

JESSICA A. GOODHEART

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www.goodheartlab.com

EDUCATION

- 2017 **Doctor of Philosophy, Biological Sciences**
University of Maryland, College Park
Dissertation: Phylogenomics, systematics, and evolution within the nudibranch group Cladobranchia (Mollusca: Gastropoda) (Advisors – Dr. Michael Cummings and Dr. Allen Collins)
- 2013 **Master of Science, Biological Sciences**
California State Polytechnic University, Pomona
Thesis: Sea slug systematics: using molecular and morphological tools to infer species relationships in opisthobranchs (Advisor – Dr. Ángel Valdés)
- 2011 **Bachelor of Science, Biological Sciences, *summa cum laude***
California State Polytechnic University, Pomona

APPOINTMENTS

- 2020 – present **Postdoctoral Researcher**
Scripps Institution of Oceanography
University of California, San Diego
PI – Dr. Deirdre Lyons
- 2017 – present **Research Associate**
Department of Invertebrate Zoology
Smithsonian National Museum of Natural History

RESEARCH & PROFESSIONAL EXPERIENCE

- 2020 – present *Scripps Postdoctoral Scholar*, University of California, San Diego, PI: Dierdre Lyons
Investigating the physical and molecular mechanisms of sequestration in the nudibranch *Berghia stephanieae*
- 2018 – 2019 *NSF Postdoctoral Fellow*, University of California, Santa Barbara, PI: Todd Oakley
Development and evolution of bioluminescence in cypridinid ostracods
- 2013 – 2017 *Graduate researcher*, University of Maryland, College Park, PI: Michael Cummings & Smithsonian National Museum of Natural History, PI: Allen Collins
Phylogenomics and the evolution of nematocyst sequestration in nudibranchs
- 2011 – 2013 *Graduate researcher*, California State Polytechnic University, Pomona, PI: Ángel Valdés
Population genetics and systematics of *Nudipleura* (Mollusca: Gastropoda)

FELLOWSHIPS

- 2020 – present *Scripps Postdoctoral Fellowship*, University of California, San Diego, \$129,000
- 2018 – 2019 Postdoctoral Research Fellowship in Biology, National Science Foundation, \$138,000

2017	Ann G. Wylie Dissertation Fellowship, The Graduate School, University of Maryland, \$15,000
2016 – 2017	International Graduate Research Fellowship, University of Maryland, \$2,000
2016	Eugenie Clark Fellowship, Department of Biology, University of Maryland, \$2,500
2015	Graduate Summer Research Fellowship, University of Maryland, \$5,000
2015	The Graduate School Dean’s Fellowship, University of Maryland, \$5,000
2015 – 2017	Peter Buck Predoctoral Fellowship, Smithsonian Institution \$72,000
2014	Graduate Student Fellowship, Smithsonian Institution \$6,500
2014	The Graduate School Dean’s Fellowship, University of Maryland, \$5,000

GRANTS/RESOURCES

2021	Transnational Collections Access grant for travel to and research at the Zoological Research Museum Koenig (ZFMK) in Germany, SYNTHESYS+
2021	Startup Allocation Request, XSEDE, computing resources worth \$2,477
2020	HPC@UC Allocation Request, San Diego Supercomputing Center
2019	Special Events Award, Company of Biologists, co-organizer, <i>Integrative Molluscan Genomics</i> Symposium at the World Congress of Malacology, £2,500
2019	General User Proposal, Advanced Light Source, micro-CT imaging resources
2019	Special Events Award, American Genetics Association, co-organizer, <i>Integrative Molluscan Genomics</i> Symposium at the World Congress of Malacology, \$5,000
2019	RAPIDD Request, Advanced Light Source, micro-CT imaging resources
2018	Startup Allocation Request, XSEDE, computing resources worth \$7,263
2016	Global Genome Initiative Exploratory Science Grant, Smithsonian Institution, \$19,393
2015	Research Grant, Conchologists of America, \$1,430
2015	Graduate Student Research Grant, Society of Systematic Biologists, \$2,500
2014	Research Opportunity Fund Grant, Smithsonian Institution, \$500
2014	Research Grant, Conchologists of America, \$1,320
2013	Student Research Grant, Biological Sciences Department, California State Polytechnic University, Pomona \$715

