

# MARIAN L. SCHMIDT

**Ph.D. Candidate | Department of Ecology and Evolutionary Biology | University of Michigan**

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## Education

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2012 – Present: **Ph.D. Candidate**, Ecology & Evolutionary Biology, UNIVERSITY OF MICHIGAN

PhD Committee: Vincent Denef (Chair), Greg Dick, Deborah Goldberg, George Kling, & Pat Schloss

*Expected graduation: August 2018*

2012 – 2014: **Master's of Science**, Ecology & Evolutionary Biology, UNIVERSITY OF MICHIGAN

2007 – 2011: **Bachelor of Arts**, Microbiology, School of Natural Science, HAMPSHIRE COLLEGE

Spring 2010: **Student Participant**, Global Health Study Abroad Program, INTERNATIONAL HONORS PROGRAM, Washington D.C., South Africa, Vietnam, & Brazil

## Certifications

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2017 – 2018: **Diversity, Equity, & Inclusion Certificate**, Rackham Graduate School, UNIVERSITY OF MICHIGAN

2012 – 2017: **Graduate Teaching Certificate**, Center for Research on Learning & Teaching, UNIVERSITY OF MICHIGAN

## Work Experience

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2016 – 2018: **Instructional Technologist & Graduate Student Instructor Consultant**, Center for Research on Learning and Teaching, UNIVERSITY OF MICHIGAN

2012 – 2017: **Graduate Student Instructor**, Program of Biology, UNIVERSITY OF MICHIGAN

2011 – 2012: **Academic Research Fellow**, David Johnston Lab, Earth & Planetary Sciences, HARVARD UNIVERSITY

2008 – 2011: **Resident Advisor**, Residential Life & Housing, HAMPSHIRE COLLEGE

2010: **NSF REU**, Jeff Gralnick Lab, Microbiology, UNIVERSITY OF MINNESOTA, TWIN CITIES

2009: **NSF REU**, Dennis Bazylinski Lab, School of Life Sciences, UNIVERSITY OF NEVADA, LAS VEGAS

## Grants and Awards

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2013 – 2018: **NSF Graduate Research Fellowship Program**, \$132,000

2017 – 2018: **NSF Doctoral Dissertation Improvement Grant**, \$18,610

2017: **Barr-Bigelow Grant**, UNIVERSITY OF MICHIGAN, \$2,699

2017: **Rackham Graduate School Doctoral Research Grant**, UNIVERSITY OF MICHIGAN, \$3,000

2016: **Margaret Ayers Host Award for Women Graduate Students**, UNIVERSITY OF MICHIGAN, \$8,000

2014 – 2016: **Rackham Graduate School Travel Grant**, UNIVERSITY OF MICHIGAN, 3 grants totaling \$2,550

2016: **Faculty Communities for Inclusive Teaching**, Center for Research on Learning and Teaching, UNIVERSITY OF MICHIGAN, \$1000

2013 – 2016: **Departmental Block Grant**, UNIVERSITY OF MICHIGAN, 4 grants totaling \$7,228

2013: **Rackham Graduate School Pre-Candidacy Grant**, UNIVERSITY OF MICHIGAN, \$1,500

2011: **Raymond W. Sarber Award**, AMERICAN SOCIETY OF MICROBIOLOGY, \$1,500

## Peer Reviewed Publications

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1. Props, R., **Schmidt, M.L.**, Heyse, J., Vanderploeg, H.A., Boon, N., and V.J. Denef. (2017) Flow cytometric monitoring of bacterioplankton phenotypic diversity predicts high population-specific feeding rates by invasive dreissenid mussels, *Environmental Microbiology*, doi:10.1111/1462-2920.13953
2. **Schmidt, M.L.**, White, J.D., and V.J. Denef. (2016) Phylogenetic conservation of freshwater lake habitat preference varies between abundant bacterioplankton phyla, *Environmental Microbiology*; DOI: 10.1111/1462-2920.13143.
3. Lefèvre, C.T., Howse, P.A., **Schmidt, M.L.**, Sabaty, M., Menguy, N., Luther III, G.W., and D. Bazylinski.

