 – May 2021
Master of Science in Plant Biology – GPA: 4.00

- Coursework: Advanced Mycology, Evolutionary Biology, Special Topics in Mycology, Eukaryotic Cell Biology, Foundations of Plant Biology, Statistical Methods in Ecology and Evolution 1 & 2, Plant Genomics, Teaching College Science, Population & Community Ecology, Integrative Microbial Biology
- Thesis: Understanding the roles of interkingdom microbial interactions, microbial traits, and host factors in the assembly of plant microbiomes.

Michigan State University, East Lansing, MI — Aug 2016 – May 2019
Bachelor of Science in Plant Biology - GPA: 3.99

- Minor: Computational Mathematics, Science, and Engineering
- Biology Coursework: Biology of Plants, Fundamental Genetics, Organic Chemistry, Ecology, Evolution, Introduction to Forestry, Plant Physiology, Plant Systematics, Algal Biology, Biochemistry
- Computational and Quantitative Coursework: Computational Biology, Computational Modeling Tools and Techniques, Introduction to Programming II, Bioinformatics
- Honors College

The Ohio State University Stone Laboratory, Gibraltar Island, OH — Summer 2017

- Field courses in Evolution and Ecology

RESEARCH EXPERIENCE

Graduate Research Assistant, Duke University, Durham, NC — Aug 2021 – Present

- He Lab – Microbiota-host interactions in the phyllosphere.

Research Technician, MSU, East Lansing, MI — May 2021 – Aug 2021

- Bonito Lab – Plant-microbe interaction imaging, genomics of Mycoplasma-related endobacteria, systematics of Mortierellaceae

Graduate Research Assistant, MSU, East Lansing, MI — Summer 2019 – May 2021

- Bonito Lab – Systematics of Mortierellaceae, fungal interactions with bacteria, algae, plants, nematodes, and plant viruses, computer vision applications to fungi.
- Mentoring of undergraduate and high school students

Undergraduate Research Assistant, MSU, East Lansing, MI — Fall 2018 – Spring 2019

- Bonito Lab – Independent research project studying the interaction of bacterial and fungal endophytes in grasses.
- Responsibilities – Experimental design, data collection, presentation of results, lab maintenance duties, regular meetings with research group and professor.

iGEM Competition Team Leader, MSU, East Lansing, MI, Spring 2018 – Fall 2018

- Team project to transform a native bacterial endophyte of grasses to promote drought stress tolerance in cereal crops
- Responsibilities – Organizing team meetings, project and experimental design, technical problem solving, community outreach, inter-lab collaboration, research presentation

Professorial Assistantship, MSU, East Lansing, MI Fall 2016 – Spring 2018

- Bonito Lab (Spring 2017 – Spring 2018) – Study of endosymbiotic bacteria interactions in fungi; culturing and sequencing novel fungi strains, microscopy, and image analysis
- Sticklen Lab (Fall 2016) – Genetic transformation techniques of wheat and cotton
- Responsibilities – Frequent meetings with PI and lab members, writing research reports, training students, working independently and in groups, scheduling

TEACHING EXPERIENCE

Teaching Assistant, Duke, Durham, NC Spring 2023

- Course: BIOL 557L – Microbial Ecology
- Responsibilities – Laboratory protocol development and presentation, lab safety compliance, microbiology material preparation, bioinformatic processing and analysis of sequencing data, identification of plants (in field) and microorganisms (in laboratory), meta-amplicon sequencing.

Teaching Assistant, Duke, Durham, NC Fall 2022

- Course: BIOL 202L – Gateway to Biology: Genetics and Evolution
- Responsibilities – Course material development and presentation, lab safety compliance, grading, hands-on explanation of animal and plant anatomy, genetics problem solving.

Peer Tutor, MSU, East Lansing, MI Fall 2020

- Course: MMG 801 - Integrative Microbial Biology
- Responsibilities – One-on-one tutoring with student to improve understanding of content.

Teaching Assistant, MSU, East Lansing, MI Fall 2019

- Center for Integrative Studies in General Science
- Course: ISB 208L – Applications in Biological Science Laboratory
- Responsibilities – Course development and planning, lectures, grading, working with course coordinator and TAs, help room.