PUBLICATIONS

- Taraporevala, N.F.*, Lesoway, M.P. **Goodheart, J.A.**, & Lyons, D.C. Accepted. Precocious sperm exchange in the simultaneous hermaphroditic nudibranch *Berghia stephanieae*. *Integrative Organismal Biology*. Preprint DOI: 10.1101/2022.03.02.482740v1.
- Goodheart, J.A.**, Barone, V. & Lyons, D.C. 2022. Movement and storage of nematocysts across development in the nudibranch *Berghia stephanieae* (Valdés, 2005). *Frontiers in Zoology*, 19:16. DOI: 10.1186/s12983-022-00460-1.
- Karmeinski D., Meusemann K., **Goodheart J.A.**, Schroedl M., Martynov A., Korshunova T., Wägele H., Donath A. 2021. Transcriptomics sheds light on the relationships of cladobranch sea slugs (Heterobranchia, Gastropoda, Mollusca) - but fails to resolve the enigmatic genus *Embletonia*. *BMC Ecology and Evolution*, 21:226. DOI: 10.1101/2020.09.22.307728.

14. Pappalardo P., Collins A.G., Pagenkopp Lohan K.M., Hanson K.M., Truskey S.B., Jaekle W., Strong E.E., Vecchione M., Ames C.L., Harasewych M.G., Reed K., **Goodheart J.A.**, Bush S.L., Lin C., Biancani L.M., Hartil E., Whelpley J., Blumberg J., Matterson K., Redmond N.E., Becker A., Boyle M.J., Osborn K.J. 2021. The role of taxonomic expertise in interpretation of metabarcoding studies. *ICES Journal of Marine Science*, 78(9):3397–3410. DOI: 10.1093/icesjms/fsab082.
13. DiRenzo G.V., Longo A.V., Muletz-Wolz C.R., Pessier A., **Goodheart J.A.**, Martel A., Passmans F. & Lips K. 2021. Plethodontid salamanders show variable disease dynamics in response to *Batrachochytrium salamandrivorans* chytridiomycosis. *Biological Invasions*, 23:2797–2815. DOI: 10.1007/s10530-021-02536-1.
12. Commichaux S., Shah N., Ghurye J., Stoppel A., **Goodheart J.A.**, Bagci C., Luque G., Cummings M., Pop M. 2021. A Critical Analysis of the Integrated Gene Catalog. *Bioinformatics*, 37(18):2848–2857,. DOI: 10.1093/bioinformatics/btab216.
11. **Goodheart J.A.**, Wägele H. 2020. Phylogenomic analysis and morphological data suggest left-right swimming behavior evolved prior to the origin of the pelagic Phylliroidea (Gastropoda: Nudibranchia). *Organisms, Diversity, and Evolution* 20(4):657–667. DOI: 10.1007/s13127-020-00458-9.
10. Miller S.E., Barrow L.N., Ehlman S.M., **Goodheart J.A.**, Greiman S.E., Lutz H.L., Misiewicz T.M., Smith, S.M. Tan, M. Thawley, C.J. Cook, J.A., Light J.E. 2020. Building biological collections for the 21st century and beyond. *BioScience* 70: 674–687. DOI: 10.1093/biosci/biaa069.
9. **Goodheart J.A.**, Munoz J.D., Minsky G.*, Brynjugard-Bialik M., N., Drummond M.S.*, Fallon T.R., Schultz D.T., Weng J., Torres E., Oakley T.H. 2020. Laboratory culture of the California Sea Firefly *Vargula tsujii* (Ostracoda: Cypridinidae): Developing a model system for the evolution of marine bioluminescence. *Scientific Reports* 10: 10443. DOI: 10.1038/s41598-020-67209-w.
8. **Goodheart J.A.**, Bleidißel S., Schillo D., Ayres D.L., Preisfeld A., Strong E.E., Collins A.G., Cummings M.P. & Wägele H. 2018. Comparative morphology and evolution of the cnidosac in Cladobranchia (Gastropoda: Heterobranchia: Nudibranchia). *Frontiers in Zoology* 15:43. DOI: 10.1186/s12983-018-0289-2.
7. **Goodheart J.A.**, Bazinet A.L., Valdés A., Collins A.G. and Cummings M.P. 2017. Prey preference follows phylogeny: evolutionary dietary patterns within the marine gastropod group Cladobranchia (Gastropoda: Heterobranchia: Nudibranchia). *BMC Evolutionary Biology* 17:221. DOI: 10.1186/s12862-017-1066-0.
6. **Goodheart J.A.** 2017. Insights into the systematics, phylogeny and evolution of Cladobranchia (Gastropoda: Heterobranchia). *American Malacological Bulletin* 35:73–81. DOI: 10.4003/006.035.0111.
5. **Goodheart J.A.** and Bely, A.E. 2017. Sequestration of nematocysts by divergent cnidarian predators: mechanism, function, and evolution. *Invertebrate Biology* 136:75–91. DOI: 10.1111/ivb.12154.
4. **Goodheart J.A.**, Ellingson R.A., Vital X.G., Galvão Filho H.C., McCarthy J.B., Medrano S.M., Bhave V.J., García-Méndez K., Jiménez L.M., López G., Hoover C.A., Awbrey J.D., De Jesus J.M., Gowacki W., Krug P.J. and Valdés A. 2016. Identification guide to the heterobranch sea slugs (Mollusca: Gastropoda) from Bocas del Toro, Panama. *Marine Biodiversity Records* 9:56. DOI: 10.1186/s41200-016-0048-z.
3. **Goodheart J.A.**, Bazinet A.L., Collins A.G. and Cummings M.P. 2015. Relationships within Cladobranchia (Gastropoda: Nudibranchia) based on RNA-Seq data: An initial investigation. *Royal Society Open Science* 2:150196. DOI: 10.1098/rsos.150196.
2. **Goodheart J.**, Camacho-Garcia Y., Padula V., Schrödl, M. Cervera, J.L. Gosliner, T.M. and Valdés A. 2015. Systematics and biogeography of *Pleurobranchus* Cuvier, 1804 sea slugs (Het-

