

# ALISON L. GOULD

California Academy of Sciences  
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## EDUCATION

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2016      **Ph.D. Ecology and Evolutionary Biology** • University of Michigan • Ann Arbor, MI  
2009      **M.S. Marine Biology** • San Francisco State University • Estuary & Ocean Science Center  
2005      **B.A. Mathematics • Biology** • University of Virginia • Charlottesville, VA

## APPOINTMENTS

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Current    **Research Scientist** • California Academy of Sciences (CAS) • Ichthyology • Microbiology  
              **Adjunct Research Professor** • San Francisco State University (SFSU) • Biology  
              **Sandler Faculty Fellow Affiliate** • University of California, San Francisco (UCSF)  
2018        **NSF Postdoctoral Fellow in Biology** • California Academy of Sciences • Ichthyology  
2017        **Postdoctoral Fellow** • University of California, Berkeley • Molecular and Cell Biology  
2015-16     **Rackham Predoctoral Fellow** • University of Michigan (UM)  
2013-14     **Carl L. and Linda Hubbs Fellow** • University of Michigan Museum of Zoology (UMMZ)  
2012        **Assistant Curator** • UMMZ • Division of Ichthyology  
2009-10     **Research Technician** • Taxon Biosciences, Inc. • Tiburon, CA

## PUBLICATIONS

\*undergraduate students mentored

**Gould, AL**, JB Henderson and AW Lam (2022) Chromosome-level genome assembly of the bioluminescent cardinalfish *Siphamia tubifer*, an emerging model for symbiosis research. *Genome Biology and Evolution*. Evac004

**Gould, AL**, A Gaisiner and A Fritts-Penniman (2021) Museum genomics illuminate the high specificity of a bioluminescent symbiosis across a genus of reef fish. *Frontiers in Ecology and Evolution* 9:630207

**Gould, AL** and PV Dunlap (2019) Shedding light on specificity: population genomic structure of a symbiosis between a coral reef fish and luminous bacterium. *Frontiers in Microbiology* 10:2670

**Gould, AL**, V Zhang, B Obadia, A Gavryushkin, L Lamberti, N Beerewinkel, E Jones, J Carlson and W Ludington (2018) Microbiome interactions shape host fitness. *PNAS* 115(51):E11951–E11960

**Gould, AL** and PV Dunlap (2017) Genomic analysis of a cardinalfish with larval homing potential reveals genetic admixture in the Okinawa Islands. *Molecular Ecology* 26:3870-82

**Gould, AL**, \*K Dougan, \*S Koenigbauer and PV Dunlap (2016) Life history of the symbiotically luminous coral reef fish *Siphamia tubifer* (Perciformes: Apogonidae). *J Fish Biology* 89:1363-1377

**Gould, AL**, S Harii and PV Dunlap (2015) Cues from the reef: olfactory preferences of a symbiotically luminous cardinalfish. *Coral Reefs* 34:673–677

**Gould, AL**, S Harii and PV Dunlap (2014) Homing behavior and site fidelity of the symbiotically luminous cardinalfish, *Siphamia tubifer* (Perciformes: Apogonidae). *Marine Biology* 161:2897-907

Kimmerer, WJ, T Ignoffo, A Slaughter and **AL Gould** (2014) Food-limited reproduction and growth of three copepod species in the low-salinity zone of the San Francisco Estuary. *J Plankton Research* 0:1-14

Dunlap, PV, **AL Gould**, ML Wittenrich and M Nakamura (2012) Symbiosis initiation in the bacterially luminous sea urchin cardinalfish *Siphamia versicolor* (Perciformes: Apogonidae). *J Fish Biol* 81:1340-56

Urbanczyk, H, Y Ogura, TA Hendry, **AL Gould**, N Kiwaki, JT Atkinson, T Hayashi and PV Dunlap (2011) Genome sequence of *Photobacterium mandapamensis* strain svers. 1.1, the bioluminescent symbiont of the cardinal fish *Siphamia versicolor*. *J Bacteriology* 193:3144-45

**Gould, AL** and WJ Kimmerer (2010) Development, growth, and reproduction of the cyclopoid copepod *Limnoithona tetraspina* in upper San Francisco Estuary. *Marine Ecology Progress Series* 412:163-77

Kimmerer, WJ and **AL Gould** (2010) A Bayesian approach to estimating copepod development times from stage frequency data. *Limnol Oceanogr Methods* 8:118-26

Preprints / in review / in prep:

**Gould, AL** and JB Henderson (*in prep*) Highly contiguous genome assemblies of luminous bacterial symbionts from fish light organs using nanopore sequencing technology

**Gould, AL** and SA Donohoo (*in prep*) Unique strain-level symbiont communities between individuals and populations of a bioluminescent fish host.

