

Curriculum Vitae

Michael J. Braus, Ph.D.

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CONTACT

Email: brausm@protonmail.com

Phone: 608-334-2827

EDUCATION

Data Carpentry Instructor Training (April 2021)

- <https://datacarpentry.org/>

Doctorate (September 2016-April 2020)

- Soil Science - Major Advisor: Dr. Thea Whitman
- Microbiology - Minor Advisor: Dr. Michael Thomas
- University of Wisconsin-Madison - Department of Soil Science
- Thesis: *The Acidity and Proticity of Soil Microhabitats*

Certificate in Microbial Diversity (July-August 2016)

- MBL Microbial Diversity Course
- Marine Biology Laboratory — Woods Hole, Massachusetts

Master of Science (September 2013-May 2016)

- Environment & Resources - Advisor: Dr. Linda Graham
- University of Wisconsin-Madison - Nelson Institute for Environmental Studies
- Thesis: *Uses of Molecular Biology and Bioinformatics in Environmental Science*

Bachelor of Arts (Class of 2011)

- Zoology - *Tropical Ecology*
- University of Wisconsin - Madison — Department of Zoology
- Study Abroad (Spring 2011): *School for Field Studies - Costa Rica*

PUBLICATIONS

RESEARCH (PEER-REVIEWED)

Braus, M. J., Swader, R., Petry, G., & Whitman, T. L. (2021). "The Iplate Suite: Affordable and Customizable Applications of Ichip Technology". *Journal of Microbiology and Biology Education*.

Braus, M. J. & Whitman, T. L. (2021). "Standard and non-standard measurements of acidity and the bacterial ecology of northern temperate mineral soils." *Soil Biology and Biochemistry*, Volume 160. <https://doi.org/10.1016/j.soilbio.2021.108323>

Cates, A. M., **Braus**, M. J., Whitman, T. L., Jackson, R. D. (2019). Separate drivers for microbial carbon mineralization and physical protection of carbon. *Soil Biology and Biochemistry*. doi:10.1016/j.soilbio.2019.02.014.

Braus, M.J., Graham, L.E., and Whitman, T.L. (2017). Spatiotemporal dynamics of the bacterial microbiota on lacustrine *Cladophora glomerata* (Chlorophyta). *Journal of Phycology*. doi:10.1111/jpy.12573.

RESEARCH (IN PREPARATION)

Braus, M. J. (2022, in preparation). "A Metrological History of Soil Acidity: Is 'Soil pH' a Dilution or a Delusion?" Target Journal: *Soil Science Society of America Journal*.

Braus, M. J. (2023, in preparation). "Net Charge Density" Target Publisher: *Oxford University Press*.

TRANSLATIONS

Sgambato et al. (2011). The 100th anniversary of pH (1909-2009). Negative logarithms for measuring hydrogen ions: are they essential in medicine? Part I. [*Il centenario del pH (1909-2009). Ma in medicina, e proprio indispensabile utilizzare i logaritmi negativi per misurare gli idrogenioni? Parte 1.*] Translation by Michael J. **Braus** (2020). Italian Journal of Medicine. Copyright 2011 Elsevier Srl. All rights reserved.

Sgambato et al. (2011). The 100th anniversary of pH (1909-2009). Part II. Was it really necessary to replace the Henderson equation with that of Henderson-Hasselbalch? [*Il centenario del pH (1909-2009). Parte seconda. Ma era proprio necessario sostituire l'equazione di Henderson con quella di Henderson-Hasselbalch?*] Italian Journal of Medicine. Translation by Michael J. **Braus** (2020). Copyright 2011 Elsevier Srl. All rights reserved.

Debye, Peter & Hückel, Erich (1923). The theory of electrolytes. I. Freezing point depression and related phenomena [*Zur Theorie der Elektrolyte. I. Gefrierpunktserniedrigung und verwandte Erscheinungen*]. *Physikalische Zeitschrift*. 24: 185-206. Translated and typeset by Michael J. **Braus** (2020). <https://archive.org/details/1923-debye-huckel-2020-braus-translation-english/>

EMPLOYMENT

August 2021 to the present

Growcentia, Inc - Loveland, CO - *Research & Data Scientist*

- Develop standard operating procedures for functional assay and analyses of microbial prototypes.
- Test and propose label claims using the research of product mode(s) of action.
- Implement data science, data integrity, and bioinformatics to fully utilize microbial diversity.
- Teach and empower colleagues and technicians as they develop new skills and capabilities.

