

Darcy A.A. Taniguchi
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Assistant Professor
Biology Department
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EDUCATION

2013 **UCSD, PhD, Biological Oceanography**
2009 **UCSD, MS, Biological Oceanography**
2006 **UCSD, BA, Mathematics, Summa Cum Laude; BS, Biology, Summa Cum Laude**

RESEARCH EXPERIENCE

2014-2016 **Postdoctoral fellow, Massachusetts Institute of Technology (MIT), Michael Follows and Susanne Menden-Deuer (University of Rhode Island)**
Modeling dynamics of plankton food webs, emergent community structure and diversity, and coupled biological-physical interactions in a global biogeochemical model

2013 **Postdoctoral researcher, Scripps Institution of Oceanography, UCSD, Jules Jaffe**
Applied computational image analysis techniques to address the objective classification of cuttlefish camouflage response to visual stimuli

2006-2012 **Graduate student researcher, Scripps Institution of Oceanography, UCSD, Peter Franks and Michael Landry**
Estimated size-dependent phytoplankton growth and grazing rates and phytoplankton size distributions; performed flow cytometric light scattering analyses; analyzed epifluorescence microscopy images; estimated zooplankton feeding rates

2005-2006 **Intern/Contractor, National Oceanic and Atmospheric Administration (NOAA), Southwest Fisheries Science Center, Tim Gerrodette**
Identified stocks of spotted dolphins, *Stenella attenuata*, using photogrammetry and machine learning techniques

2003-2006 **Research assistant, Scripps Institution of Oceanography, UCSD, Tonya Huff and Paul Dayton**
Identified microscopic intertidal invertebrates in San Diego; collected intertidal algal turf and sandy beach samples

TECHNICAL EXPERIENCE AND SKILLS

2017-2018 Udacity Deep Learning course graduate
2017-2018 Software developer, Pluralsight
Matlab, Fortran77, R, Python, TensorFlow, Javascript, Git

PUBLICATIONS

2019 Talmy, D., S.J. Beckett, **D.A.A. Taniguchi**, C.P.D. Brussaard, J.S. Weitz, M.J. Follows. An empirical model of carbon flow through marine viruses and microzooplankton grazers. *Environmental Microbiology* 21(6): 2171-2181. doi: 10.1111/1462-2920.14626

2019 Talmy, D., S.J. Beckett, A.B. Zhang, **D.A.A. Taniguchi**, J.S. Weitz, M.J. Follows. Contrasting controls on microzooplankton grazing and viral infection of microbial prey. *Frontiers in Marine Science*. doi: 10.3389/fmars.2019.00182.

2019 **Taniguchi, D.A.A.**, K. Schulz, J. Rohr, S. Ridgway. Two Beakers, Five E's, Twenty Pennies, and Archimedes' Principle. *The Physics Teacher*. 57(3): 138-141. doi: 10.1119/1.5092468.

- 2015 **Taniguchi, D.A.A.**, Y. Gagnon, B.J. Wheeler, S. Johnsen, J. Jaffe. Cuttlefish *Sepia officinalis* preferentially respond to bottom rather than side stimuli when not allowed adjacent to tank walls. *PLoS ONE*. 10:e0138690.
doi:10.1371/journal.pone.0138690
- 2015 Krause, J.W., M.R. Stukel, A.G Taylor., S.B. Baines, **D.A.A. Taniguchi**, A. de Verneil, M.R. Landry. Net biogenic silica production and the contribution of diatoms to new production and organic matter export in the Costa Rica Dome ecosystem. *Journal of Plankton Research*. doi: 10.1093/plankt/fbv077.
- 2014b **Taniguchi, D.A.A.**, P.J.S. Franks, F.J. Poulin. Planktonic biomass size spectra: an emergent property of size-dependent physiological rates, food web dynamics, and nutrient regimes. *Marine Ecology Progress Series*. 514:13-33.
- 2014a **Taniguchi, D.A.A.**, M.R. Landry, P.J.S. Franks, K.E. Selph. Size-specific growth and grazing rates for picophytoplankton in coastal and oceanic regions of the eastern Pacific. *Marine Ecology Progress Series*. 509:87-101.
- 2013 Pasulka, A.L., M.R. Landry, **D.A.A. Taniguchi**, A.G. Taylor, and M.J. Church. Temporal dynamics of phytoplankton and heterotrophic protists at Station ALOHA. *Deep Sea Research, Part II*. 93:44-57.
- 2013 Stukel, M.R., M. Decima, K.E. Selph, **D.A.A. Taniguchi**, and M.R. Landry. The role of *Synechococcus* in vertical flux in the Costa Rica upwelling dome: Pigment flux analyses. *Progress in Oceanography*. 112:49-59.
- 2013 **Taniguchi, D.A.A.** Size structuring of plankton communities: Biological rates and ecosystem dynamics. Thesis for Doctorate of Philosophy. University of California. ProQuest LLC.
- 2012 **Taniguchi, D.A.A.**, P.J.S. Franks, M.R. Landry. Estimating size-dependent growth and grazing rates and their associated errors using the dilution method. *Limnology and Oceanography: Methods*. 10:868-881.