erobranchia: Nudipleura: Pleurobranchidae). *Zoological Journal of the Linnean Society* 174:322–362. DOI: 10.1111/zoj.12237.

1. **Goodheart J.** and Valdés A. 2013. Re-evaluation of the *Doriopsilla areolata* Bergh, 1880 (Mollusca: Opisthobranchia) subspecies complex in the eastern Atlantic Ocean and its relationship to South African *Doriopsilla miniata* (Alder & Hancock, 1864) based on molecular data. *Marine Biodiversity* 43:113–120. DOI: 10.1007/s12526-012-0136-1.

Manuscripts Submitted

2. **Goodheart, J.A.**, Collins, A.G., Cummings, M.P., Egger B., & Rawlinson, K.A. Submitted. Phylogenomics suggests that larvae are ancestral in polyclads, but not homologous to the trochophore. *bioRxiv*. DOI: 10.1101/2022.07.14.500079.
1. Ellis, E.A.¹, **Goodheart, J.A.**¹, Hensley, N.M., González, V.L., Reda, N.J., Rivers, T.J., Morin, J.G., Torres, E., Gerrish, G.A., Oakley, T.H. Revision Under Review. Transcriptome phylogenies support ancient evolutionary transitions in bioluminescence traits of cypridinid ostracods. *bioRxiv*. DOI: 10.1101/2021.09.03.458903.

Manuscripts in Preparation - anticipated submission within 3 months

1. Masterson P., Johnston H., Taraporevala N.*, **Goodheart, J.A.**, Batzel G., Whitesel C., Barone V., Lyons D. Scalable Spiralian: Establishing the Nudibranch *Berghia stephanieae* (Valdés, 2005) as a new model for unwinding molluscan development.

Additional Publications

1. **Goodheart J.A.**, Bazinet A.L., Collins A.G. and Cummings M.P. 2015. Phylogeny of Cladobranchia (Gastropoda: Nudibranchia): a total evidence analysis using DNA sequence data from public databases. *Digital Repository at the University of Maryland*. DOI: 10.13016/M-20K9X.