- (2016) Growth of magnetotactic sulfate-reducing bacteria in an oxygen concentration gradient medium, *Environmental Microbiology Reports*, DOI: 10.1111/1758-2229.12479
4. Denef, V.J., Fujimoto, M., Berry, M.A., and **M.L. Schmidt**. (2016) Seasonal succession leads to habitat-dependent differentiation in ribosomal RNA:DNA ratios among freshwater lake bacteria, *Frontiers in Microbiology*, DOI: 10.3389/fmicb.2016.00606.
  5. Bradley, A.S., Leavitt, W.D., **Schmidt, M.L.**, Knoll, A.H., Girguis, P.R., and D.T. Johnston. (2015) Patterns of sulfur isotope fractionation during Microbial Sulfate Reduction, *Geobiology*, DOI: 10.1111/gbi.12149.
  6. McCarthy, A., Chiang, E., **Schmidt, M.L.**, and V. J. Denef. (2015) RNA preservation agents and nucleic acid extraction method bias perceived bacterial community composition, *PLoS ONE* 10(3); e0121659.
  7. Leavitt, W.D., Cummins, R., **Schmidt, M.L.**, Sub Sim, M., Ono, S., Bradley, A.S., and D.T. Johnston. (2014) Multiple sulfur isotope signatures of sulfite and thiosulfate reduction by the model dissimilatory sulfate-reducer, *Desulfovibrio alaskensis* str. G20, *Frontiers in Microbiology* 5: Article 591; doi:10.3389/fmicb.2014.00591.
  8. Lefèvre, C.T., **Schmidt, M.L.\***, Vilorio, N., and D.A. Bazylinski. (2012) Insight into the Evolution of Magnetotaxis in Magnetospirillum spp. based on mam Gene Phylogeny, *Applied and Environmental Microbiology* 78(20): 7238 – 7248; DOI:10.1128/AEM.01951-12.  
\* Undergraduate thesis work
  9. Lefèvre, C.T., Vilorio, N., **Schmidt, M.L.**, Pósfai, M., Frankel, R.B., and D.A. Bazylinski. (2011) Novel magnetite-producing magnetotactic bacteria belonging to the Gammaproteobacteria, *International Society for Microbial Ecology Journal*: 1-11; DOI:10.1038/ismej.2011.97.
  10. Lefèvre, C.T., Abreu, F., **Schmidt, M.L.**, Lins, U., Frankel, R.B., Hedlund, B.P., and D.A. Bazylinski. (2010) Moderately thermophilic magnetotactic bacteria from hot springs in Nevada, *Applied and Environmental Microbiology* 76(11): 3740 – 3743; DOI:10.1128/AEM.03018-09.

### Submitted Manuscripts

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1. Chiang, E., **Schmidt, M.L.**, Berry, M.A., Biddanda, B.A., Burtner, A., Johengen, T.H., Palladino, D., and V.J. Denef. Verrucomicrobia are prevalent in north-temperate freshwater lakes and display class-level preferences between lake habitats, *In Revision* at PLoS ONE.
2. **Schmidt, M.L.**, Biddanda, B.A., Weinke, A.D., Chiang, E., Januska, F., Props, R. and V.J. Denef. Microhabitats shape diversity-productivity relationships in freshwater bacterial communities. BioRxiv preprint available at <https://doi.org/10.1101/231688>

### Invited Presentations & Guest Lectures

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October 24th, 2017 & October 12, 2015: **Invited Guest Lecturer**, EEB 416 Bioinformatics with Dr. Gina Baucom, UNIVERSITY OF MICHIGAN, “Reproducible Research with R”

May 11<sup>th</sup>, 2017: **Invited Presenter to the public**, Ann Arbor UseRs Meetup: “Helpful data wrangling functions with *tidyR* and *dplyR*”; Ann Arbor SPARK, Ann Arbor, MI

February 2<sup>nd</sup>, 2017: **Invited Guest Lecturer**: 3 hours, EARTH 523 Metagenomics with Dr. Greg Dick, UNIVERSITY OF MICHIGAN, “Reproducible Research Using R and Git”

December 2<sup>nd</sup>, 2016: **Invited Speaker**, 1 hour; “Does biodiversity predict ecosystem function? A case study of lake bacteria” at HOPE COLLEGE

December 1<sup>st</sup>, 2016: **Guest Lecturer**, 3 hours; BIO 105 Introduction to Biology with Dr. Aaron Best, HOPE COLLEGE, “Introduction to the Unix Shell”

August 11<sup>th</sup>, 2016: **Invited Speaker**, 1 hour; “Patterns of Microbial Diversity within Muskegon Lake” at GRAND VALLEY STATE UNIVERSITY Annis Water Research Institute

August 24-28, 2015: **Invited Instructor**, 2 hours; Next generation Sequencing Data Analysis workshop, MICHIGAN STATE UNIVERSITY, “Reproducible Research Using RMarkdown and Git through RStudio”

## Conference Presentations

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- Marian L. Schmidt** et al., “Microhabitats shape diversity-productivity relationships in freshwater bacterial communities” *Symposium on Aquatic Microbial Ecology* 2017; Poster
- Marian L. Schmidt** et al., “Microhabitats shape diversity-productivity relationships in freshwater bacterial communities” *Ecological Society of America* 2017; Oral
- Marian L. Schmidt** et al. “Active & total bacterial communities differ along a near to offshore transect in Lake Michigan,” *International Association of Great Lakes Research* 2017; Oral
- Marian L. Schmidt** et al., “Heterotrophic Production is strongly linked to diversity of particle-associated but not free-living bacterial communities” *International Society of Microbial Ecology* 2016; Poster
- Marian L. Schmidt** et al., “Habitat partitioning of specialist bacterioplankton within freshwater stratified lakes is conserved at the phylum level” *Gordon Conference Applied & Environmental Microbiology* 2015; Poster
- Marian L. Schmidt** et al. “Dissecting microbial habitats in stratified lakes: Evidence of deterministic changes in free-living and particle-associated bacterial community composition across a productivity gradient” *Ecological Society of America* 2014; Poster
- Marian L. Schmidt** et al., “Phylogeny of Newly Isolated Freshwater *Magnetospirilla* Based on *mam* Gene Sequences” *American Society of Microbiology* 2011; Poster

