

# Edna Chiang

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## EDUCATION

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### University of Wisconsin-Madison

Madison, WI

- Microbiology PhD Candidate, Life Sciences Communication and Biotechnology Minors Sep 2016 - Present
- Advisors: Dr. Garret Suen and Dr. Hannah Carey GPA: 4.00/4.00

### University of Michigan

Ann Arbor, MI

- Bachelor of Science with High Distinction Graduation: Apr 30, 2015
- Microbiology (High Honors) and Spanish GPA: 3.85/4.00
- Honors Thesis: Ecology of Verrucomicrobia in a Freshwater Estuary

## SCIENTIFIC PUBLICATIONS

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Regan MD, **Chiang E**, Martin SL, Porter WP, Assadi-Porter FM, Carey HV. (2019) Shifts in metabolic fuel use coincide with maximal rates of ventilation and body surface rewarming in an arousing hibernation. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* (In press).

**Chiang E**, Schmidt ML, Berry MA, Biddanda BA, Burtner AM, Johengen TH, Palladino D, Denef VJ (2018) Verrucomicrobia are prevalent in north-temperate freshwater lakes and display class-level preferences between lake habitats. *PLoS ONE* 13(3):e0195112. doi:10.1371/journal.pone.0195112

Schmidt ML, Biddanda, BA, Weinke AD, **Chiang E**, Januska F, Props R, Denef VJ (2017) Microhabitats shape diversity-productivity relationships in freshwater bacterial communities. *bioRxiv*.

Denef VJ, Carrick HJ, Cavaletto J, **Chiang E**, Johengen TH, Palladino D, Vanderploeg HA (2017) Lake bacterial assemblage composition is sensitive to biological disturbance caused by an invasive filter feeder. *mSphere* 2:e00189-17. doi:10.1128/mSphere.00189-17

Denef VJ, Mueller RS, **Chiang E**, Liebig JR, Vanderploeg HA (2016) Chloroflexi CL500 11 populations that predominate deep lake hypolimnion bacterioplankton rely on nitrogen-rich DOM metabolism and C1 compound oxidation. *Appl. Environ. Microbiol.* 82(5):1423-1432. doi:10.1128/AEM.03014-15.

McCarthy A, **Chiang E**, Schmidt ML, Denef VJ (2015) RNA Preservation Agents and Nucleic Acid Extraction Method Bias Perceived Bacterial Community Composition. *PLoS ONE* 10(3):e0121659. doi:10.1371/journal.pone.0121659

## SCIENTIFIC PRESENTATIONS

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Poster, "The hibernating squirrel microbiome responds to seasonal dietary shifts by altering its functional potential." 2019 Congress on Gastrointestinal Function, Apr 16, 2019, Chicago, IL.

Poster, "The hibernating squirrel microbiome responds to seasonal dietary shifts by altering its functional potential." Biotechnology Training Program Winter Banquet, Feb 28, 2019, Madison, WI.

Presentation, "Hibernation: How Do They Survive the Winter?" Science On Tap – Minocqua, Jan 2, 2019, Minocqua, WI.

Presentation, "Winter is Coming: A Stark Look at the Hibernator Microbiota." Microbiology Doctoral Training Program Student Seminar, Sep 26, 2018, Madison, WI

Poster, "The hibernating squirrel microbiome responds to seasonal dietary shifts by altering its functional potential." 17<sup>th</sup> International Symposium on Microbial Ecology, Aug 12, 2018, Leipzig, Germany.

Poster, "The hibernating squirrel microbiome responds to seasonal dietary shifts by altering its functional potential." 7<sup>th</sup> Conference on Beneficial Microbes, Jul 8, 2018, Madison, WI.

Poster, "Linking bacterial taxonomic shifts with function in hibernating squirrels." Madison Microbiome Meeting, Apr 25, 2018, Madison, WI.

Poster, "Linking bacterial taxonomic shifts with function in hibernating squirrels." Biotechnology Training Program Winter Banquet, Feb 29, 2018, Madison, WI.

Poster, "Ecology of freshwater Verrucomicrobia, an abundant yet understudied bacterial phylum." Beckman Symposium, Aug 8, 2015, Irvine, CA.

Poster, "Ecology of Verrucomicrobia in a Freshwater Estuary." American Society of Microbiology General Meeting, Jun 2, 2015, New Orleans, LA.

Poster, "Ecology of Verrucomicrobia in a Freshwater Estuary." Program in Biology Undergraduate Research Poster Session, Jun 2, 2015, Ann Arbor, MI.

Presentation, "RNA Preservation Agents and Nucleic Acid Extraction Method Bias Perceived Bacterial Community Composition." University of Michigan Microbial Ecology Working Group, Oct 30, 2014, Ann Arbor, MI

Poster, "Deceptive sexual swellings as a counterstrategy to infanticide." Undergraduate Research Opportunity Symposium, Apr 18, 2012, Ann Arbor, MI.

