


# E. Maggie Sogin

*Curriculum Vitae*

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Dr. (Emilia) Maggie Sogin  
University of California, Merced  
 <https://github.com/esogin>

Assistant Professor  
Molecular and Cell Biology  
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## RESEARCH BACKGROUND

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### ECOLOGY AND THE ENVIRONMENT

Investigate the effect of the environment on host-microbial interactions using metabolomics, metagenomics and metatranscriptomics approaches coupled to experimental manipulations

### MICROBIOME INTERACTIONS

Integrate metabolic data and incubation studies to determine microbial function

## EDUCATION & PROFESSIONAL EXPERIENCE

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- Since 01/2021* **Assistant Professor**, Department of Molecular and Cellular Biology, University of California at Merced, Merced, California, USA
- 01/2020 to 11/2020 **Project Leader**, Department of Symbiosis, Max Planck Institute for Marine Microbiology, Bremen, DE
- Leadership role in Department including student mentorship and lead on major departmental project
- 05/2019 to 11/2020 **MarMic Faculty**, Max Planck Research School for Marine Microbiology, Bremen, DE
- Mentorship of Bachelors, Masters and PhD students
  - Developing and teaching graduate course materials, workshops, guest lectures
- 01/2016 to 12/2019 **Post-doctoral Scientist**, Department of Symbiosis, Max Planck Institute for Marine Microbiology, Bremen, DE
- Analytical methods for marine metabolomics
  - Coastal sediment biogeochemistry
  - Mass spectrometry imaging of symbiotic associations
  - Metagenomic and metatranscriptomics of marine rhizospheres
  - Integrative exploratory analysis in 'omics research
- 04/2015 to 12/2015 **Post-doctoral Associate**, Hawaii Institute of Marine Biology, Kaneohe, HI
- Preparation of tag sequencing libraries for Illumina sequencing
- 04/2015 **PhD, University of Hawaii, Manoa, HI**
- Department of Zoology & Hawaii Institute of Marine Biology  
Advisor: Dr. Ruth D. Gates  
*Thesis title:* A metabolomic investigation in reef building corals: development and utility of metabolite profiling tools

- 08/2014 **Research Assistant**, Center for Microbial Oceanography, Research and Education,  
to University of Hawaii, Manoa, HI
- 04/2015
- Preparation of tag sequencing libraries for Illumina sequencing
  - Integration of metabolomics and tag sequencing data
- 2011 **Hawaii EPSCoR Graduate Fellow**, Hawaii Institute of Marine Biology, Kaneohe, HI
- to
- Developed metabolomic tools for reef-building corals
- 2014
- Performed field and laboratory experiments
- 2009 **Teaching Assistant**, University of Hawaii, Manoa, HI
- to
- Responsible for teaching undergraduate laboratories
- 2011
- 05/2009 **ScB, Honors, Brown University, Providence, RI**
- Marine Biology, Department of Ecology and Evolutionary Biology  
Advisors: Mark Bertness, Anne Cohen (Woods Hole Oceanographic Institute)  
*Thesis title:* The impacts of ocean acidification on the development of the larval shell of the New England Bay Scallop (*Argopecten irradians*)
- 2008 **Three Seas Program, Northeastern University, Boston, MA**
- Trained in field and laboratory techniques for marine ecologists
  - AAUS Scientific certification

## PUBLICATIONS

Coauthors: \*\* Undergraduate student ; \* Graduate student

[google scholar](#)