April 2021 to August 2021

Idaho State University - Pocatello, ID - *Postdoctoral Scholar*

- Develop and maintain 16S amplicon analyses for the Aquatic Intermittency effects on Microbiomes in Streams (AIMS) project. (NSF Grant: https://www.nsf.gov/awardsearch/showAward?AWD_ID=2019603&HistoricalAwards=false)
- Perform field work, molecular biology, literature reviews, and meta-analyses.
- Training and advising undergraduate and graduate students.

Summer of 2016, 2017, 2018, 2019, & 2020

University of Wisconsin-Madison - Madison, WI - *Course Lecturer, Botany 100*

- Deliver two daily lectures and manage learning outcomes in an accelerated introductory biology course for non-science majors
- Students complete a full semester of coursework in three weeks

August 2020 to June 2021 (remote, intermittent)

University of Wisconsin-Madison - Madison, WI - *Honorary Fellow*

- Provide intermittent advising and training to the Graham Phycology Laboratory on the utilization of MinION nanopore sequencing for production of metagenomes of filamentous algal symbionts

September 2016 to August 2020

University of Wisconsin-Madison - Madison, WI - *Research Assistant*

- Assist the research goals of the Whitman Soil Ecology Laboratory in the UW-Madison Soil Science Department

June 2014 to 2016

AlgaXperts, LLC - Madison, WI - *Project Assistant*

- Provide intermittent assistance during the production of filamentous algae while improving wastewater treatment systems
- Manage online company profiles and website to publicize algal products and scientific services

September 2013 to May 2016

University of Wisconsin-Madison - Madison, WI - *Biology Laboratory Teaching Assistant (TA)*

- Biology/Botany/Zoology 151 (Fall 2013)
- Biology/Botany/Zoology 152 (Spring 2014)
- Biology/Botany/Zoology 151 (Fall 2014)
- Botany 100 (Spring 2015 & Summer 2015)
- Plant Pathology 123 (Fall 2015)
- Botany 100 (Spring 2016)

April 23 to May 17, 2012

Americorps Student Conservation Association (SCA) - Fire Island, NY - *SCA Intern*

- Survey horseshoe crab populations and mating behavior on Long Island Sound
- Train and collaborate with National Park Service personnel

Summers of 2004, '05, and '07

Camp Unistar - Cass Lake, MN - Staff

- Lead children and youth indoor and outdoor activities with fellow staff
- Waterfront lifeguard and emergency response

AWARDS & HONORS

- UW-Madison Conference Travel Grant to give a presentation at the Soil Science Society of America annual conference in San Antonio, TX, USA. (November 2019)
- UW-Madison Conference Travel Grant to give a presentation at the Soil Science Society of America annual conference in San Diego, CA, USA. (January 2019)
- FEMS Early Career Scientist Grant to facilitate attendance at the Ecology of Soil Microorganisms international conference in Helsinki, Finland. (2018)
- Jaya Iyer Award second prize winner for prospectus seminar at the UW-Madison Department of Soil Science. (2018)
- Marine Biological Laboratory Scholarship to attend the MBL summer Microbial Diversity course in Woods Hole, MA. (2016)
- UW-Madison Research Travel Grant to attend a summer course at the Marine Biological Laboratory. (2016)
- Anna Grant Birge Memorial Award for aquatic science to perform 16S amplicon analysis of the green filamentous algal microbiome in Lake Mendota. (2014)
- Advanced Computing Initiative Student Fund to attend the weeklong Explorations in Data Analyses for Metagenomic Advances in Microbial Ecology (EDAMAME) workshop on bioinformatics, genetic sequence data analysis, and microbial ecology, led by faculty and collaborators at Michigan State University. (2014)
- Americorps Education Award for service with the Student Conservation Association. (2012)
- Marjorie Brown Leff Music Scholarship to continue the study and performance of the classical guitar. (2005)

TALKS & PRESENTATIONS

ASM 240 – Computer Applications in Biological Sciences (Prof. Laurel Lynch). University of Idaho - Moscow, ID, USA. April 26th, 2022 - “Guest Lecture: The Roles of Computation at a Soil Amendment Start-Up Company”.