Undergraduate Learning Assistant, MSU, East Lansing, MI Spring 2018 – Spring 2019

- Department of Computational Mathematics, Science, and Engineering
- Course: CMSE 202 – Computational Modeling Tools and Technology
- Responsibilities – Group facilitation in class, weekly meetings with instructors, aid students in help room, software troubleshooting, discussion of education pedagogy.

AWARDS

- Mycological Society of America, Best Graduate Student Poster Summer 2021
- Summa Cum Laude, MSU Spring 2019
- Department of Plant Biology Outstanding Undergraduate Award Spring 2019

- Department of Computational Mathematics, Science, and Engineering Outstanding Learning Assistant Spring 2019
- University Undergraduate Research and Arts Forum 1st Place Poster Spring 2018
- Dean's List Fall 2016 – Spring 2019
- Scholarships - Alumni Distinguish Scholarship Finalist, National Merit Finalist, Norman A. Good Scholarship Award, College of Natural Science Research Scholarship

SYNERGISTIC ACTIVITIES/PROFESSIONAL IMPACT

Duke University Graduate and Professional Student Government 2021 – 2024

- *Director of Academic Affairs* May 2023 – May 2024
  - Assess issues pertaining to courses, teaching, diversity, harassment, discrimination, and due process and work to resolve them by working with university administration. Management of GPSG Lawyer Assistance Program.
- *Secretariat Rep. for Trinity College of Arts & Sciences (Nat. Science)* May 2022 – Present
  - Develop and set legislative agenda, communicate with Natural Science grad student constituency and represent their interests, provide checks and oversight of Executive Committee, organize and run elections.
- *Chair of Doctoral Student Affairs Committee* May 2022 – Present
  - Organize and lead advocacy on issues impacting doctoral students including cost of living, stipends, and leave policies.
- *Representative to University Campus Sustainability Committee* 2021 – 2022
  - Recommend, champion, and communicate sustainability policies to administration and graduate student constituencies
- *General Assembly Rep. for Department of Biology* Sept 2021 – May 2022
  - Read, discuss, and vote on legislation, share information with department, bring student concerns to administration. Member of Climate Crisis Committee.

Duke Biology Organisms and Evolution Seminar Czar Fall 2021

Notify department of seminar, coordinate meeting with speaker, host seminar event.

MSU Plant Biology Graduate Student Organization Outreach Committee 2019 – 2021

Organize and participate in events in the Lansing, MI area to promote interest in science and science literacy.

MSU Plant Biology Club President 2018 – 2019

Club activities organization, recruitment, plant collection maintenance, outreach events.

MSU iGEM Team 2018

Integrated human practices including expert consultations, community surveys and public forums, and educational events at Impression 5 Science Center and Lansing Public Library.

MSU Science Festival Presenter 2017 – 2021

Interactive presentations discussing photosynthesis and plant adaptations.

East Lansing Science Nights Presenter 2016 – 2019

Hands-on activities exploring plant diversity, microbiomes, evolution, and plant anatomy.

PUBLICATIONS/PRESENTATIONS/FEATURES

- Longley R, Robinson A, **Liber JA**, Bryson AE, Morales, DP, LaButti K, Riley R, Mondo SJ, Kuo A, Yoshinaga Y, Daum C, Barry K, Grigoriev IV, Desirò A, Chain PSG, Bonito G. (2023) Comparative Genomics of Mollicutes-related Endobacteria Supports a Late Invasion into Fungi. *In review.*
- Sohrabi R, Paasch BC, **Liber JA**, He SY (2023) Phyllosphere Microbiome. Annual Review of Plant Biology. 74. *In press*.