TEACHING EXPERIENCE

- 2018-present **Instructor for ecology, marine science, and biostatistics courses, CSUSM**
Taught and teaching a variety of courses within the Biology Department
- 2017 **Introduction to Atmosphere and Ocean Science laboratory instructor, University of San Diego (USD)**
Instructed a laboratory course on the fundamentals of sea water physics and chemistry, ocean circulation, and air-sea interactions
- 2017 **Early Implementers scientist, West Ed**
Collaborated with elementary school teachers to integrate the Next Generation Science Standards into active learning activities in classrooms and informal environments
- 2016-2017 **Price Postdoctoral Fellow, Birch Aquarium at Scripps Institution of Oceanography, University of California, San Diego (UCSD)**
Developed, implemented, and evaluated K-12 science education programming in formal and informal settings; taught and assisted students in pedagogical practices
- 2016 **Communicating Science to the Public seminar co-lecturer, UCSD**
Co-instructed a graduate seminar to teach students how to communicate and interpret science to broad audiences
- 2016 **Earth History and Evolution course guest lecturer, UCSD**
Assisted with and guest lectured in introductory course about evolution of the Earth and life on it
- 2016 **Math-Science Partnership scientist, San Diego County Office of Education**

- Partnered with middle and high school science and math teachers to integrate the two subjects in interactive, inquiry-based learning experiences that model the K-12 Next Generation Science Standards
- 2014 **Oceanography course instructor, Boston College**
Developed and taught core course on the fundamentals of oceanography
- 2014 **Ecology course co-organizer and guest lecturer, MIT**
Assisted in the design and execution of the course curriculum, assignments, and lectures
- 2014 **Teaching Certificate Program participant, MIT**
Completed a series of sessions to learn and develop effective teaching and communication skills
- 2013 **Ecology lab instructor, USD**
Sole instructor for a section of an ecology laboratory, which included computer work, lab and fieldwork, and scientific writing covering basic and advanced biostatistical and ecological concepts
- 2012 **High school summer course co-instructor, UCSD Academic Connections**
Co-developed and taught the course “Exploring Local Ecosystems,” which included field trips to diverse ecosystems around San Diego, California, and interactive assignments, laboratory exercises, and lectures about fundamental ecological concepts
- 2011-2012 **NSF GK12 fellow and high school guest instructor, Mission Bay High School**
Developed and taught interactive lessons based on my research and catered to a high school biology class of underrepresented students
- 2010 **Teaching assistant for California Coast Oceanography, UCSD**
Designed and led laboratory exercises covering biological, physical, and chemical oceanography to complement class lectures
- 2010 **Teaching assistant for Earth History and Evolution, UCSD**
Led discussions, laboratories, and review sessions on topics ranging from the geology of the planet to the evolution of life to complement lectures
- 2009, 2006 **Teaching assistant for Introduction to Biological Oceanography, UCSD**
Developed discussion sections and homework assignments to supplement biological oceanography concepts covered in lecture
- 2005 **Teaching assistant for Fundamental Concepts of Modern Biology, UCSD**
Designed and led discussion and review sessions tailored to non-science majors