10. **Sogin EM**, Leisch N, Dubilier N, Liebeke M (2020) Chemosynthetic symbioses. **Current Biology**.  
<https://doi.org/10.1016/j.cub.2020.07.050>  
*\*Invited primer into the field*
9. **Sogin EM**, Puskas E\*\*, Dubilier N, Liebeke M. (2019) Marine metabolomics: a method for the non-targeted measurement of metabolites in seawater by gas-chromatography mass spectrometry. **mSystems**. <https://doi.org/10.1128/mSystems.00638-19>  
*\*Article was selected as the Editors' Pick*  
Role: I developed a new method for describing metabolite composition in seawater samples using GC-MS techniques that until now were unavailable for seawater samples.
8. Geier B\*, **Sogin EM**, Janda M\*, Kompauer M, Michellod D\*, Dubilier N, Liebeke M. (2019) Spatial metabolomics of in situ, host-microbe interactions. **Nature Microbiology**,  
<https://doi.org/10.1101/555045>  
Role: I developed the bioinformatic pipeline needed to combine mass spectrometry imaging data with fluorescence in situ microscopy data that is the foundation of metaFISH.
7. Wilkins LGE, Leray M, Yuen B, Peixoto R, Pereira TJ, Bink HM, Coil DA, Duffy JE, Herre EA, Lessios H, Lucey N, Mejia LC, O'Dea A, Rasher DB, Sharp K, **Sogin EM**, Thacker RW, Vega Thurber R,

Wcislo WT, Wilbanks EG, Eisen JA. (2019) Host-associated microbiomes and their roles in marine ecosystem functions. *PloS Biology*. doi: [10.1371/journal.pbio.3000533](https://doi.org/10.1371/journal.pbio.3000533)

6. **Sogin EM**, Putnam HM, Nelson CE, Anderson P, Gates RD (2017). Interspecific congruency of the coral holobiont metabolome with symbiotic bacteria, archaea and *Symbiodinium* communities. *Environmental Microbiology Reports*. doi: [10.1111/1758-2229.12541](https://doi.org/10.1111/1758-2229.12541)

This work involved integrating microbial community data with metabolomics results using a correlative analytical approach.

5. **Sogin EM**, Putnam HM, Anderson P, Gates RD (2016). Metabolomic signatures of increases in temperature and ocean acidification from the reef-building coral, *Pocillopora damicornis*. *Metabolomics*. doi: [10.007/11306-016-0987-8](https://doi.org/10.007/11306-016-0987-8)

This work involved integrating metabolomics data with physiological metrics of coral health.

4. Claar CD, Fabina NS, Putnam HM, Cunnning R, **Sogin EM**, Baum JK, and Gates RD (2015). Embracing complexity in coral-algal symbiosis. *Algal Symbioses*. (Book Chapter)

3. **Sogin EM**, Anderson P, Williams P, Chen CS, Gates RD (2014). Application of <sup>1</sup>H-NMR metabolomic profiling for reef-building corals. *PLoS One*: doi: [10.1371/journal.pone.0111274](https://doi.org/10.1371/journal.pone.0111274)

2. Yost DM, Wang LH, Fan TY, Chen CS, Lee RW, **Sogin EM** and Gates RD (2013). Diversity in skeletal architecture influences biological heterogeneity and *Symbiodinium* habitat in corals. *Zoology* 116(5): 262-269

1. Allen JJ, Mäthger LM, Barbosa A, Buresch KC, **Sogin E**, et. al. (2010) Cuttlefish dynamic camouflage: responses to substrate choice and integration of multiple visual cues. *Proceedings of the Royal Society: Biological Sciences* 1684:1031-1039

-Pre-prints in preparation for submission-

**Sogin EM**, Michellod D\*, Gruber-Vodicka H, Bourceau P\*, Geier B, Meier D\*, Seidel M, Hach PF\*, Procaccini G, Dubilier N, Liebeke M. (2019b) Seagrasses excrete sugars to their rhizosphere making them the sweet spots in the sea. *bioRxiv*, <https://doi.org/10.1101/797522>

Role: I am leading a collaborative team of researchers to define the biogeochemistry and microbial communities of seagrass rhizospheres.