* Refers to an undergraduate mentee co-author

** Links to my publications can be found here: <https://jessicagoodheart.weebly.com/publications.html>

¹ Co-first authors on publication

AWARDS

2017	Student Research Award, BEES Student Taskforce, University of Maryland
2015, 2016	Merit Award, Biological Sciences Graduate Program, University of Maryland
2016	Constance Boone Student Presentation Award, American Malacological Society
2015	Eugenie Clark Award, Department of Biology, University of Maryland
2014	Goldhaber Travel Award, Graduate School, University of Maryland
2014	Biology Department Student Travel Award, University of Maryland
2013	Chuck Bayless Scholarship, Biological Sciences Department, California State Polytechnic University, Pomona
2013	Vernon Gregory Memorial Scholarship, Biological Sciences Department, California State Polytechnic University, Pomona

PRESENTATIONS

Invited Talks

- 2022 Society for Developmental Biology and Pan-American Society for Evolutionary Developmental Biology Joint Meeting, *Movement and storage of nematocysts across development in the nudibranch *Berghia stephanieae**

- 2022 American Museum of Natural History, *Invertebrate pirates: mechanism and evolution of a stolen defense*
- 2021 Biologisches Kolloquium, Zoological Research Museum Alexander Koenig, Germany, *Invertebrate pirates: mechanism and evolution of a stolen defense*
- 2020 Scripps Institution of Oceanography, UC San Diego, *Invertebrate pirates: mechanism and evolution of a stolen defense*
- 2019 Adelphi University, *Origins of biodiversity: The evolution of acquired defenses*
- 2019 Smithsonian National Museum of Natural History, *Invertebrate pirates: convergent evolution of nematocyst acquisition in Metazoa*
- 2018 American Malacological Society Meeting, *Comparative morphology and evolution of the cnidosac in Cladobranchia (Gastropoda: Heterobranchia: Nudibranchia)*, Honolulu, HI USA
- 2017 Smithsonian National Museum of Natural History Zoology Seminar, *Phylogenomics, systematics, and evolution within the nudibranch group Cladobranchia (Mollusca: Gastropoda)*
- 2016 American Malacological Society Meeting, *Phylogenomics of Cladobranchia (Gastropoda: Heterobranchia: Nudibranchia) and the evolution of nematocyst sequestration*, Ensenada, Mexico *Constance Boone Student Presentation Award
- 2015 American Malacological Society Meeting, *Phylogenomics of Cladobranchia (Gastropoda: Heterobranchia: Nudibranchia)*, Michigan, USA

Contributed Presentations

- 2022 Society for Integrative and Comparative Biology, Phoenix, AZ, USA
- 2021 Society for Integrative and Comparative Biology, Washington, DC, USA (virtual)
- 2020 American Malacological Society Meeting, Florida Keys, USA (virtual)
- 2019 Society for Integrative and Comparative Biology, Tampa, FL, USA
- 2018 Society for Integrative and Comparative Biology, San Francisco, CA, USA
- 2017 Mid-Atlantic Malacologists Annual Meeting, Washington, D.C., USA
- 2017 Society for Integrative and Comparative Biology, New Orleans, LA, USA
- 2016 Society for Integrative and Comparative Biology, Portland, OR, USA
- 2014 Mid-Atlantic Malacologists Annual Meeting, Newark, DE, USA
- 2013 Meeting of the Western Society of Malacologists, San Diego, CA, USA *Student Presentation Award
- 2012 Western Society of Malacologists Meeting and International Workshop on Opisthobranchs, Santa Cruz, CA, USA

Poster Presentations

- 2022 Society for Integrative and Comparative Biology, Phoenix, AZ, USA
- 2020 Society for Integrative and Comparative Biology, Austin, TX, USA
- 2019 World Congress of Malacology, Pacific Grove, CA, USA
- 2019 NSF Postdoctoral Research Fellowship in Biology Collections Mini-Symposium, Albuquerque, NM, USA
- 2018 Global Invertebrate Genomics Alliance Conference, Curaçao, Netherlands Antilles
- 2013 Smithsonian Botanical Symposium, Washington, D.C., USA

PROFESSIONAL AFFILIATIONS

Global Invertebrate Genomics Alliance
 Society of Systematic Biologists
 The Society for Integrative and Comparative Biology
 Unitas Malacologica

