

Cumulative Bio-Bibliography

Princeton University

May 2021

Bess B. Ward

William J. Sinclair Professor of Geosciences

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POSITIONS HELD

- 2016-Present Trustee, Bermuda Institute of Ocean Sciences
- 2012-2013 Visiting Scientist (Sabbatical), Plymouth Marine Laboratory
- 2007-2011 Visiting Scientist, Plymouth Marine Laboratory
Plymouth UK, July – August
- 2010-Present Trustee, Plymouth Marine Laboratory
- 2006-Present Chair, Department of Geosciences
Princeton University
- 1998-Present Professor, Department of Geosciences and the Princeton Environmental Institute,
Princeton University
- 2004 Visiting Scientist (Sabbatical), Plymouth Marine Laboratory
Plymouth UK, January - August
- 1995-1998 Chair, Ocean Sciences Department
University of California, Santa Cruz
- 1995-1998 Professor, Ocean Sciences Department
University of California, Santa Cruz
- 1991-1995 Associate Professor, Marine Sciences Department
University of California, Santa Cruz
- 1993 Visiting Scientist, Max Planck Institute für Limnologie
Plön, Germany, October-December
- 1989-1991 Assistant Professor of Marine Sciences
University of California, Santa Cruz
- 1984-1989 Assistant Research Oceanographer, Institute of Marine Resources,
Scripps Institution of Oceanography, University of California, San Diego
- 1987-1991 Associate Member, Center for Molecular Genetics,
University of California, San Diego
- 1987-1988 Chairperson, Food Chain Research Group, Scripps Institution of Oceanography,
University of California, San Diego
- 1982-1984 Postgraduate Research Biologist, Institute of Marine Resources,
Scripps Institution of Oceanography, University of California, San Diego
- 1976-1982 Graduate Research Assistant, Department of Oceanography,
University of Washington, Seattle
- 1980 Graduate Teaching Assistant, Friday Harbor Laboratories,
(Summer) Department of Oceanography, University of Washington
- 1977 Graduate Teaching Assistant, Department of Oceanography,
(Fall) University of Washington

EDUCATION

1982 Ph.D., Biological Oceanography, University of Washington, Seattle, WA
1979 M.S., Biological Oceanography, University of Washington, Seattle, WA
1978 Microbial Ecology Course, Marine Biological Laboratory, Woods Hole, MA
1976 B.S., Zoology, Michigan State University, East Lansing, MI
1971-72 Mathematics, Auburn University, Auburn, AL

HONORS and AWARDS:

Distinguished Visiting Biologist, Woods Hole Oceanographic Institution, March 1996
G. Evelyn Hutchinson Medal, American Society of Limnology and Oceanography, 1997
Who's Who in American University Teachers, 1997
Fellow of the American Academy of Microbiology, 1999
Fellow of the American Geophysical Union, 2002
Fellow of the American Academy of Arts and Sciences, 2004
Proctor and Gamble Award, American Society for Microbiology, 2012
Samuel A. Waxman Honorary Lectureship, Theobald Smith Society, 2014
Rachel Carson Award Lecture, American Geophysical Union, 2014
(WHOI) Chemical Oceanography H. Burr Steinbach Scholar of 2015
Charnock Lecturer, Southampton Oceanography Center, UK, 2015
Marie Tharp Award Lecture, Helmholtz Center for Ocean Research, Kiel, Germany, 2016

RESEARCH INTERESTS:

Marine and global nitrogen cycle, molecular analyses to link marine phytoplankton, bacteria and microbial processes (especially nitrification and denitrification), oxygen minimum zones, phytoplankton nitrogen dynamics, microbial genomics

PUBLICATIONS

Submitted/in revision

Schulz, K. G., Achterberg, E. P., Arístegui, J., Bach, L. T., Banos, I., Boxhammer, T., Erler, D., Igarza, M., Kalter, V., Ludwig, A., Löscher, C., Meyer, J., Meyer, J., Minutolo, F., von der Esch, E., Ward, B. B. and Riebesell, U. Nitrogen loss processes in response to upwelling in a Peruvian coastal setting dominated by denitrification. *Biogeochemistry*.

Wan, X. S., Hua-Xia Sheng, H.-X., Dai, M., Casciotti, K. L., Church, M. J., Zou, W., Liu, L., Shen, H., Zhou, K., Ward, B. B., Kao, S.-J. Multiple nitrous oxide sources embed in a short recycling circuit of the marine biological pump. *Science*

Mdutyana, M., Sun, X., Burger, J. M., Flynn, R. F., Smith, S., van Horsten, N. R., Roychoudhury, A. N., Planquette, H., Bucciarelli, E., Thomalla, S. J., Ward, B. B., Fawcett, S. E. The kinetics of ammonium uptake and oxidation across the African sector of the Southern Ocean. *Limnology and Oceanography*.

- Rees, A. P., Brown, I. J., Jayakumar, A., Lessin, G., Somerfield, P. J., and Ward, B. B. Biological nitrous oxide consumption in oxygenated waters of the high latitude Atlantic Ocean. *Communications Earth and Environment*.
- Wan, X. S., Sheng, H.-X., Ward, B. B., Church, M. J., Zou, W., Li, X., Hutchins, D. A., Dai, M., Kao, S. J. Nitracline upward migration drives nitrite accumulation and nitrous oxide production in the ocean surface.
- Leuders-Dumont, J. A., Forder, A. G., Mohan, J. A., Walther, B. C., Sigman, D. M., and Ward, B. B. Diet-driven nitrogen isotopic change in the organic matrix of otoliths: a diet switch experiment with Atlantic croaker (*Micropogonias undulatus*). *Methods in Ecology and Evolution*.
- Sun, X. and Ward, B. B. Draft genome recovery reveals uncultured novel microbes linked to biogeochemistry in a marine oxygen minimum zone. *ISME J*.