AWARDS AND HONORS

- 2018 NVIDIA GPU Grant recipient
- 2018 Competent Communicator, Toastmasters International
- 2017 Most Awesome Partner Award for the National Marine Mammal Foundation
- 2015 Nomination for the Boston College Earth and Environmental Sciences Department Teaching Award
- 2014-2016 NOAA Climate and Global Change Postdoctoral Fellowship
- 2011-2012 National Science Foundation GK-12 Fellowship
- 2010 Scripps Institution of Oceanography Teaching Assistant Award

OUTREACH EXPERIENCE

- 2018, 2019 **California Science Teachers Association Climate Summit, UCSD**
Worked with elementary school teachers to develop NGSS-aligned curricula that teachers used in their classes and that was shared with teachers at the CSTA conference

- 2019 **Super STEM Saturday presenter on marine plankton, CSUSM**
Presented to the general public about planktonic communities
- 2018 **Workshop leader on plankton, machine learning, and biogeochemical modeling, San Diego Unified School District**
Developed and led workshop on plankton adaptations, computational thinking, and modeling of planktonic communities
- 2018 **Guest blogger for Reflections on the QUBES/BioQUEST Summer Workshop - a future faculty perspective**
<https://qubeshub.org/news/blog/2018/11/reflections-on-the-qubesbioquest-summer-workshop---a-future-faculty-perspective-final-post-in-the-QUBES/BioQUEST>
- 2018 **Workshop leader on plankton and computational thinking, San Diego Chapter of Computer Science Teachers Association**
Designed and led a workshop for diverse K-12 and community college instructors on plankton model building and image classification as it relates to computational thinking
- 2018 **Panelist for San Diego CodeQueens Event, CSUSM**
Discussed career options and the integration of programming and science with female high school students
- 2017 **Workshop leader on computational thinking, CSUSM**
Developed and lead interactive activities for elementary school teachers that combine scientific concepts with computational thinking
- 2017 **Co-creator and facilitator of the Plastic Ocean Pollution Prevention Patch, National Marine Mammal Foundation**
Designed and created materials to help raise awareness among young adults and mentors about issues surrounding marine plastic debris
- 2016-2017 **Panelist and facilitator, Girl Scouts Events, San Diego Girl Scouts Headquarters**
Discussed research involving animals; facilitated science experiments that led to Girl Scouts earning Animal Helper badge
- 2015 **Science exhibit presenter, John H. Carlson Lecture, New England Aquarium**
Displayed and shared information about plankton samples collected in the Boston Harbor as a precursor to the formal lecture on water
- 2015 **Science exhibit presenter, Volvo Ocean Races**
Displayed and described real-life examples of local zooplankton and biofouling communities to attendees of the event
- 2014, 2015 **Science exhibit presenter, Cambridge Science Festival, MIT**
Designed and presented exhibit involving live, local and tropical planktonic organisms to share with the general public
- 2014 **Science exhibit presenter, Nautical Night, MIT**
Developed and presented an exhibit on planktonic ecosystems to share with the general public
- 2010-13, 2016 **Science workshop presenter and keynote speaker, Better Education for Women in Science and Engineering**
Designed and led workshops to help middle school girls learn about local marine invertebrate communities and plankton morphology and increase their participation in science, technology, engineering, and mathematics (STEM)
- 2009-2012 **High school tutor and mentor, Reality Changers**
Tutored and mentored first-generation college-bound students in a variety of subjects, particularly in math and science

- 2008-2013 **Science workshop presenter, Expanding Your Horizons Conference**
Developed and taught workshops for middle school girls on oceanographic topics to increase their activity in STEM fields
- 2008 **Volunteer teaching assistant, UCSD Academic Connections**
Assisted in running laboratories, collecting organisms, and leading field trips to study marine invertebrates in their environments
- 2006 **High school tutor, San Diego Superb Tutors**
Tutored students to prepare them for the SAT and ACT
- 2006 **Undergraduate mentor, Revelle College One-On-One Mentoring Program**
Mentored a freshman college student as she adjusted to life at UCSD

