

Alexis D. Fischer

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EDUCATION

- 2011–2017 **Massachusetts Institute of Technology & Woods Hole Oceanographic Institution**
Ph.D. in Biological Oceanography
Advisor: Dr. Donald Anderson, WHOI
- 2006–2010 **Wellesley College**, B.A. in Biological Sciences

RESEARCH POSITIONS

- 2017–present **Postdoctoral Investigator**, UC Santa Cruz, with Dr. Raphael Kudela:
phytoplankton ecology and bio-optical oceanography.
- 2017 **Postdoctoral Investigator**, WHOI, with Dr. Donald Anderson:
harmful algal blooms and dinoflagellate ecophysiology in Greenland.
- 2011–2017 **Graduate Research Assistant**, WHOI, with Dr. Donald Anderson:
harmful algal blooms in the Nauset Marsh system; dinoflagellate ecophysiology.
- 2010–2011 **Research Technician**, University of Alberta, with Dr. Yan Boucher & Dr. Rebecca Case:
microbial ecology and evolution of *Vibrio cholerae*; bacterial-algal interactions and production of novel chemicals.
- 2010 **Summer Student Fellow**, WHOI, with Dr. Ann Tarrant:
comparative physiology of cnidarians; signal disruption by environmental contaminants.
- 2009–2010 **Undergraduate Research Assistant**, MIT, with Dr. Martin Polz & Dr. Yan Boucher:
microbial ecology and evolution of *Vibrio cholerae*.
- 2009 **Amgen Scholar**, MIT, with Dr. Leona Samson & Dr. Dharini Shah:
DNA repair pathways dealing with alkylated base lesions present in cellular DNA.
- 2008 **Research Assistant**, GO₂ Water Inc., with Dr. Franklin Bailey Green
removal efficiency of endocrine disrupting compounds from wastewater treatment systems.
- 2007 **Research Assistant**, Romberg Tiburon Center, San Francisco State University, with Dr. Kathy Boyer:
experimental approaches toward restoration of eelgrass in San Francisco Bay.

AWARDS & GRANTS

- 2016 **Best Student Oral Presentation Award**, International Conference on Harmful Algae,
Florianopolis, Brazil.
- 2015 **Best Student Poster Presentation Award**, Symposium on Harmful Algae, Long Beach, CA.
- 2014, 2016 **International Society for the Study of Harmful Algae Travel Award**
- 2014, 2015 **Amgen Scholars Alumni Travel Award**
- 2014 **Ocean Ventures Fund Grant**, WHOI: “A novel transcriptomics approach to characterize genetic regulation of the annual rhythmicity in *Alexandrium fundyense* cysts.” Award: \$7,000.
- 2014 **Joshua A. Nickerson Conservation Fellowship**, Friends of Cape Cod National Seashore.
Award: \$2,000.

- 2013 **Best Student Poster Presentation Award**, Symposium on Harmful Algae, Sarasota, FL.
- 2012 **Center for Microbial Oceanography Research & Education Summer Program Scholarship**
- 2010 **WHOI Summer Student Fellowship**
- 2009 **Amgen Summer Scholarship at MIT**
- 2008, 2009 **Academic All-Conference Athlete**, New England Women's & Men's Athletic Conference, awarded for excellence in collegiate lacrosse and academics.

PUBLICATIONS

Fischer, A.D., Brosnahan, M.L., and Anderson, D.M.: Cold exposure controls the duration of dormancy in cysts of the toxic dinoflagellate *Alexandrium catenella*. **In revision**, *Protist*.

Brosnahan, M.L., Ralston, D.K., **Fischer, A.D.**, Solow, A.R., and Anderson, D.M.: Bloom termination of the toxic dinoflagellate *Alexandrium catenella*: vertical migration behavior, sediment infiltration, and benthic cyst yield. **Accepted**, *Limnology & Oceanography*.

Fischer, A.D., Moberg, E.A., Alexander, H.A., Brownlee, E.F., Hunter-Cevera, K.R., Pitz, K.J., Rosengard, S.Z., and Sosik, H.M., 2014: Sixty Years of Sverdrup: A Retrospective of Progress in the Study of Phytoplankton Blooms. *Oceanography*, 27: 222-235.

PRESENTATIONS

- 2016 *Talk*: "Quantifying the chilling requirement for germinability of natural *Alexandrium fundyense* resting cysts." 17th International Conference on Harmful Algae, Florianopolis, Brazil.
- 2016 *Talk (invited)*: "Harmful Algal Blooms." Wellesley College, Wellesley MA.
- 2016 *Talk*: "Quantifying the chilling requirement for germinability of natural *Alexandrium fundyense* resting cysts." Biology seminar, WHOI.
- 2016 *Talk*: "Winter chilling induces synchronous spring germination by *Alexandrium fundyense* cysts in the Nauset Marsh System." Ocean Sciences, New Orleans, LA
- 2015 *Poster*: "The Dynamic Role of Temperature in Spring Bloom Initiation." 8th Symposium on Harmful Algae, Long Beach, CA.
- 2015 *Poster*: "How to outlast winter on land and sea: terrestrial plant seeds and marine dinoflagellate cysts both rely on winter chilling." Seed Longevity Workshop, Wernigerode, Germany.
- 2015 *Talk (invited)*: "Sixty years of Sverdrup." Wellesley College, Wellesley MA.
- 2015 *Talk*: "Winter chilling entrains the endogenous annual germination rhythm in *Alexandrium fundyense* cysts from a shallow estuarine system." Ocean Outlook Conference, Bergen, Norway.
- 2014 *Talk*: "Winter chilling entrains the endogenous annual rhythm in *Alexandrium fundyense* cysts from a shallow estuarine system." 16th International Conference on Harmful Algae, Wellington, New Zealand.
- 2013 *Poster*: "Seasonal excystment rhythms of *Alexandrium fundyense* in a shallow estuarine system: Control by endogenous and/or exogenous factors." 7th Symposium on Harmful Algae, Sarasota, FL.
- 2010 *Talk*: "Physiological and Transcriptional Response of *Nematostella vectensis* to Environmental Contaminant Exposures." Biology seminar, WHOI.
- 2009 *Poster*: "DNA Damage Response to Alkylation". Amgen Scholars Program Symposium, MIT.