## RESEARCH EXPERIENCE

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**Graduate Research Assistant, Dr. Garret Suen and Dr. Hannah Carey, University of Wisconsin-Madison**

- Linked bacterial taxonomy to function in hibernating 13-lined ground squirrels (*Ictidomys tridecemlineatus*) Jan 2017 – Present
- Prepared DNA libraries for Illumina MiSeq sequencing
- Analyzed bacterial and fungal amplicon sequencing data using mothur and R, and analyzed metagenomics
- Performed stable isotope assisted labeling experiments

**Undergraduate Researcher / Lab Technician, Dr. Vincent Denef, University of Michigan** Sep 2012 – Aug 2016

- Optimized fluorescent *in situ* hybridization microscopy protocol, extracted DNA/RNA, prepared samples for amplicon sequencing, created cultures
- Collected water and sediment sample from Muskegon Lake and Lake Michigan
- Applied statistical and bioinformatics techniques to analyze bacterial 16S rRNA data using mothur and R

**Undergraduate Researcher, Ruthven Museum of Natural History, University of Michigan** May 2012 – Jul 2012

- Analyzed mite abundance and distribution on preserved lizard specimens

**Undergraduate Research Opportunity Student, Dr. Jacinta Beehner, University of Michigan** Sep 2011 – Apr 2011

- Compared hormone levels with chest patch sexual swellings in gelada baboons (*Theropithecus gelada*)
- Conducted hormone elutions and assays, analyzed chest patch color using Photoshop

## AWARDS

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- NSF Graduate Research Fellowship Sep 2018 – Aug 2023
- NIH Biotechnology Training Program Traineeship Jan 2017 – Aug 2019
- University of Wisconsin-Madison Student Research Travel Grant Sep 2018
- Bacteriology Graduate Student Travel Award May 2018
- Romance Languages and Literatures Student Achievement Award Apr 2015
- Phi Beta Kappa Mar 2015

- Beckman Scholars Fellowship	May 2014 – Aug 2015
- American Society of Microbiology Undergraduate Research Fellowship	May 2014 – Dec 2014
- University of Michigan Honors Summer Fellowship	May 2014 – Aug 2014
- Sophomore Honors Award	Nov 2013
- Summer Vincenti Study Abroad Scholarship	Apr 2013
- Honors Travel Grant	Mar 2013
- James B. Angell Scholar	Mar 2013

## TEACHING EXPERIENCE

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<b>Co-Instructor, Biotechnology Center, University of Wisconsin-Madison</b>	Nov 2017 – Present
- Co-instructed workshops teaching analysis of amplicon sequencing data with mother and R	
<b>Graduate Teaching Assistant, University of Wisconsin-Madison</b>	Sep 2017 – Dec 2017
- Assisted in teaching Emerging Infectious Diseases and Bioterrorism (MM&I 554)	
- Encouraged student discussion, graded exams and homework	
<b>Guest Instructor, Microbiology Capstone Course, University of Wisconsin-Madison</b>	Jan 2017 – May 2017
- Designed student research projects in collaboration with Dr. Robin Kurtz and Dr. Melissa Christopherson	
- Collected samples for students, taught bioinformatics, and directly aided in bacterial genome assembly	
<b>Biochemistry Study Group Leader, Science Learning Center, University of Michigan</b>	Sep 2013 – Apr 2015
- Created engaging activities to help students enhance their understanding of biochemistry	
- Formed strong sense of community to encourage collaborative discussion between students	

## VOLUNTEER EXPERIENCE

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<b>Invited Speaker, Science On Tap – Minocqua</b>	Jan 2, 2019
- Presented two stories about hibernation from the perspective of a hibernating squirrel and its gut microbes	
- Engaged in informal discussion with local Minocqua, WI residents about implications of hibernation research	
<b>Social Media Manager, Carey Lab, University of Wisconsin-Madison</b>	Nov 2018 - Present
- Administered Carey Lab twitter handle (@13liner) to increase public recognition and interaction by highlight work from Carey Lab members and collaborators	
<b>Gaining STEAM! Scientist, JKK Comics, University of Wisconsin-Madison</b>	Oct 2018 – Present
- Created a comic book about hibernation microbiology by integrating science, story-telling, and art through a collaboration with JKK Comics and local Madison artists	
- Incorporated the comic into outreach activities to improve participant engagement and learning	
<b>Wisconsin Idea STEM Fellow, University of Wisconsin-Madison</b>	Jun 2018 – Present
- Learned interactive teaching strategies and outreach evaluation techniques	
- Developed an interactive hibernation microbiology outreach activity for elementary school-aged children	
- Worked with fellows-in-training to develop and improve their outreach activities	
<b>Panelist, NSF Broader Impacts Workshop, University of Wisconsin-Madison</b>	Oct 3, 2018
- Provided consultation to students about improving their broader impacts	
<b>Social Media Administrator, Microbiology Doctoral Training Program, UW-Madison</b>	Nov 2017 - Present
- Managed Microbiology Doctoral Training Program (MDTP) twitter handle (@UWMadisonMDTP) and facebook page	
- Increased public recognition by highlight news and work from MDTP trainers and students	