PROFESSIONAL SERVICE

Manuscript Reviewer

<i>Bulletin of Marine Science</i>	<i>J. of the Marine Biol. Association of the UK</i>
<i>Canadian Journal of Zoology</i>	<i>Marine Biodiversity</i>
<i>Deep Sea Research Part I</i>	<i>Marine Biology Research</i>
<i>Diversity</i>	<i>Molecular Phylogenetics and Evolution</i>
<i>Frontiers in Ecology & Evolution</i>	<i>Organisms, Diversity & Evolution</i>
<i>International Journal of Molecular Sciences</i>	<i>PeerJ</i>
<i>J. of Conchology</i>	<i>PLoS One</i>
<i>J. of Crustacean Biology</i>	<i>Science Advances</i>
<i>J. of Experimental Marine Biology and Ecology</i>	<i>Zoological Journal of the Linnean Society</i>
<i>J. of Molluscan Studies</i>	<i>Zoomorphology</i>
<i>J. of Morphology</i>	<i>Zootaxa</i>

Proposal Reviewer

2019	American Malacological Society Carriker Award
2019	National Science Foundation
2018	Conchologists of America Research Grant

Symposia Organized

2019	<i>Integrative Molluscan Genomics</i> , World Congress of Malacology, Pacific Grove, CA
2013	<i>Opisthobranchs</i> , Meeting of the Western Society of Malacologists, San Diego, CA

Committee Member

2021 – Present	Member-at-large, American Microscopical Society
2017 – 2019	Student Representative, American Malacological Society Council
2017	Merit Award Committee, Biological Sciences Graduate Program, University of Maryland
2016	Graduate Student Representative, Ecology Faculty Search, University of Maryland
2016	Nominating Committee for the Division of Phylogenetics and Comparative Biology Program Officer, The Society for Integrative and Comparative Biology

Additional Service

2020 – Present	Co-organizer, Spiraliabase Virtual Lab Meeting series (www.spiraliabase.org)
2019, 21	Presentation Judge, The Society for Integrative and Comparative Biology
2020	Thesis Reviewer, Southern Cross University
2019	Organizer, Faculty panel for students and bioinformatics table at the World Congress of Malacology in Pacific Grove, CA, USA
2018 – 2019	Santa Barbara Natural History Museum, reorganize Cephalaspidea collections
2018, 19	Presentation Judge, EEMB Graduate Student Symposium, University of California, Santa Barbara

2016 – 2017	Co-President of the Behavior, Ecology, Evolution and Systematics Student Taskforce, University of Maryland
2014, 15, 16	Behavior, Ecology, Evolution and Systematics Student Taskforce Research/Lois Reed Service Award committees
2015 – 2016	Vice President for the Behavior, Ecology, Evolution and Systematics Student Taskforce, UMD BISI

TEACHING & STUDENT MENTORING

Teaching Positions

2019	Co-Instructor , Macroevolution Honors Section Department of Ecology, Evolution and Marine Biology, University of California Santa Barbara
2013 – 2015	Graduate Teaching Assistant , Introductory Ecology and Evolution Laboratory Department of Biology, University of Maryland
2011 – 2013	Graduate Teaching Assistant , Biometrics Laboratory Biological Sciences Department, California State Polytechnic University, Pomona

Students Mentored

2021 – present	Ana Sofia Barrera, undergraduate, UC San Diego Project: Nematocyst sequestration process in the nudibranch <i>Berghia stephanieae</i>
2020 – 2021	Abigail Bigasin*, undergraduate, UC San Diego Project: Bioinformatics pipeline for differential expression analysis
2018 – 2021	Michael Drummond*+, undergraduate, UC Santa Barbara Project: Development in the cypridinid ostracod <i>Vargula tsujii</i>
2018 – 2019	Geetanjali Minsky*+, undergraduate, UC Santa Barbara Project: Biosynthetic pathway of cypridinid luciferin
2019	Crystal Barajas, undergraduate, UC Santa Barbara Project: Morphological evolution in bioluminescent ostracods
2016	Maiss Mohammed*, high school student, Virginia Project: Histological analysis of the cnidosac in the nudibranch <i>Berghia stephanieae</i>
2016	Emma Rebour*, high school student, Washington, D.C. Project: Histological analysis of the cnidosac in the nudibranch <i>Spurilla braziliana</i>

* Presented at a conference or meeting

+ Co-author on a publication

FIELDWORK EXPERIENCE

2019	South Water Caye, Belize, <i>Ostracoda</i> sampling
2019	Shimoda, Japan, <i>Ostracoda</i> sampling
2019	Catalina Island, California, USA, <i>Ostracoda</i> sampling
2019	Long Beach, California, USA, <i>Syllid</i> sampling
2018	Curaçao, Netherlands Antilles, <i>Nudipleura</i> , <i>Polycladida</i> and <i>Ostracoda</i> sampling
2018	Oahu, Hawaii, USA, <i>Nudipleura</i> and <i>Ostracoda</i> sampling
2018	southern California, USA, <i>Ostracoda</i> sampling
2017	Florida, USA <i>Gulf Stream Pelagic Biodiversity Assessment</i>