2008 *Talk*: “A Tall Cool Glass of...Sustainable Wastewater?” Tanner Conference, Wellesley College.

FIELDWORK

2017 **West Greenland** (R/V Maria S. Merian, 25 days): sediment coring with a vibrocorer, multicorer, and Van Veen grab sampler, microscopy, phytoplankton whole cell sampling, CTD deployments, hydrographic measurements.

2012–2016 **Nauset Marsh system, Cape Cod** (13' *Limulus* and waders): sediment coring, sediment flux traps, phytoplankton and grazer sampling, nutrient measurements, CTD deployments, mooring recovery and deployments, hydrographic measurements, HOBO data loggers, Imaging Flow Cytobot maintenance.

2012 **Pacific Ocean** (R/V Kilo Moana, 10 days): measurements of thermohaline structure, water column chemistry, optical properties, primary production, plankton community structure, and particle export for Hawaii Ocean Time-series.

2011 **Gulf of Maine** (R/V Connecticut, 4 days): Phytoplankton sampling, CTD deployments, Environmental Sample Processor instrument recovery.

2011 **Continental shelf, New England** (SSV Corwith Cramer, 10 days): variety of chemical, physical, & biological oceanography instrument deployments.

2009–2011 **Estuaries in New South Wales, Australia & Cape Cod**: water collection and filtration, microbial isolation.

WORKSHOPS & INTENSIVE COURSES

2012 **Center for Microbial Oceanography Research & Education Summer Course: “From genomes to biomes”**, 6-week course led by Dr. Dave Karl and Dr. Matthew Church, University of Hawaii.

TEACHING EXPERIENCE

2013–2016 **Advisor** to undergraduates through the WHOI Guest Student Program and Northeastern University Cooperative Education Program: Natalie Kuskhtel, Jessica Roth, Nathaniel Haycock, Finn Correia, Jennifer Haskell, and Madeline McKenna.

2015 **Kaufman Teaching Certificate Program at MIT**: semester-long training in teaching at undergraduate level.

2010–2011 **Mentor** for Capstone Project, University of Alberta: Smit Patel, Chris Chuy, Lauren Bradford, and Danielle Simkus

INSTITUTIONAL SERVICE

2015–2016 **Co-President**, MIT Water Club: Managed 7 teams and work-streams to host MIT student-led events: Water Summit, Water Night, Water Innovation Prize, Lecture Series, Lunch & Learn Lecture Series, Corporate Sponsorships, and Marketing. Fundraised and oversaw a budget of \$70,000 (largest in club history).

2014–2015 **Director of Finance & Sponsorship**, MIT Water Club.

2013–2015 **WHOI Biology Student Seminar Series: “Challenger Expeditions”**. Created and coordinated an informal monthly seminar series for graduate students and postdoctoral scholars.

OUTREACH

- 2016 Featured in **National Park Service webisode series:**
Outside Science (inside parks). "Ready, Set, Bloom! Red Tides at Cape Cod National Seashore".
<https://www.youtube.com/watch?v=CzkJc6-oENQ>
- 2015 Invited speaker at **Cape Cod National Seashore Science Symposium:**
"Alexandrium cysts in the Nauset Marsh System: Factors controlling germination and bloom initiation in a changing climate."
- 2015, 2012 Invited speaker at **Wellesley College Graduate Student Panel for Summer Research Program**
- 2013 Created and manned booth of hands-on activities with MIT-WHOI Broader Impacts Group:
"Making the Invisible Visible: The Secret, Bizarre, and Amazing World of Plankton"
Cambridge Science Festival. Estimated more than 1000 people in attendance.
World Oceans Day at New England Aquarium. Estimated than 500 people in attendance.
- 2013 Article in *The Tech*: "The Secret Life of Researchers: The Importance of Adaptations."

SKILLS & CERTIFICATIONS

- Certifications** PADI Open-water Scuba Certification (2010)
- Computation** MATLAB, Adobe Illustrator and Photoshop, Microsoft Office
- Field/Lab** Imaging FlowCytobot, Sediment Coring, Aseptic cell culturing, Single cell isolation, Microscopy, Nucleic acid extraction, PCR, Sequencing, Microscopy, Sandwich Hybridization Assay, ELISA
- Languages** English, Spanish