In Press

- Ward, B. B. and X. Sun. Microbiology of oxygen minimum zones. In: *Microbiology of the Deep Sea*. Eds. Vetriani, C. and Giovannelli, D.

Published

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- Sun, X., Frey, C., Garcia-Robledo, E., Jayakumar, A., and Ward, B. B. Anaerobic nitrite oxidation: A missing component in the nitrogen cycle. *ISME Journal*. 15:1317-1329. (2021)
- Sun, X., A. Jayakumar, J. Tracey, E. Wallace, C. Kelly, K. Casciotti, and B. B. Ward. Microbial N₂O consumption in and above marine N₂O production hotspots. *ISME Journal*. 15:1434-1444. (2021).
- Jayakumar, A., and Ward, B. B. Diversity and distribution of nitrogen fixation genes in the oxygen minimum zones of the world oceans. *Biogeosciences*, 17, 5953–5966 (2020)
- Wilson, S. T., Al-Haj, A. N., Bourbonnais, A., Frey, C., Fulweiler, R. W., Kessler, J. D., Marchant, H. K., Milucka, J., Ray, N. E., Suntharalingham, P., Thornton, B. F., Upstill-Goddard, R. C., Weber, T. S., Arévalo-Martínez, D. L., Bange, H. W., Benway, H. M., Bianchi, D., Borges, A. V., Chang, B. X., Crill, P. M., del Valle, D. A., Farías, L., Joye, S. B., Kock, A., Labidi, J., Manning, C. C., Pohlman, J. W., Rehder, G., Sparrow, K. J., Tortell, P. D., Treude, T., Valentine, D. L., Ward, B. B., Yang, S. and Yurganov, L. N. Ideas and perspectives: A strategic assessment of methane and nitrous oxide measurements in the marine environment. *Biogeosciences*, 17, 5809–5828 (2020)
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- Lueders-Dumont, J., D. M. Sigman, B. Johnson, O. Jensen and B. B. Ward. Comparison of the isotopic composition of fish otolith-bound organic N with host tissue. *Canadian Journal of Fisheries and Aquatic Sciences*. 77: 264-275. doi.org/10.1139/cjfas-2018-0360 (2020)

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- Ji, Q., E. Buitenhuis, P. Suntharalingam, J. L. Sarmiento and B. B. Ward. Global nitrous oxide production determined by oxygen sensitivity of nitrification and denitrification. *Global Biogeochemical Cycles* [10.1029/2018GB005887](https://doi.org/10.1029/2018GB005887) (2018)

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- Ward, B. B. and N. C. Van Oostende. Phytoplankton assemblage during the North Atlantic spring bloom assessed from functional gene analysis. *Journal of Plankton Research*, doi: 10.1093/plankt/fbw043 (2016)
- Ji, Q., A. R. Babbin, A. Jayakumar, S. Oleynik, and B. B. Ward. Nitrous oxide production by nitrification and denitrification in the Eastern Tropical South Pacific oxygen minimum zone. *Geophysical Research Letters* 42:10755-10764 (2015)
- Peng, X., C. A. Fuchsman, A. Jayakumar, S. Oleynik, W. Martens-Habbena, A. H. Devol and B. B. Ward. Ammonium and nitrite oxidation in the Eastern Tropical North Pacific. *Global Biogeochemical Cycles*, doi:10.1002/2015GB05278 (2015)
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- Fawcett, S. E., B. B. Ward, M. W. Lomas, D. M. Sigman. Vertical decoupling of nitrate assimilation and nitrification in the Sargasso Sea. *Deep-Sea Research Part I* 103:64-72 (2015)
- Bowen, J. L., Weisman, D., Yasuda, M. Jayakumar, A., Morrison, H. G. and Ward, B. B. Marine oxygen deficient zones harbor depauperate denitrifying communities compared to extensive novel genetic diversity in coastal sediments. *Microbial Ecology* 70:311-321 (2015)
- Ji, Q., A. R. Babbin, X. Peng, J. L. Bowen and B. B. Ward. Nitrogen substrate dependent nitrous oxide cycling in salt marsh sediments. *Journal of Marine Research* 73:71-92 (2015)
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- Van Oostende, N. C., J. P. Dunne, S. E. Fawcett and B. B. Ward. Phytoplankton succession explains size partitioning of new production during upwelling blooms. *Journal of Marine Systems* 148: 14-25 (2015)
- Zhang, E. S. Huang, Q. Ji, M. Silvernagel, Y. Wang, B. Ward, D. M. Sigman and G. Wysocki. Nitric Oxide Isotopic Analyzer Based on a Compact Dual-Modulation Faraday Rotation Spectrometer. *Sensors*, 15(10)(2015) doi: 10.3390/s151025992
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- Peng, X., Jayakumar, A. and Ward, B. B. Community composition of ammonia-oxidizing archaea from surface and anoxic depths of oceanic oxygen minimum zones. *Frontiers of Microbiology* doi: 10.3389/fmicb.2013.00177 (2013)
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MEMBERSHIP IN PROFESSIONAL SOCIETIES

1988 - Present	The Oceanography Society
1982 - Present	American Geophysical Union
1982 - Present	Sigma Xi
1980 - Present	American Society for Microbiology
1980 - Present	American Association of Limnology and Oceanography
1978 - 1990	American Association for the Advancement of Science