Submission pending addition of metatranscriptomics data currently missing in bioRxiv preprint

[Link to outreach article describing our study system](#)

## AWARDS

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Sign up! Career building workshop for excellent post-docs part of the MPG (2019) (5000 €)  
Tom Brock Award for Most Innovative Research by an Early Career Scientist, International Society  
for Microbial Ecology Symposium, Leipzig, DE (2018)( 1000 €) [press release](#)  
Best Digital Poster Prize, Hawaii EPSCoR (2013) (\$2000)  
Mai Tegner Award, Best paper in applied ecology, Western society of Naturalists, Vancouver, WA  
(2011)

## FELLOWSHIPS

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**Sogin EM (PI)** (2011-2014) University of Hawaii EPSCoR ECOGEM Fellow (\$77,000)  
**Sogin EM (PI)** (2014) University of Hawaii Dai Ho Chun Fellowship (\$1500)  
**Sogin EM (PI)** (2012) NPS George Melendez Wright Climate Change Fellowship (\$19,962)  
**Sogin EM (PI)** (2011) NSF East Asian and Pacific Island Summer Institute Fellow (\$8,100)

## GRANTS RECIEVED

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Eisen J (PI), Stachowicz J (CO-PI), **Sogin EM (CO-PI)**. (2020–2022) *Zostera marina* as a model  
systems for marine symbioses, Gordon and Betty Moore Foundation (\$300,000)  
**Sogin EM (PI)**. (2014) Graduate student organization travel grant (\$450)  
**Sogin EM (PI)**. (2012) Marine Technological Society Graduate Funding (\$2000)  
**Sogin EM (PI)**. (2011) Graduate student organization travel grant (\$1600)  
**Sogin EM (PI)**. (2011) Graduate student organization travel grant (\$400)  
**Sogin EM (PI)**. (2011) Graduate student organization travel grant (\$688)  
**Sogin EM (PI)**. (2010) Edmonson Foundation Grant in Aid of Research (\$750)

## STUDENT MENTORSHIP

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09/2018 - current	<b>Caroline Zeidler, Masters and PhD Student</b> Thesis: <i>Bioplastic-eating animals: PHA-degrading enzymes in a chemosymbiotic worm</i>
03/2019	<b>Miriam Sternel, Bachelors Student</b> Thesis: <i>Exocellular metabolomics of three spring blooms in the North Sea</i> Currently a Masters student at the University of Oldenburg
2017	<b>David Benito, MarMic Student</b> <i>Lab rotation, Mass spectrometry imaging of gutless oligochaetes</i> Currently a PhD student at the Max Planck Institute for Marine Microbiology
2017	<b>Matthew Schechter, MarMic Student</b> Lab rotation, Integrating metagenomics and metabolomics data from a deep-sea mussel Currently a PhD student at the University of Chicago
2015	<b>Jennifer Pendleton, High School Student</b> St Joseph's Academy for girls, St. Louis MO Virtual mentorship

- 2014      **Rene Francolini**, Undergraduate Student  
Carnegie Mellon University  
Currently a researcher at Woods Hole Oceanographic Institute
- 2013      **Laura Michenfelder**, High School Student  
St Joseph's Academy for girls, St. Louis MO  
Virtual mentorship
- 2013      **Kelly Anderson**, Marine Science Coordinator  
Coordinator for American Samoa Community College  
*\*I mentored Kelly in laboratory techniques so she could share them with her students in American Samoa*
- 2012      **Daniel K. Jennings-Kam**, Undergraduate student  
Native Hawaiian student at University of Hawaii at Hilo

## TEACHING EXPERIENCE

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- 2020      **Symbiosis Practical Laboratory: Metabolomics**  
Max Planck Institute for Marine Microbiology  
Masters students  
*Co-developed & taught course material for a practical laboratory for MarMic masters students*
- 2018-2020      **Making plots with ggplot2**  
Max Planck Institute for Marine Microbiology  
Masters and PhD student workshop  
*Developed and taught course material for making publication quality figures in R*