- **Liber JA**, He SY (2022) Probing phylloplane microbial community physiology and dynamics in situ using whole-cell yeast biosensors. Mycological Society of America. University of Florida, Gainesville, Florida. July 12, 2021. Poster presentation.
- Vande Pol N, **Liber JA**, Yocca A, Matlock J, Edger P, Bonito G. (2022) *Linnemannia elongata* (Mortierellaceae) stimulates *Arabidopsis thaliana* aerial growth and responses to auxin, ethylene, and reactive oxygen species. PloS one. 17(4): e0261908.
- **Liber JA**, Minier DH, Stouffer-Hopkins A, Van Wyk J, Longley R, Bonito G. (2022) Maple and hickory leaf litter fungal communities reflect pre-senescent leaf communities. PeerJ. 10(e12701)
- **Liber JA**, Benucci GMN, Bonito G. (2021) CONSTAXv2: a software for accurate taxonomic classification of environmental DNA markers. Mycological Society of America & Botanical Society of America (Botany 2021). Virtual. July 20, 2021. Poster presentation.
- **Liber JA**, Benucci GMN, Bonito G. (2021) CONSTAXv2: a software for accurate taxonomic classification of environmental DNA markers. Bioinformatics. 37(21): 3941-3943. https://github.com/liberjul/CONSTAXv2
- **Liber JA**, Golematis N, Cole E, Malmstrom C, Bonito G. (2020) Four-way interactions in the plant holobiont: How does plant viral disease alter fungal and bacterial community assembly? Mycological Society of America. Virtual, July. 22, 2020. Poster presentation.
- **Liber JA**, Bryson A, Bonito, G, Du Z. (2020) Harvesting microalgae for food and energy products. Small Methods. 2020(2000349): 1-16.
- Vande Pol N, **Liber JA**, Desirò A, Na H, Kennedy M, Barry K, Grigoriev IV, Miller AN, O'Donnell K, Stajich JE, Bonito G. (2020) Resolving the Mortierellaceae phylogeny through synthesis of multi-gene phylogenetics and phylogenomics. Fungal Diversity. 104(1): 267-289.
- **Liber JA**, Bonito G. (2019) Do fungal endophytes facilitate colonization of bacterial endophytes in *Brachypodium distachyon*? Mycological Society of America. University of Minnesota, Minneapolis, Minnesota, Aug. 13, 2019. Poster presentation.
- **Liber JA.** (2019) Co-inoculation effects of bacterial and fungal endophytes in Brachypodium distachyon. University Undergraduate Research and Arts Forum. Michigan State University, East Lansing, Michigan, Apr. 5, 2019. Oral presentation.
- **Liber JA**, Brauer-Delaney B. (2018) Julian Liber: Undergrad research opportunities. MSU Today Student Views. Dec. 5, 2018.
- **Liber JA**, Houwat I. (2018) MSU team wins bronze at 2018 synthetic biology competition. Michigan State University, Molecular Plant Sciences News. Nov. 27, 2018.
- **Liber JA**, Lee J, Uhelski E, Del Rose A, Schultz J, Viola S, Gate C, and Caldwell S. (2018) Transformation of endophyte *Enterobacter ludwigii* with ACC deaminase related to ethylene stress response. iGEM Giant Jamboree. Hynes Convention Center, Boston, Massachusetts, Oct. 25, 2018. Poster and oral presentation.
- **Liber JA**, Gall E, Vande Pol N, Silvia D, and Bonito G. (2018) Use of hyphal image analysis and machine learning to classify Mucoromycota soil fungal isolates. International Mycological Congress. San Juan Convention Center, San Juan, Puerto Rico, July 20, 2018. Poster presentation.
- Aime MC, Urbina H, **Liber JA**, Bonito G, and Oono R. (2018). Two new endophytic Atractiellomycetes, *Atractidochium hillariae* and *Proceropycnis hameedii*. Mycologia. 110(1): 136-146
- **Liber JA**, Gall E, Vande Pol N, Silvia D, and Bonito G. (2018) Use of hyphal image analysis and machine learning to classify Mucoromycota soil fungal isolates. University Undergraduate Research and Arts Forum. Michigan State University, East Lansing, Michigan Apr. 13, 2018. Poster presentation.
- Desirò A, Hao Z, **Liber JA**, Benucci GM, Lowry D, Roberson R, Bonito G. (2018) Mycoplasma-related endobacteria within Mortierellomycotina fungi: diversity, distribution and functional insights into their lifestyle. The ISME journal. 12(7): 1743-1757.

- Hussien A, Olson E, Brisco E, West H, Javaid T, **Liber JA**, and Sticklen M. (2016) Overactivation of two wheat native genes in wheat genome confers resistance to FHB pathogen inoculations. Scab Symposium, Genes Discovery and Engineering Chapter. Hyatt Regency at the Arch. St. Louis, Missouri, Dec. 4-6, 2016. Poster presentation.