RESEARCH CRUISES AND EXPEDITIONS

2018	Chief Scientist, R/V <u>Sally Ride</u> , Eastern Tropical North Pacific, 35 days, Mar-Apr.
2014	Chief Scientist, R/V <u>Endeavor</u> , Subarctic North Atlantic, 27 days, May.
2013	Chief Scientist, R/V <u>Endeavor</u> , Subarctic North Atlantic, 27 days, Aug-Sep. R/V <u>N. B. Palmer</u> , Eastern Tropical South Pacific, 35 days, Jun-Jul.
2012	R/V <u>T. G. Thompson</u> , Eastern Tropical North Pacific, 30 days, Mar-Apr. Chief Scientist, R/V <u>Atlantic Explorer</u> , Bermuda, 4 days, Aug.
2012	R/V <u>Atlantic Explorer</u> , Bermuda, 5 days, Aug.
2011	R/V <u>Atlantic Explorer</u> , Bermuda, 4 days, Nov.
2009	R/V <u>Atlantic Explorer</u> , Bermuda, 5 days, Dec.
2007	Chief Scientist, R/V <u>Roger Revelle</u> , Arabian Sea, 30 days, Sep – Oct.

- 2005 McMurdo Station and Lake Bonney, Antarctica, 6 weeks, Nov-Dec.
R/V Knorr, Eastern Tropical North Pacific, 21 days, Oct-Nov.
- 2004 McMurdo Station and Lake Bonney, Antarctica, 7 weeks, Nov-Dec.
Chief scientist, R/V Cape Henlopen, Sargasso Sea, 4 days, Oct, Chesapeake Bay, 3 days Oct.
- 2003 Chief scientist, R/V Cape Henlopen, Sargasso Sea, Chesapeake Bay, 3 days Apr, June, Oct.
- 2002 Chief scientist, R/V Cape Henlopen, Sargasso Sea, 4 days, Apr, Chesapeake Bay, 3 days Oct.
- 2001 Chief scientist, R/V Cape Henlopen, Chesapeake Bay, 3 days, Aug, 3 days Oct.
- 2000 McMurdo Station and Lake Bonney, Antarctica, 6 weeks, Nov-Dec.
- 1999 Chief scientist, R/V Point Sur, Monterey Bay, 5 bimonthly 1-day cruises.
McMurdo Station and Lake Bonney, Antarctica, 7 weeks, Nov-Dec
- 1998 Chief scientist, R/V Point Sur, Monterey Bay, 6 bimonthly 1-day cruises.
- 1996 R/V Sagar Sampada, Arabian Sea, 13 days, November.
- 1995 Chief Scientist, R/V New Horizon, Eastern Tropical North Pacific, 28 days, July.
- 1994 Chief Scientist, R/V Sproul, Southern California Bight, 6 days, April.
McMurdo Station and Lake Bonney, Antarctica, 6 weeks, Nov-Dec.
- 1993 Chief Scientist, R/V Point Sur, Monterey Bay, 6 days, March.
Chief Scientist, R/V Point Sur, Monterey Bay, 6 days, October.
- 1992 Chief Scientist, R/V Sproul, Southern California Bight, 6 days, October.
McMurdo Station and Lake Bonney, Antarctica, 6 weeks, Nov-Dec.
- 1990 R/V New Horizon, Southern California Bight, 14 days, July.
R/V New Horizon, Southern California Bight, 10 days, January.
- 1988 Chief Scientist, R/V Sproul, Southern California Bight, 5 days, October.
R/V Knorr, Black Sea, 16 days, July.
Chief Scientist, R/V Sproul, Southern California Bight, 5 days, June.
- 1987 R/V New Horizon, CaBS Cruise-7, Southern California Bight, 3 days, October.
- 1986 Chief Scientist, R/V Barnes, Saanich Inlet, British Columbia, 4 days, September.
Chief Scientist, R/V Barnes, Saanich Inlet, British Columbia, 4 days, August.
- 1986 R/V Iselin, Cariaco Trench, 30 days, February-March.
- 1985 R/V Sproul, SCBS Cruise-23, Southern California Bight, 7 days, May.
R/V Wecoma, Nitrogen transformations in the oxygen minimum zone off Peru, eastern tropical Pacific, 35 days, March.
- 1983 R/V Wecoma, eastern subtropical Pacific, 30 days, November.
- 1982 R/V New Horizon, SCBS Cruise-22, Southern California Bight, 10 days, May.
R/V New Horizon, SCBS Cruise-21, Southern California Bight, 5 days, November.
- 1981 R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 21 days, August.
- 1980 R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 21 days, September.
- 1979 R/V Oceanus, Northeast Atlantic, 14 days, November.
R/V T. G. Thompson, subtropical Pacific, 30 days, September.

- 1978 R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 21 days, July.
R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 7 days, May.
- 1977 R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 7 days, March.
R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 10 days, September.
R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 7 days, April.