Research Talk at the Soil Science Society of America Conference. Henry B. Gonzalez Convention Center — San Antonio, Texas, USA. November 12th, 2019 — “Simulating the Conditions of Soil in the Laboratory Elucidates the Limitations of Soil pH Values in Biogeochemistry and the Potential of ‘Proticity’ As a Unitful Physical Quantity of Acidity at All Scales”.

Guest Lectures, Botany 130 General Botany (Professor: Dr. Linda Graham). UW-Madison Birge Hall Auditorium — Madison, WI, USA. February 25th, 2019 — “Algae and the Endosymbiotic Origin of Eukaryotic Life”, and February 27th, 2019 — “Structural Diversity, Life Cycles, and Symbioses of Fungi & Lichens”.

Research Talk at the Soil Science Society of America Conference. Sheraton Hotel & Marina — San Diego, California, USA. January 6, 2019 — “The Divergence and Significance of in Situ Soil pH in the Bacterial Ecology of Wisconsin’s Soils Compared to Standard Soil pH”.

Research Talk at the international Ecology of Soil Microorganisms (ESM) Conference. Kulttuuritalo — Alppila, Helsinki, Finland. June 18, 2018 — “Methods, Measurements, & Models of In Situ Soil pH of the Soils of Wisconsin”.

Doctoral Prospectus Seminar - Department of Soil Science. UW-Madison Soils Building — Madison, WI. January 31, 2018 — “Physiological Influences and Comparative Measurements of In Situ pH in Bacterial Ecology”.

Conference Poster for “Navigating the Future of Water: Charting a Vision for American Cities”. Milwaukee, WI. October 18-20, 2017 — “Spatiotemporal Dynamics of the Bacterial Microbiota on Lacustrine Cladophora glomerate (Chlorophyta)”.

Soil Science Departmental Seminar. UW-Madison Soils Building, Madison, WI. February 1, 2017 — “Meta & Metagenomics”.

Earth Day Conference 2016. Monona Terrace Community Convention Center — Madison, WI. April 25, 2016 — “Algae and Algae-Associated Bacteria in the Context of Climate Change: Why Not All Algae are ‘Nuisance Algae’”.

Guest Lecture for Botany 100. Birge Hall, UW-Madison — Madison, WI. April 25, 2016 — “Algae and Algae-Associated Bacteria in the Context of Climate Change: Why Not All Algae are ‘Nuisance Algae’”.

Limnology & Marine Science Seminar. Water Sciences Building — Madison, WI. December 10, 2014 — “Bioinformatics and the Algal Microbiome”.

OTHER SERVICES & OUTREACH

Consultation — Algae in Golf Course Irrigation. Helena Agri-Enterprises, LLC. June 13, 2018 — Golf Course ‘Cornflakes’.

Saturday Science. Wisconsin Institutes for Discovery — Madison, WI. October 7, 2017 — “Soil Ecology & Microscopy” exhibit for local kids.

Grandparents University. Soil Science Building — Madison, WI. July 28, 2017 — Half-day “Soil Science Major” class getting local kids and their grandparents excited about soil with demonstrations and performing soil-related songs by Francis D. Hole.

Science Expeditions. Wisconsin Institutes for Discovery — Madison, WI. April 1, 2017 — “Soil Safari & Critter Quest” exhibit for local kids.

Darwin Day Tree of Life Science Activities Fair. Wisconsin Institutes for Discovery — Madison, WI. Day-long event in January in 2013, 2014, 2015, 2016, & 2017 — A phycology/algae exhibit teaching local kids about chemical uses of alginate made from giant kelp.