PRESENTATIONS

- 2019 Greta Kcomt Del Rio*, Sara Bailey*, C. Anela Choy, Melissa M. Omand, Jackson Sugar, Tor Mowatt-Larssen, **Darcy A.A. Taniguchi.**
Photographing and identifying marine communities with the use of underwater photography and machine learning. Summer Scholars Poster Showcase. CSUSM. San Marcos, California. (Poster.)
- 2018 Hazlehurst, J., **D.A.A. Taniguchi**, S. Yang. Cats Teach Stats: purrrfect tools to reduce statistics anxiety. National Association of Biology Teachers Conference. San Diego, California. (Poster.)
- 2018 Taniguchi, D.A.A. Developing hands-on activities linking plankton and computational thinking. QUBES/BioQUEST Workshop. Claremont, California. (Poster.)
- 2016 Taniguchi, D.A.A., M.J. Follows, S. Menden-Deuer, C. Peach, K. Aguilar, R. Poland. A multidisciplinary approach to study planktonic community structure and teach K-12 students. Monterey Bay Aquarium Research Institute seminar series. Monterey, California. (Talk.)
- 2016 Taniguchi, D.A.A., M.J. Follows, S. Menden-Deuer, P.J. Franks, M.R. Landry
The invisible force: Understanding the microscopic organisms that support life in the ocean. Brown Bag Seminar at Birch Aquarium. La Jolla, California. (Talk.)
- 2016 Taniguchi, D.A.A., S. Dutkiewicz, M.J. Follows, S. Menden-Deuer, O. Jahn
Resolving microzooplankton functional groups in a size-structured planktonic model. Association for the Sciences of Limnology and Oceanography (ASLO) Ocean Sciences Conference. New Orleans, Louisiana. (Talk.)
- 2015 Taniguchi, D.A.A., M. Follows, S. Menden-Deuer. How top-down effects influence predator:prey ratios and planktonic community diversity in a size-structured model of phyto- and microzooplankton. Trait-Based Approaches to Ocean Life Workshop. Waterville, NH. (Poster)
- 2015 Taniguchi, D.A.A., M. Follows, S. Menden-Deuer. Traits and tradeoffs influencing microzooplankton feeding preferences and plankton community structure. University of Rhode Island, Graduate School of Oceanography seminar series. Narragansett, Rhode Island. (Talk.)
- 2015 Taniguchi, D.A.A., M. Follows, S. Menden-Deuer. Simulated tradeoffs in predator-prey dynamics of phyto- and microzooplankton. ASLO Aquatic Sciences Conference. Granada, Spain. (Talk.)
- 2014 Taniguchi, D.A.A., M. Follows, S. Menden-Deuer. Traits and tradeoffs in plankton food web dynamics. NOAA Climate and Global Change Summer Institute. Steamboat Springs, Colorado. (Talk.)