**Gould, AL**, T Lai and JB Henderson (*in prep*) Decoding symbiosis: dual-RNAseq reveals differential gene expression for a fish host and bacterial symbiont when in association

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## GRANTS AND AWARDS

2018-23	<b>NIH Director's Early Independence Award (DP5)</b> • NIH-DP5-OD026405-01	\$1,250,000
	"Investigating mechanisms of specificity in a bioluminescent vertebrate-bacteria symbiosis"	
2017-19	<b>NSF Postdoctoral Fellowship in Biology</b> • NSF-DBI-1711430	\$138,000
	"Investigating modes of ecological speciation in a symbiotically luminous coral reef fish"	
2014	<b>NSF Doctoral Dissertation Improvement Grant (DDIG)</b> • NSF-DEB-1405286	\$17,510
	"DISSERTATION RESEARCH: The evolutionary ecology of a vertebrate-microbe symbiosis"	
2014	<b>PADI Foundation Grant</b> • PADI-11180	\$4,550
	"The use of olfactory cues for homing and settlement by a bioluminescent cardinalfish"	
2014	<b>Graduate Women in Science (GWIS) National Fellowship</b> • Honorable Mention	
2014	<b>Susan Lipschutz Award for women scholars</b> • Rackham Graduate School, UM	\$6,000
2013-15	<b>Ichthyology Graduate Student Awards</b> • UMMZ	\$6,220
2013	<b>Robert and Francis Miller Ichthyology Award</b> • UMMZ	\$1,000
2013	<b>Rackham International Travel Grant</b> • UM	\$1,200
2012	<b>Rackham International Research Award</b> • UM	\$5,000
2011-13	<b>Rackham Graduate Student Research Grants</b> • UM	\$4,500
2011-12	<b>Department of Ecology and Evolutionary Biology Block Grants</b> • UM	\$3,258
2008	<b>Robert W. Maxwell Scholarship</b> • San Francisco State University (SFSU)	\$4,000

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## FELLOWSHIPS

2017-19	<b>NSF Postdoctoral Fellowship in Biology (PRFB)</b> • California Academy of Sciences (CAS)
2015-16	<b>Rackham Predoctoral Fellowship</b> • Rackham Graduate School, University of Michigan
2013-14	<b>Carl and Linda Hubbs' Fellowship</b> • University of Michigan Museum of Zoology
2011	<b>NSF East Asia and the Pacific Summer Institute (EAPSI) Fellowship</b> University of the Ryukyus • Okinawa, Japan
2004	<b>NSF Research Experience for Undergraduates (REU)</b> University of Alaska, Southeast • Juneau, Alaska

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## OTHER PUBLICATIONS AND PATENTS

E Jones, L Lamberti, **AL Gould**, V Zhang, B Obadia, A Gavryushkin, N Beerenwinkel, J Carlson and W Ludington (2019) How do microbes shape fruit fly fitness? *Biomedical Science Journal for Teens*

Ashby, M, L Wood, U Lidström, C Clarke, **AL Gould**, D Strapoc, AJ Lambo, BJ Huizinga (2015) US Patent 9,206,680 B2. Compositions and methods for identifying and modifying carbonaceous compositions

## **TEACHING EXPERIENCE**

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2015-21    **Guest Lecturer** • Animal Diversity • Marine Ecology • Microbiology  
2014       **Ecology Lab (EEB372)** • Graduate Student Instructor • University of Michigan  
2011-13    **Animal Diversity (BIO288)** • Graduate Student Instructor • University of Michigan  
2010       **Intro. Ecology & Evolution (BIO171)** • Graduate Student Instructor • University of Michigan  
2008       **Biological Oceanography (BIO582)** • Teaching Assistant • San Francisco State University

## **INVITED SEMINARS**

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2022       University of North Carolina, Chapel Hill • Biology Department • Virtual Seminar  
2022       University of San Francisco • Biology Department • San Francisco, CA  
2021       Stanford University • Biology Department • Eco/Evo Lunch Seminar • Palo Alto, CA  
2021       University of California, Davis • Center for Population Biology Seminar • Virtual Seminar  
2021       Museum Genomics and HiFi Sequencing Webinar • Pacific Biosciences  
2020       San Diego State University • Biology Department Seminar • San Diego, CA  
2019       Washington State University • Biological Sciences Seminar • Vancouver, WA  
2019       Carnegie Institution for Science • Symposium on Biological Interactions • Baltimore, MD  
2019       Stanford University • Biology Department • Eco/Evo Lunch Seminar • Palo Alto, CA  
2019       Harvard University • Department of Organismic and Evolutionary Biology • Cambridge, MA  
2018       Institute for Biodiversity Science and Sustainability Seminar (CAS) • San Francisco, CA  
2017       Estuary and Ocean Science Center • SFSU • Rosenberg Institute Seminar • Tiburon, CA  
2017       Bay Area Postdoc Symposium • Buck Institute for Research on Aging • Novato, CA