## COMMUNITY SERVICE & OUTREACH ACTIVITIES

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- 2020      Co-editor for upcoming Special Frontiers Issue In Marine Science: Applying metabolomics to questions in marine ecology and ecophysiology
- 2020      Co-convenor for upcoming Early Career Scientist session at International Society for Microbial Ecology (ISME-18), Cape Town, South Africa
- 2020      Co-chair for upcoming symposium session at International Coral Reef Symposium (ICRS-14), Bremen, Germany  
*Theme 3- How do metabolic processes underpin the health and function of reef ecosystems?*
- 2014, 2012      Volunteer, Testers Symposium, Honolulu, HI
- 2013      Public presentation, "Together forever, I can never escape you!", Nerd Night Honolulu, HI
- 2012      Volunteer, Center for Ocean of Science Education and Excellence (Ocean Exposition), Honolulu, HI
- 2012      Volunteer, Regional Science Fair Judge, Honolulu, HI
- 2010- 2011      Graduate Student Representative, University of Hawaii at Manoa, Zoology Department, Honolulu, HI

Invited Peer review for following journals:

*ISME, Scientific Reports, Marine Chemistry, Coral Reefs, Comparative biochemistry and physiology, Metabolomics*

AD Hoc reviewer for NSF: OCE-BIO (2017)

## RECENT INVITED TALKS

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- 2020      *Metabolites shape host-microbial interactions in the sea*. Invited speaker at UC Merced, California.
- 2019      *Seagrasses secrete sugars to their rhizospheres making them the sweet spots in the sea*. Invited speaker for the Isthmobiome Workshop, Bocas del Toro, Panama
- 2019      *Exploring the metabolite interface of host-microbe interactions in the sea*. Guest lecture for master's course Current trends in Ecology and Evolution at Universiteit van Amsterdam.
- 2018      *From a gutless worm to sweetening of the seas*. Invited seminar for the Department of Fundamental Microbiology, Université de Lausanne

## SELECT PRESENTATIONS

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† Oral Presentation; ‡ Poster Presentation

† **Sogin EM**, Meier D, Gruber-Vodicka H, Seidel M, Michellod D, Hach PF, Dittmar T, Dubilier N, Liebeke M (2018). Sweetening the sea: sugars excreted by seagrass stimulate a marine rhizosphere. *17th International Symposium on Microbial Ecology*. Leipzig, Germany.

\*Awarded Tom Brock Award for most innovative research by an early career scientist

‡ **Sogin EM**, Wippler J, Michellod D, Geier B, Dubilier N, Liebeke M (2017) Leveraging metabolomics to explore nutrient acquisition in a gutless marine worm. *GRC: Animal-Microbe Symbiosis*. Mount Snow, VT, USA

† **Sogin EM**, Putnam HM, Nelson CE, Anderson P, Gates RD (2016). Interspecific congruency of the coral holobiont metabolome with symbiotic bacteria, archaea and *Symbiodinium* communities. *13<sup>th</sup> International Coral Reef Symposium*, Honolulu, HI, USA

† **Sogin EM**, Putnam H and Gates RD (2014) Variation in coral metabolite production after exposure to global climate change stressors is species specific. *Ocean Sciences Meeting*, Honolulu, HI, USA

‡ **Sogin EM**, Anderson P, Williams P, Horgen FD and Gates RD (2013) Betaine expression links to coral performance. *EPSCoR State Wide Meeting*, Knoxville, TN, USA

† **Sogin EM** and RD Gates (2013) Linking coral holobiont communities to metabolite production. *Moorea Coral Reef Long Term Ecological Research All Investigators Meeting*, Santa Barbra, CA

† **Sogin EM**, Anderson PA, Chen T, Wang LH, Fan TY, Chen CSC, Horgen D, Gates RD (2012) Using metabolomics to investigate coral-*Symbiodinium* unions. 12<sup>th</sup> *International Coral Reef Symposium*, Cairns, Australia