2016	Florida and the Florida Keys, USA, <i>Polycladida (Platyhelminthes) and Nudibranchia (Mollusca) sampling</i>
2015	Panama City and Bocas del Toro, Panama, <i>Marine Heterobranchia (Mollusca) sampling</i>
2015	Mo'orea and Tetiaroa, French Polynesia, <i>Mo'orea Biocode project</i>
2014	Florida and the Florida Keys, USA <i>Nudibranchia sampling</i>
2014	San Diego, Santa Barbara and Morro Bay, California, USA <i>Nudibranchia sampling</i>
2012	Madang, Papua New Guinea, <i>Papua Niugini Biodiversity Expedition with the Muséum national d'Histoire naturelle in Paris</i>
2011	Jamaica, <i>Marine Heterobranchia sampling</i>
2011	Maui, Hawaii, USA, <i>Marine Heterobranchia sampling</i>

OUTREACH ACTIVITIES

Invited Public Talks

2021	Science & Conservation Leader Speaker at Ocean Adventures Camp, Ocean Discovery Institute, San Diego, CA
2017	<i>Sea Slugs</i> , Terrapin Discovery tour (middle school age), University of Maryland
2016	<i>Nudibranchs</i> , Scientist is In Series (public interaction), Q?rius, National Museum of Natural History
2016	<i>Nudibranch Defenses</i> , Blue Planet Scuba (public presentation), Washington, D.C.
2016	<i>Sea Slug Pirates</i> , Teen SciCafé (high school age), National Museum of Natural History
2013	<i>Sea Slugs</i> , Marine Biology Class, Claremont High School, Claremont, CA

Events

2018 – 2019	<i>Family Ultimate Science Exploration (FUSE)</i> , Lead short science experiments with local middle school students and their families (multiple events in Spring and Fall), Volunteer
2019	<i>Tech Savvy</i> , Led a workshop for female-identified high school students, which focused on bioluminescence and signal diversification, Co-facilitator
2019	<i>Nanodays</i> , Lead short science experiments with local elementary school students and their families, Volunteer
2018	<i>I HEART STEM</i> , Designed and led a workshop for female-identified high school students, which focused on bioluminescence and signal diversification, Co-facilitator
2014 – 2017	<i>Maryland Day Biology Booth</i> , Public event at the University of Maryland, Organizing committee member and volunteer
2016	<i>World Ocean Day</i> , Event for the public at the Smithsonian National Museum of Natural History, Volunteer

Media

2021	Guest for the episode "Nudibranchs Do It Better" on the National Public Radio science podcast, <i>Short Wave</i>
2018	Science Advisor for KQED (public radio station) Deep Look episode <i>This Adorable Sea Slug Is a Sneaky Little Thief</i>

- 2017 Published “Heterobranch sea slugs of Bocas del Toro, Panama” in the magazine *American Conchologist* 45:17-19.
- 2015 Published “Sea slug thieves: A nudibranch defense strategy” in the magazine *American Conchologist* 43:34-36.
- 2013, 2015 Contributor to the National Museum of Natural History Invertebrate Zoology Department blog *No Bones*
- 2014 Contributor to the National Museum of Natural History blog *Ocean Portal*

PROFESSIONAL DEVELOPMENT

- 2020 EPIC Bootcamp, UC San Diego
- 2020 Ethical Challenges of Research, UC San Diego
- 2018 Discipline-based Education Research In Science, UC Santa Barbara
- 2017 An Introduction to Evidence-Based Undergraduate STEM Teaching, edX
- 2017 Bioinformatics Course, University of Tuebingen, Germany
- 2016 Bioinformatics Course, University of Tuebingen, Germany
- 2015 Taxonomy and Biology of Sea Slugs, Smithsonian Tropical Research Institute, Panama
- 2014 Phylogenomics Course, Lund University, Sweden

ADDITIONAL QUALIFICATIONS

Diving Certifications

2012 – Present AAUS Scientific Diver