LECTURES, SEMINARS AND PRESENTED PAPERS

- 2020 Department of Ecology, Environment and Plant Sciences, Stockholm University, Sweden, December, Invited Speaker
Escuela de Ciencias del Mar, Pontificia Universidad Católica de Valparaíso, Chile, November, Invited Speaker
- 2019 Princeton Energy and Climate Scholars, Princeton University, Princeton, NJ, December, Invited Speaker
6th International Conference on Nitrification, Xiamen, China, October, Plenary Speaker
Princeton Environmental Institute Seminar, Princeton University, Princeton, NJ, April, Invited Speaker
Swedish National Academy of Sciences, Deoxygenation symposium, Sweden, January, Invited Speaker
- 2018 Challenger Society, Newcastle, UK, September, Plenary speaker
Ocean Deoxygenation Symposium, GEOMAR, Kiel, Germany, September, Plenary Speaker
- 2017 5th International Conference on Nitrification, Vienna, Austria, invited speaker, August
Departmental Seminar, invited speaker, MIT, December
- 2016 Invited Speaker and Symposium leader, International Symposium on Ocean Deoxygenation; SCOR WG-144 and Symposium in honor of the retirement of Professor Wajih Naqvi, Director National Institute of Oceanography, Goa, India, December
Departmental Seminar, invited speaker, University of Wisconsin, November
Departmental Seminar, invited speaker, Johns Hopkins, October
Marie Tharp Lecturer, GEOMAR, Kiel, Germany, September

- 2015 International Symposium on Dynamics of the Indian Ocean: Perspective and Retrospective, Goa, India, December
Charnock Lecture, Southampton Oceanography Center, UK, October
Goldschmidt Conference, Invited Keynote Lecture, Prague, August
Chemical Oceanography H. Burr Steinbach Lecture, WHOI, July
Departmental Seminar, invited speaker, WHOI, July
ASLO meeting, Plenary Speaker, Granada, Spain, March
- 2014 American Geophysical Union, Rachel Carson Award Lecture, December
Rutgers University, New Brunswick, NJ, USA, Selman A. Waksman award speaker, April
- 2013 Harvard University, Boston, MA, USA, invited seminar, December
Universidad Catolico, Santiago, Chile, invited seminar, November
Universidad Concepcion, Concepcion, Chile, invited seminar, November
Rutgers University, New Brunswick, NJ, USA, invited seminar, November
University of Rhode Island, Narragansett, RI, USA, Charles and Marie Fish Lecture in Oceanography, November
Plymouth Marine Laboratory, invited seminar, May
ASLO meeting, New Orleans, LA, invited speaker, February
- 2012 American Society for Microbiology, Proctor and Gamble Award speaker, June
University of Toronto, invited Symposium speaker, January
- 2011 Aspen Institute for Physics, Microenvironments Workshop, invited plenary speaker, January
Lamont Doherty Earth Observatory, March, departmental seminar
Second International Conference on Nitrification, The Netherlands, July, invited plenary speaker
Nereis Park Benthic Processes in a Globally Changing Environment, Kristineberg, Sweden, August, invited plenary speaker
Scripps Institution of Oceanography, San Diego, CA, November, Departmental seminar speaker
- 2010 ASLO meeting, Portland, OR, invited speaker, February
University of Georgia, Department of Marine Science, Departmental Seminar speaker, March
Gordon Conference Marine Microbial Ecology, invited speaker, July
ISME (International Society for Microbial Ecology) Session Chair and invited symposium speaker, August
Geotraces Scoping Workshop, Los Angeles, CA, invited speaker, November
Plymouth Marine Laboratory, invited speaker, December
Agricultural University of Sweden, Departmental Seminar, December
- 2009 Rutgers, Princeton Environmental Geochemistry seminar, May
ASLO meeting, Nice, France, February, Session chair

- Plymouth Marine Laboratory, July, invited speaker
 First International Conference on Nitrification, Louisville, KY, July, invited speaker
 Agouon Nitrogen meeting, October, invited speaker
 Princeton, Departmental seminar, December
- 2008
 International Symposium on Microbial Ecology, Cairns, August, speaker
 University of Maryland, Baltimore, May, departmental seminar
 EC-US Task Force on Biotechnology Research, Mallorca, June, invited speaker
 University of Cape Town, South Africa, Workshop on International Oceanographic collaboration, July, invited speaker
 Stroud Water Research Center, Avondale, PA, May, invited speaker
 Royal Netherlands Academy of Arts and Sciences Colloquium for International Census of Marine Microbes, Amsterdam, May, invited speaker
- 2007
 ASLO meeting, Santa Fe, February, speaker
 Lamont Doherty Earth Observatory, March, departmental seminar
 Sequencing the Seas (NERC), London, May, invited speaker
 ASM meeting, Toronto, May, invited symposium speaker, symposium organizer
 Plymouth Marine Laboratory, July, invited speaker
- 2006
 ASLO meeting, Hawaii, February, speaker, session chair
 Environmental Systems Microbiology Symposium, Georgia Institute of Technology, March, invited speaker
 SGM Symposium, Environmental Metagenomics, Warwick University, UK, April, invited speaker
 Sustained Indian Ocean Biogeochemical and Ecological Research (SIBER) Workshop, Goa, India, October, invited speaker
 Anthropogenic Nitrogen in the Marine Environment, SCOR workshop, Norwich, England, November, invited
 Old Dominion University, Norfolk, VA, December, invited
 Great Lakes Center for Research, Milwaukee, WI, November, invited
- 2005
 ASLO meeting, Salt Lake City, February, invited speaker
 University of Oregon, May, invited seminar speaker
 UNC Wilmington, Marine Sciences/Department of Biology, May 2005, invited
 ASLO meeting, Santiago, Spain, June, special session speaker
 Significant Pathways, Observations and Transformation in Oceanic Nitrogen (SPOT-ON) Conference, Warnemunde, Germany, July, invited speaker
 Oceanic Carbon and Climate Change (OCCC) science meeting, Woods Hole, MA, August, invited speaker
 Brown University, Department of Ecology and Evolutionary Biology, September, invited seminar speaker
 Cray Science Laboratory, McMurdo Station Antarctica, December