- Designer and Volunteer, Science Saturday**, University of Wisconsin-Madison Sep 2017 - Present
- Co-developed and implemented outreach activities with the Wisconsin Institute for Discovery and Morgridge Research Institute to teach hibernation physiology and microbe-host physiology
- Volunteer, Biology Outreach Club**, University of Wisconsin-Madison Mar 31, 2017
- Led "Disco Microbes" activity teaching the importance of proper hand washing at Science Expeditions
- Judge, Capital Science & Engineering Fair** Feb 18, 2017
- Evaluated science projects from Wisconsin high school students and determined prize winners
- Social Media Manager, Suen Lab**, University of Wisconsin-Madison Dec 2016 - Present
- Administered Suen Lab twitter handle (@suenlab) to increase public recognition by highlighting work from Suen Lab members and collaborators
  - Established the new tradition #MooMonday to share ruminant-related facts and increase audience engagement
- Volunteer, Wisconsin Science Festival**, University of Wisconsin-Madison Oct 21, 2016
- Led interactive activity employing color-sensing robots
- Spanish Translator, Translate-a-thon**, University of Michigan Oct 2014
- Translated multiple documents from English to Spanish for local non-profit organizations aiding immigrants and low-income families
- Worker and Interpreter, Jatun Sacha**, Galapagos Islands Jul 2013 – Aug 2013
- Participated in environmental conservation by working with local farmers to develop sustainable farming practices, removing invasive species, and cleaning tortoise nest sites
  - Facilitated communication between volunteers and staff by interpreting English and Spanish

## LEADERSHIP EXPERIENCE

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- Student Recruitment Team, University of Wisconsin-Madison, MDTP** Aug 2017 – Apr 2019
- Organized four recruitment weekends to welcome prospective PhD students and share the research and environment that UW-Madison offers
  - Coordinated student hosts, faculty interviews, student panels, activities, and dinner reservations
- Editorial Board Member, University of Michigan Undergraduate Research Journal** Sep 2012 – Apr 2015
- Assisted students in improving writing submissions for publication
  - Coordinated meetings with corporate sponsors and university departments to increase journal funding
  - Performed outreach by conducting presentations to inform undergraduates about research opportunities
- Co-President, Arabian Dance Ensemble**, University of Michigan Sep 2011 – Apr 2015
- Instructed beginning belly dance class and created choreography to teach students
  - Oversaw usage of group funds, coordinated costume purchases, and organized performances

## SKILLS

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- **Lab Skills:** DNA/RNA extraction, PCR, gel electrophoresis, DNA library preparation, Illumina MiSeq sequencing, fluorescent *in situ* hybridization microscopy, limnology field work and sample collection, squirrel trapping
- **Bioinformatics:** R (advanced), perl (beginner), python (beginner), mothur (advanced), amplicon sequencing analysis, metagenomic analysis
- **Languages:** English (fluent), Spanish (fluent), Mandarin Chinese (intermediate)

## PROFESSIONAL DEVELOPMENT

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Life Sciences Communication Symposium	<i>Jan 2019 – May 2019</i>
Scientific Writing	<i>Jan 2019 – May 2019</i>
Getting the message across	<i>Oct 12, 2018</i>
Life as a Scientific Editor: It's all about Communication	<i>Sep 20, 2018</i>
Wisconsin Idea STEM Fellows	<i>Jun 27, 2017 - Present</i>
Life Sciences Career Day	<i>Apr 13, 2017</i>
Empowering People to Break the Prejudice Habit: Creating Inclusion and Overcoming Bias	<i>Dec 14, 2017</i>
Building Your Networking Confidence	<i>Nov 30, 2017</i>
DELTA – Communicating Science with Everyone	<i>Sep 2017 – Dec 2017</i>
Improv for Scientists (Medicine 710)	<i>Sep 2017 – Oct 2017</i>
DELTA – NSF Application Broader Impacts Workshop	<i>Oct 4, 2017</i>
Oral Science Communication Through Improv Workshop	<i>Jun 26, 2017</i>
CIRTL – Developing a CV or Resume	<i>Jun 22, 2017</i>
What Graduate Students Need to Know about Successful Negotiation	<i>Apr 13, 2017</i>
Science Writing as a Career	<i>Apr 06, 2017</i>
Careers in Government Research Labs	<i>Mar 28, 2017</i>
Public Opinion of Life Science Issues (LSC 902)	<i>Sep 2016 – Dec 2016</i>
Writing Science as a Story (Comp Bio 675)	<i>Nov 2016 – Dec 2016</i>

## Journal Peer-Review

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PLOS ONE	<i>Feb 2019</i>
Science (co-reviewer)	<i>Jan 2019</i>
Scientific Reports (co-reviewer)	<i>Oct 2018</i>
Environmental Microbiology (co-reviewer)	<i>Apr 2018</i>

## Mentees

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Yuhan Xie, Computer Science Undergraduate	<i>Jun 2018 – Aug 2018</i>
Hannah Grauer, High Schooler	<i>Sep 2017 – Oct 2018</i>
Darby Gilfillan, Visiting Undergraduate	<i>Jul 2017 – Aug 2017</i>