## Teaching Experience & Mentoring

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- Summer 2017: **Invited Lead Instructor**, Next Generation Sequencing Data Analysis Workshop, UNIVERSITY OF CALIFORNIA, DAVIS, DATA INTENSIVE BIOLOGY SUMMER INSTITUTE; A two-week intensive workshop on using bioinformatics tools for genome assembly, binning & annotation, RNA-seq, and variant calling.
- 2015 – Present: **Instructor**, Software Carpentry Foundation; Co-taught 7 two-day programming workshops on shell, git, & R: One international & two for Women in Science & Engineering. [Press release](#)
- 2015 – Present: **Workshops on Teaching**, Center for Research on Learning & Teaching, UNIVERSITY OF MICHIGAN
1. “Teaching with Technology: Incorporating Digital Media”
  2. “Everyday Technology in Teaching”
  3. “Let’s make a screencast with Jing”
  4. “Teaching with Technology: How can I include all students?”
  5. “Canvas for Graduate Student Instructors”
- Winter 2016: **Co-Instructor**, Diversity, Equity & Inclusion in Biology Classrooms and Labs, UNIVERSITY OF MICHIGAN; Grant supported reading group on stereotype threat & pedagogies for minimizing its effects.
- 2012 – 2016: **Graduate Student Instructor**, Program in Biology, UNIVERSITY OF MICHIGAN
- Fall 2016: EEB 483, Freshwater Ecosystems, with lab
  - Winter 2015: BIO 207: Introduction to Microbiology, with lab
  - Fall 2014: EEB 483, Freshwater Ecosystems, with lab
  - Winter 2013: BIO 173, Introduction to Biology Laboratory, with lab
  - Fall 2012: BIO 171, Introduction to Ecology and Evolutionary Biology
- 2008 – 2011: **Undergraduate Teaching Assistant**, School of Natural Science, HAMPSHIRE COLLEGE
- January 2011: NS 101, Gene Cloning, Introductory molecular biology course, with lab
  - Fall 2009: NS 264, Environmental Microbiology, with lab
  - Fall 2008: NS 353, Natural History of Infectious Disease
  - Fall 2008: NS 119, Culturing the Unculturable, Introductory microbiology course, with lab
- Undergraduate Mentees:** Dorcas Li (Current) through the [Changing Gears](#) program, Amadeus Twu (2015 – 2016), Kyle Buffin (2015), Edna Chiang (2013 – 2017), Alexandra Teodorescu (2013 – 2014)
- Other Mentoring Experience:** Mentored 3 first year international graduate students (various disciplines) through the Center for Research on Learning and Teaching and the English Language Institute. (Winter 2017 semester)

## Volunteer & Outreach

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- Winter 2014 – Present: **Executive Board member & Data Analyst**, Females Excelling More in Math, Engineering, and the Sciences (FEMMES), Organized and hosted bi-annual daylong science education event for ~200 fourth to sixth grade girls from underserved communities. Led the collection and analysis of survey data from 989 participants since Fall 2015.
- 2016 – Present: **Mentoring Committee Co-Chair**, Software & Data Carpentry Global Organizations, Host monthly committee meetings and discussions with global active instructors and trainees.
- 2014 – 2016: **Great Lakes Bowl Moderator**, Annual statewide qualifying competition for the National Ocean Sciences Bowl
- 2007 – 2009: **Outreach Activity Creator & Volunteer**, Girls Day in the Lab & Day in the Lab, Created a hands-on lab to make Winogradsky columns with 60 low-income middle school students and participated as a volunteer.

## Professional Service & Societies

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- 2015 – 2016: **Organizing Committee, Early Career Scientist Symposium (ECSS)** Organized 2 one-day conferences and invited seven early career & two keynote speakers, each. ~ 120 attendees.
1. March 12<sup>th</sup>, 2016: [Frontiers in Community Assembly](#)
  2. March 28<sup>th</sup>, 2015: [Ecosystems within Organisms: Ecology and Evolution of the Microbiome](#)
- 2015: **Departmental Retreat Committee**, Ecology & Evolutionary Biology, UNIVERSITY OF MICHIGAN
- Reviewer:** PeerJ
- Societies:** Ecological Society of America (ESA); International Society of Microbial Ecology (ISME); International Association of Great Lakes Research (IAGLR)

## Lab and Computational Skills

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- Computational:** R/RMarkdown, Unix, GitHub/git, some familiarity with SQL, Python
- Lab:** Aerobic/micro-aerobic/anaerobic bacterial culturing, batch & chemostat cultures, microscopy (general and transmission electron microscopy), Fluorescent in Situ Hybridization (FISH), nucleic acid extraction