- 2004 Agouoron Institute Workshop on Marine Microbial Ecology, Del Mar, CA, January
 Arctic Microbiology conference, Rovaniemi, Finland, March, invited
 Marine and Freshwater Molecular Biology meeting, University of Norwich, UK, June, Plenary speaker
 Speaker, Gordon Conference in Bioinorganic Chemistry, Maine, July
 Departmental Seminar, Ecole Normale Superieure, Paris, France, July
 Departmental Seminar, Plymouth Marine Laboratory, Plymouth, UK, August
- 2003 ASLO meeting, Salt Lake City, February, Session Chair and Speaker
 Gothenburg University, Gothenburg, Denmark, Symposium on Alternative Pathways in Nitrogen Cycling, March, Invited Speaker
 Geobiology Course, Catalina Island (USC): "Function and Diversity in the Nitrogen Cycle," Symposium Speaker, July
 Teachers Experiencing Antarctica Workshop, American Museum of Natural History, NYC, July, Invited Speaker
- 2002 Cornell University, Biogeochemistry and Biocomplexity program, departmental seminar, October
 Rutgers University, Biochemistry and Microbiology Department, departmental seminar, November
 Plymouth Marine Laboratory, Plymouth UK, November
 Center for Ecology and Hydrology, Oxford University, Oxford UK, November
 Environmental Bioinorganic Chemistry Gordon Conference, June, Session Chair and Invited Speaker
 ASLO meeting, Hawaii, February, Session Chair and speaker
 AGU meeting San Francisco, December, Invited Speaker
- 2001 "Denitrification in an Antarctic lake: A role for trace metal regulation?" ASLO, Albuquerque, February.
 "Functional diversity in microbially mediated nitrogen cycling." Chemical Oceanography Gordon Conference, August.
 "Community structure and activity of AOB assemblages compared in the marine water column vs. intertidal sediments." International Symposium on Microbial Ecology, Amsterdam, August.
 Biocomplexity of aquatic microbial systems: Relating diversity of microorganisms to ecosystem function." NSF, October.
 "Methods limited, technology driven: A new age of discovery in aquatic environmental microbiology." Biotechnology Center for Agriculture and the Environment, Rutgers University, October.
 "Functional diversity in microbially mediated nitrogen cycling." Georgia Institute of Technology, October.
- 2000 "Functional diversity of nitrification and denitrification." ASM, invited symposium, Los Angeles, May.

- "Nitrogen cycling in aquatic environments: Microbiological and biogeochemical advances in the study of nitrogen transformations. 7th European Marine Microbiology Symposium, invited symposium, The Netherlands, September.
- "Functional diversity of nitrification and denitrification." Florida State University, October.
- "Complexity and diversity in the marine nitrogen cycle." Princeton Environmental Institute, October.
- "Control of denitrification in a permanently ice-covered Antarctic lake: A role for bioactive trace metals?" McMurdo Station, Antarctica, November.
- 1999 "Molecular Microbial Ecology: The wave of the future in oceanographic exploration" Bigelow Laboratory for Ocean Sciences, 25th Anniversary Conference, June
- "Probing for Denitrification in Aquatic Systems." State University of New York, Stony Brook, October.
- "Probing for Denitrification in Aquatic Systems." University of Delaware, Lewes, October.
- 1998 "Denitrification parameters in the Arabian Sea." ASLO, San Diego, February.
- "Biogeochemistry and molecular ecology of nitrification and denitrification in aquatic environments." Dauphin Island Marine Laboratory, Alabama, May.
- "Mystery of denitrification in a permanently ice-covered Antarctic Lake. Dauphin Island Marine Laboratory, Alabama, May.
- "Biogeochemistry and molecular ecology of nitrification and denitrification in aquatic environments." University of California, Irvine, May.
- 1997 "Where does the nitrogen go? Tracer experiments in an enclosed planktonic system." ASLO, Santa Fe, February.
- "Molecular ecology of nitrifying bacteria." Departmental Seminar, Virginia Institute of Marine Sciences, Williamsburg, March.
- "Biogeochemistry and molecular ecology of the nitrogen cycle." Departmental Seminar, Princeton University, April.
- "Biogeochemistry and molecular ecology of the nitrogen cycle." Oceanography Departmental Seminar, University of Washington, Seattle, May.
- "Environmental regulation of biogeochemical nitrogen cycles and linkage to community diversity and composition." Applied and Environmental Microbiology Gordon Conference, July.
- 1996 "Nitrification and denitrification in aquatic and sediment environments: What we've learned about their biogeochemistry from molecular biology." Skidaway Institution of Oceanography, Savannah, GA, January.
- "Production and consumption of dissolved organic nitrogen by planktonic assemblages in coastal systems: Trophic implications from size fraction experiments." ASLO/AGU San Diego, February.