## **CONTRIBUTED TALKS**

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2022       10<sup>th</sup> Annual Symbiosis Meeting • Yosemite, CA  
2021       Biodiversity Genomics 2021 Virtual Conference • Plenary speaker  
2020       Society for Integrative and Comparative Biology • Austin, TX  
2019       2<sup>nd</sup> International Fish Microbiota Workshop • Eugene, OR  
2018       7<sup>th</sup> Conference on Beneficial Microbes • Madison, WI  
2017       7<sup>th</sup> Annual Symbiosis Meeting • Yosemite, CA  
2016       13<sup>th</sup> International Coral Reefs Symposium • Honolulu, HI  
2016       Western Society of Naturalists Annual Meeting • Monterey, CA  
2015       Fish at Night Symposium • Miami, FL  
2015       Western Society of Naturalists Annual Meeting • Sacramento, CA  
2015       Benthic Ecology Meeting • Québec City, Québec, Canada  
2014       Ecological Society of America Annual Meeting • Sacramento, CA  
2014       Western Society of Naturalists Annual Meeting • Tacoma, WA  
2013       9<sup>th</sup> Indo-Pacific Fish Conference • Okinawa, Japan  
2009       Coastal and Estuarine Research Federation Conference • Portland, OR

## **SERVICE AND OUTREACH**

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2022       Presenter • Science Under the Sea Stars; Glow in the Park • California Academy of Sciences  
2021       Presenter • NightSchool • California Academy of Sciences  
2020       Panelist • NIH Workshop on Validation of Animal Models and Tools for Biomedical Research: Validation of Non-Zebrafish Aquatic Models for Preclinical Research  
2020       NSF Review Panelist • Postdoctoral Research Fellowship in Biology (BIO)  
2019-22    Volunteer • Skype a Scientist  
2019       Co-coordinator • IBSS Seminar Series • California Academy of Sciences

2019	Panelist • Teen Environmental Education Mentorship (TEEM) Career Panel
2018-22	Volunteer • NightLife events at CAS (guest panelist for Women in Science night)
2018-20	Project Mentor • Careers in Science Internship Program California Academy of Sciences
2014-16	Regional Coordinator • Great Lakes Bowl, National Ocean Science Bowl
2014-15	Elected Representative • Admissions Committee, EEB Department (UM)
2013-14	Volunteer • Females Excelling More in Mathematics, Engineering & the Sciences (FEMMES)
2012-13	President • Graduate Researchers in Ecology and Evolutionary Biology (UM)
2011-13	Volunteer • 826michigan Writing Workshops
2011-12	Elected Representative • Executive Committee, EEB Department (UM)
2008-14	Volunteer Judge • Sea Lion Bowl • Great Lakes Bowl • National Ocean Science Bowl
2006-09	Volunteer • Expanding Your Horizons, Women in Math and Science
Peer Reviewer	<i>eLife, Evolution, Molc Ecol, Behav Ecol, ISME J, iScience, PLoS ONE, J Fish Biol, Front Microbiol, FEMS Microbiol, Front Ecol Evol, J Cont Shelf Res, Mar Biodiversity, Genes, J Exp Mar Biol Ecol, Comp Biochem Physiol, Microorganisms, Sustainability</i>

## MENTORSHIP

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2022-	Emily Neff • Master's Advisor • Biology Department • San Francisco State University (SFSU)
2022-	Deepa Rajan • Committee Member • MD/PhD • University of California San Francisco (UCSF)
2021-	Amy Wong • Committee Member • MS in Biology • San Francisco State University (SFSU)
2020-22	Samantha Donohoo • graduate student research assistant • SFSU • CAS
2020-21	Ana Gaisiner • research associate • California Academy of Sciences (CAS) • Ichthyology
2018-19	Jessica Herbert • high school intern • Careers in Science (CiS) Internship Program (CAS)
2018-19	Noelle Kaslly • undergraduate research assistant • SFSU • CAS
2017	Andrew Wang • high school summer intern • UC Berkeley
2015-16	Karen Hug • undergraduate research assistant • University of Michigan (UM)
2015-16	Clara Tift • undergraduate research assistant • UM
2014-15	Scott Koenigbauer • Undergraduate Research Opportunities Program (UROP) • UM
2014-15	Maggie Grundler • undergraduate Honors thesis • UM
2012-14	Katherine Dougan • undergraduate research assistant • UM

## REFERENCES

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William Ludington (Postdoctoral advisor) Principal Investigator Department of Embryology Carnegie Institution for Science Baltimore, MD 21218 ludington@carnegiescience.edu	Shannon Bennett (Supervisor) Chief of Science Harry & Diana Hind Dean of Science & Research Collections Associate Curator of Microbiology California Academy of Sciences San Francisco, CA 94118 sbennett@calacademy.org
Dr. Paul Dunlap (Ph.D. advisor) Professor Emeritus Department of Ecology & Evolutionary Biology University of Michigan Ann Arbor, MI 48109 pdunlap@umich.edu	Wim Kimmerer (Master's advisor) Adjunct Professor Emeritus Estuary and Ocean Science Center San Francisco State University Tiburon, CA 94920 (415) 338-3515 kimmerer@sfsu.edu
Luiz Rocha (Project mentor) Curator and Follett Chair of Ichthyology California Academy of Sciences San Francisco, CA 94118 lrocha@calacademy.org	