* Denotes student author

- 2014 Taniguchi, D.A.A., P.J.S. Franks, F. Poulin. Planktonic biomass size spectra: an emergent property of size-dependent physiological rates, food web dynamics, and nutrient regimes. Sack Lunch Seminar for Earth, Atmospheric, and Planetary Sciences. MIT. Cambridge, Massachusetts. (Talk.)
- 2014 Taniguchi, D.A.A., P.J.S. Franks, F. Poulin. Planktonic size spectra: an emergent property of physiological rates, food web dynamics, and nutrient regimes. ASLO Ocean Sciences Conference. Honolulu, Hawaii. (Poster.)
- 2013 Taniguchi, D.A.A., Gagnon, Y., Wheeler, B.J., Jaffe, J. Cuttlefish camouflage response to vertical and horizontal stimuli. Applied Ocean Sciences Seminar. Scripps Institution of Oceanography, UCSD. La Jolla, California. (Talk.)
- 2012 Taniguchi, D.A.A., P.J.S. Franks, F. Poulin, and M.R. Landry. Parameterizing size-structured ecosystem models using a modification of the traditional dilution method. ASLO Ocean Sciences Conference. Salt Lake City, Utah. (Poster.)
- 2011 Taniguchi, D.A.A. Environmental Impacts of the BP Deepwater Horizon Oil Spill. Japanese American Citizens League, Environmental Justice Summit. New Orleans, Louisiana. (Invited talk.)
- 2011 Taniguchi, D.A.A., M.R. Landry, and P.J.S. Franks. Phytoplankton size in the California Current Ecosystem: Distributions and rates. Long Term Ecological Research (LTER) Graduate Student Symposium. Santa Barbara, California. (Poster.)
- 2010 Taniguchi, D.A.A. Scripps Environmental Accumulation of Plastics Expedition (SEAPLEX). California State University Stanislaus. Turlock, California. (Guest lecture.)
- 2010 Taniguchi, D.A.A., M.R. Landry, and P.J.S. Franks. Size-specific growth and grazing rates of the microbial community: Adding a new dimension to the dilution method. ASLO Ocean Sciences Conference. Portland, Oregon. (Poster.)
- 2009 Decima, M. and D.A.A. Taniguchi. Comparisons of top-down controls on autotrophic biomass in aquatic and terrestrial ecosystems. LTER All Scientists Meeting. Estes Park, Colorado. (Workshop.)
- 2009 Taniguchi, D.A.A., M.R. Landry, and M. Shartau. Size spectral analysis of the micro-plankton community. LTER All Scientists Meeting. Estes Park, Colorado. (Poster.)
- 2008 Taniguchi, D.A.A., M.R. Landry, and A.G. Taylor. Size spectra of nano- and microplankton of the California Current Ecosystem. ASLO Ocean Sciences Conference. Orlando, Florida. (Poster.)
- 2007 Taniguchi, D.A.A. and M.R. Landry. Size spectra of eukaryotic autotrophic and heterotrophic nano- and microplankton in the California Current Ecosystem. National Science Foundation Midterm Site Review. La Jolla, California. (Poster.)

OCEANOGRAPHIC EXPERIENCE

- 2015 **R/V Endeavor, Georges Bank, Chief Scientist: Susanne Menden-Deuer**
Designed and executed temporal dilution experiments to examine diurnal growth and predation rates of plankton
- 2011 **R/V New Horizon, California Current Ecosystem, Chief Scientist: Jules Jaffe**
Conducted dilution experiments, water sample collection, chlorophyll sample processing, epifluorescence microscopy slide making
- 2010 **R/V Melville, Costa Rica Dome, Chief Scientist: Michael Landry**

- Ran temporal dilution experiments, on-board flow cytometry sample collection and processing, collection and processing of biogenic silica rate samples
- 2009 **R/V New Horizon, California Current Ecosystem, Chief Scientist: Michael Stukel**
Collected and processed microbial community and ecosystem data, supervised volunteers
- 2009 **R/V New Horizon, Subtropical North Pacific Gyre, Chief Scientist: Miriam Goldstein**
Collected and processed microbial community and ecosystem data as part of the Scripps Environmental Accumulation of Plastics Expedition (SEAPLEX)
- 2008 **R/V Melville, California Current Ecosystem, Chief Scientist: Michael Landry**
Collected water samples, processed biogenic silica samples

PROFESSIONAL AND COMMUNITY SERVICE

- 2000-2015 Japanese American Citizens League member
2004-2013, 2016-present UCSD Wind Ensemble flautist
2010-2011 Long Term Ecological Research California Current Ecosystem graduate student co-chair
2008 Scripps Annual Teacher Evaluation Committee member
2007-2008 Scripps Community Outreach Program for Education member

PROFESSIONAL SOCIETIES

- 2018 National Biology Teachers Association
2017-2018 Toastmasters International
2014-present Association for Women in Science
2011-present American Association for the Advancement of Science
2008-present Association for the Sciences of Limnology and Oceanography
2006-present Phi Beta Kappa Society