- “Nitrification and denitrification in the marine environment: What we’ve learned about their biogeochemistry from molecular biology.” Oceanography Departmental Seminar, Texas A&M University, March.
- “Nitrification and denitrification in the marine environment: What we’ve learned about their biogeochemistry from molecular biology.” Biology Departmental Seminar, Woods Hole Oceanographic Institution, March.
- “Redrawing the box model of the nitrogen cycle of surface waters.” General Seminar, Woods Hole Oceanographic Institution, March.
- "Molecular microbial ecology of denitrification in marine environments." National Institute of Oceanography, Goa, India, November.
- 1995 “Detecting, characterizing and quantifying nitrifying and denitrifying bacteria in aquatic and sediment environments.” Marine Biology Departmental Seminar, Scripps Institution of Oceanography, October.
- “Nitrification and ammonification in aquatic systems” NASA workshop on “Nitrogen dynamics in controlled systems,” Berkeley, September
- “Detection and characterization of denitrifying bacteria from a permanently ice-covered Antarctic lake.” ASLO, Reno, June.
- “Probing bacterial processes on oceanic to micro-scales.” MIT, March.
- 1994 "Functional and taxonomic probes for bacteria in the nitrogen cycle." Invited speaker, NATO ASI Workshop, Molecular Ecology of Aquatic Microbes, Italy, August.
- "Probing the unusual nitrogen cycle of a permanently frozen Antarctic lake." Microbiology Department, Aberdeen University, Scotland, August.
- "Probing the unusual nitrogen cycle of a permanently frozen Antarctic lake." Invited participant and speaker, Workshop on Molecular Microbial Ecology and Biosafety. Braunschweig, Germany, June.
- "Probing the nitrogen cycle: Nitrification and Denitrification." Invited symposium speaker, ASM, Las Vegas, May.
- “Microbial ecology of estuaries.” Monterey Bay Marine Biological Symposium, Naval Post Graduate School, February.
- 1993 “Probes for bacteria in the marine nitrogen cycle.” Gesellschaft für Biotechnologische Forschung mbH, Braunschweig, Germany, December.
- “Nitrification and denitrification in oxic/anoxic interface environments.” Lehrstuhl für Mikrobiologie, Universität Karlsruhe, Karlsruhe, Germany, December.
- “Probes for bacterial processes in the nitrogen cycle of an Antarctic Lake.” Max Planck Institute für Limnologie, Plön, Germany, November.
- “Transformation rates, species distributions and functional probes; complex pictures of the marine nitrogen cycle.” Institute for Marine Research, Warnemuende, Germany, November.
- “Nitrification and denitrification in oxygen minimum zones.” Department of Ecology and Genetics, Aarhus University, Aarhus, Denmark

Rate processes, species distributions and function-specific probes for bacteria in the nitrogen cycle." Max Planck Institute für Marine Microbiology, Bremen, Germany, November.

"Microbiology of nitrogen transformations in marine gradient ecosystems." American Society for Microbiology, Atlanta, May.

"Marine microbiology and nitrogen cycling in interface environments." Microbiology Department, Auburn University, May.

- 1992 "Relationships between methane and ammonium oxidation in seawater." Invited departmental seminar, Soil Sciences Department, University of California, Berkeley, January.
- "Probes for denitrifying bacteria in marine systems and proposed use in Tomales Bay microbial mats." Marconi Conference Center (Tiburon Center, UCSF), March.
- "Nitrification leads to denitrification: Studies on the marine nitrogen cycle." Biology departmental seminar, Montana State University, Bozeman, March.
- "Probes for denitrifying bacteria in the marine environment." Invited departmental seminar, Oceanography Department, University of Washington, Seattle, May.
- "Bioremediation by microbial mats." ONR Workshop on Bioremediation, Seattle, June.
- "Genetic and immunological diversity of marine denitrifying bacteria." American Society for Microbiology, New Orleans, May.
- "Specific probes for denitrifying bacteria." Invited, ASLO, Santa Fe, February.
- 1991 "Methane oxidation at deep methane maxima in coastal California waters." Tenth International Symposium on Environmental Biogeochemistry, San Francisco, August.
- "Biotechnology applications in marine nitrogen cycle studies." National Institute of Oceanography, Goa, India, November.
- 1990 "Nitrification leads to denitrification: Studies on the marine nitrogen cycle." Rutgers University, New Brunswick, October.
- "Reaction kinetics in the real world: Nitrification and methane oxidation in marine systems." Oceanography departmental seminar, Old Dominion University, Norfolk, October.
- "Relationship between ammonium and methane oxidation in a stratified fjord." Marine Sciences departmental seminar, University of California, Santa Cruz, May.
- "Nitrogen cycling in anoxic basins: The Black Sea and the Cariaco Trench." Oceanography departmental seminar, University of Washington, Seattle, March.
- "Reaction kinetics in the real world: Nitrification rates and V vs S ." University of Washington, Seattle, March.
- Inorganic nitrogen "Transformations in the Black Sea." AGU/ASLO, February.

- 1989 "Inorganic nitrogen transformations in the oxic zone of the Black Sea." NATO Workshop on Black Sea Oceanography, Izmir, Turkey, October.
 "Relationship between substrate concentration and nitrification rates: Kinetics in the real world." Southern California Microbial Physiology Society, UC Riverside, April.
 "Dissolved methane in the Southern California Bight." Scripps Institution of Oceanography, March.
- 1988 "Biological nitrogen cycling in the nitracline." AGU, San Francisco, December.
 "Kinetics of ammonium and methane oxidation in pure cultures and natural populations." Horn Point Environmental Laboratory, May.
 "Chemoautotrophic CO₂ assimilation by nitrifying bacteria in marine systems: an enzymatic approach." Nitrification in Terrestrial and Aquatic Systems, an International Workshop organized by the Institute for Ecological Research, Arnhem, The Netherlands, April. (presented by H.E. Glover)
 "Nitrification and trace gases in oceanic systems." Nitrification in Terrestrial and Aquatic Systems, an International Workshop organized by the Institute for Ecological Research, Arnhem, The Netherlands, April.
 "Methane oxidation by marine nitrifying bacteria." University of California, Santa Cruz, February.
- 1988 "Methane oxidation and methane flux in Saanich Inlet during summer stratification." ASLO, New Orleans, January.
 "Relationship between ribosomal content and growth rate in a marine bacterium." ASLO, New Orleans, January. (presented by L.J. Kerkhof)
- 1987 "Methane oxidation by marine ammonia-oxidizing bacteria." 3rd European Marine Microbiology Symposium, Menai Bridge, Wales, September.
 "Nitrogen and carbon cycling by marine nitrifying bacteria." Scripps Institution of Oceanography, June.
 "Oceanic source of atmospheric methane estimated from in situ methane oxidation rates." American Chemical Society, Denver, April.
 "Relationships between methane and ammonia oxidation in seawater." American Society for Microbiology annual meeting, Atlanta, GA, March.
- 1986 "Methane oxidation in the marine water column." AGU, San Francisco, December.
 "Immunoaffinity column for separation of marine nitrifying bacterium." Invited. Immunochemical Methods in Estuarine, Coastal and Oceanographic Ecology, University of Southern Maine, Portland, October.
 "Kinetics of ammonium oxidation and methane oxidation by a marine nitrifying bacterium." Limnological Institute, University of Uppsala, Sweden, May.
 "Nitrification and nitric oxide in the oxygen minimum of the Eastern Tropical North Pacific." Botaniska Institutionen, Goteborgs Universitet, Sweden, May.
 "Nitrification and methane oxidation in the sea: Kinetic evidence for methylotrophic marine nitrifying bacteria." Marine Biological Association of the United Kingdom, Plymouth, England, April.

- "Nitrification and nitric oxide in the oxygen minimum of the eastern Tropical North Pacific." University College of North Wales, Menai Bridge, Wales, April.
- "Nitrification rates and nitric oxide in the oxygen minimum zone off Baja California." ASLO, New Orleans, January.
- "Bacteriological studies in the oxygen minimum off Peru." ASLO, New Orleans, January.
- 1985 "Nitrification in the Southern California Bight." Center for Great Lakes Studies, University of Wisconsin, Milwaukee, October.
- 1984 "Serological diversity of nitrifying bacteria and nitrification rates in the Southern California Bight." ASLO, San Francisco, December.
Published Abstract, EOS, 65(45):920
- "Nitrogen oxidation and assimilation in the Southern California Bight." University of Texas, Port Aransas, April.
- "Environmental control of marine nitrification rates." ASLO, New Orleans, January. Published Abstract, EOS, 64(52):1075
- 1983 "Contributions of phytoplankton and nitrifying bacteria to nitrogen fluxes in coastal waters." Third International Symposium on Microbial Ecology, Michigan State University, East Lansing, August.
- "Contributions of phytoplankton and nitrifying bacteria to nitrogen cycling in coastal waters." University of California, Santa Barbara, May.
- "Nitrogen cycling in coastal waters off the coast of Washington." Woods Hole Oceanographic Institution, February.
- 1982 "Immunofluorescence for ecological study of individual bacterial species." Invited presentation, ASLO, San Francisco, December.
[Published Abstract, EOS 63(45):958] "Autotrophic activity of marine nitrifying bacteria in the primary nitrite maximum of the coastal Northeast Pacific Ocean." ASLO, San Antonio, February.
- 1981 "Abundance and in situ activity of marine nitrifying bacteria." American Society for Microbiology, Dallas, March. (Published Abstract of Annual Meeting of the American Society for Microbiology. Amer. Soc. Microbiol. Washington, D.C., p.180)
- 1980 "Marine nitrification: Estimates of in situ microbial activity." ASLO, Seattle, December. (with R.J. Olson).
- 1979 "An immunofluorescence assay for the enumeration of Nitrosococcus Oceanus" ASLO, Stony Brook, June. (with M.J. Perry).

SELECTED PROFESSIONAL ACTIVITIES / UNIVERSITY SERVICE

2020 Chair, PEI teaching postdoctoral fellows program and search committee

2019 Visiting Committee to review Atmospheric and Ocean Sciences Ph.D. program, University of California, Los Angeles

2018-present PEI Faculty Advisory Committee

2017-2019 Chair, PEI senior search committee

2018-present University and Geoscience Building Committees

2017 Visiting Committee to review Oceanography Ph.D. program, University of California, Santa Barbara

2016-2017 Committee on Promotion and Tenure, Princeton University

2016 Visiting Committee to review Georgia Tech, School of Earth and Environmental Sciences

2016-2018 Princeton University Task Force on the Environmental Sciences

2014 Visiting Committee to review MIT/WHOI Joint Program in Oceanography

2014-2015 Sir Alister Hardy Foundation for Ocean Sciences (SAHFOS) task force member

2014-2015 Princeton University Task Force on the future of the Natural Sciences

2014-2018 Chair SCOR working group chair, Deoxygenation in the Oceans

2013-2014 Princeton University President's Committee on the Grading Policy

2012-2015 Member, Decadal Survey of Ocean Sciences, National Academy of Sciences

2011-2015 TARA Oceans project, Science Advisory Board

2010 Panel Member, Chemical Oceanography, National Science Foundation

2010 Steering Committee, NSF Geotraces workshop: The molecular biology of biogeochemistry: Using molecular methods to link ocean chemistry with biological activity

2008-2009 Member, President's Committee on Climate Science at Princeton, Princeton University

2006-2007 Committee on Promotion and Tenure, Princeton University

2006-present Chair, Department of Geosciences, Princeton University

2005 Panel Member, Biological Oceanography, National Science Foundation

2005-2006 Chair, Graduate Work Committee, Department of Geosciences

2004-2006 Princeton Environmental Institute, Chair of undergraduate program

2004-present Nitrification Network RCH and International Conference on Nitrification, steering committee

2004 Discussion Leader, Picoplankton Gordon Conference, June
Special Sessions Chair, ASLO 2004 February meeting

2005-present Member, Scientific Advisory Council, Plymouth Marine Laboratory

2001-2003 Member, President's Task Force on the Status of Women in the Sciences and Engineering at Princeton University

2001-2006 Member, Radiation Safety Committee, Princeton University

2001-2002 Chair, American Society for Limnology and Oceanography Public Policy and Outreach Committee

2001-2004 Member, Steering committee for Coastal Ocean Processes (CoOP)

2001 Panel Member, Biological Oceanography, National Science Foundation

2001 Panel Member, Microbial Observatories, National Science Foundation

2001 Discussion Leader, Chemical Oceanography Gordon Conference, August

2000-present Member, Executive Committee for the Princeton Environmental Institute

1999-2003 Member, Council on Science and Technology, Princeton University

- 1999-present Member, Interdepartmental Committee for the Program in Environmental Studies, Princeton Environmental Institute
- 1999 Chair, External Visiting Committee for the Biology Department, Woods Hole Oceanographic Institution
Discussion Leader, Gordon Conference on Applied and Environmental Microbiology: Global Processes, Microorganisms and Molecular Ecology
- 1998-2005 Member, Graduate Work Committee, Geosciences Department
- 1998 Special Sessions Program Chairman, ASLO99 Committee
- 1998 Steering Committee Member and invited participant, OUEVRE future of biological oceanography workshop sponsored by NSF
- 1997 Session Chairman, Nitrogen Transformations, ASLO, February
Discussion Leader, Applied and Environmental Microbiology Gordon Conference, July
- 1997 Panel Member, Office of Polar Programs, National Science Foundation
- 1997-Present Subject Editor, Aquatic Microbial Ecology
- 1996-Present Editorial Board Member, Microbial Ecology
- 1996-1998 Biological Oceanography representative, The Oceanography Society Council
- 1995-1998 Ocean Sciences Department Chair, UCSC
- 1995-1998 Member, Fleet Improvement Committee for UNOLS (University National Oceanographic Laboratory System)
- 1995-2006 Editorial Board Member, Global Change Biology journal
- 1994-1997 Member, US JGOFS Steering Committee
- 1993-1996 Nominations Chairperson, Sigma Xi, UCSC Chapter
- 1992-1995 Member at Large, ASLO
- 1992 Panel Member, Biological Oceanography, National Science Foundation, January
- 1990 - 1992 Member, Editorial Board, American Society for Limnology and Oceanography (ASLO)
- 1982-Present Reviewer for NSF Programs (Biological Oceanography, Chemical Oceanography, Small Business Initiative Research, Biological Instrumentation, etc.).
Reviewer for NASA, Sea Grant, NERC, etc. Programs.
- 1980-Present Reviewer for Journals (e.g., Limnology and Oceanography, Deep-Sea Research, Marine Chemistry, Marine Ecology-Progress Series, Science, Nature, Journal of Marine Research, ISME Journal, Water Research, and others).
- 1991 Session Chairman, "Metals, Organics, and Depositional Environments." International Symposium on Environmental Biogeochemistry, San Francisco, August
Member, National Scientific Committee for Tenth International Symposium on Environmental Biogeochemistry
Member, Indo-U.S. Working Group on Atmospheric and Marine Sciences, Delhi, India, November
- 1990 Panel Member, Biotechnology Fellowship Program, National Science Foundation, October.
Participant, Future directions for DOE-sponsored Oceanographic Research Workshop, June.
Working group member, Arctic System Science Workshop, JOI sponsored, March.

- 1989 Panel Member, Biotic Systems and Resources, National Science Foundation, May.
Panel Member, Biological/Chemical Oceanography, National Foundation, January.
- 1988 Session Chairman, AGU/ASLO, December.
Session Chairman, Workshop on Transfer of Biotechnology to Marine Sciences, September.
Panel Member, Biotic Systems and Resources, National Science Foundation, May.
- 1984 Session Chairman, AGU/ASLO, December.
- 1982 Session Chairman, AGO/ASLO, December.

CLASSROOM TEACHING (last five years)

Quarter/ Semester	Course Number	Course Name	Enrollment
Spring 2020	GEO 417	Biological Oceanography	13
Fall 2020	GEO 506	Fundamentals of Geosciences	8 Team taught
Spring 2019	GEO 417	Environmental Microbiology	14
Fall 2019	GEO 506	Fundamentals of Geosciences	5 Team taught
Spring 2018	GEO 428	Biological Oceanography	13
Fall 2018	GEO 506	Fundamentals of Geosciences	13 Team taught
Spring 2017	GEO 417	Environmental Microbiology	14
Fall 2017	GEO 506	Fundamentals of Geosciences	6 Team taught
Spring 2016	GEO 428	Biological Oceanography	15
Fall 2016	GEO 506	Fundamentals of Geosciences	5 Team taught

OTHER TEACHING

Thesis Advisor, Ph.D. Students:

Lee Kerkhof (UCSD), Ph.D. 1991
 Mary Voytek (UCSC), Ph.D. 1996
 Karen Casciotti (Princeton), Ph.D. 2002
 Gregory O'Mullan (Princeton), Ph.D. 2005
 Anita Adhitya (Princeton), Ph.D. 2009
 Silvia Newell (Princeton), Ph.D. 2010
 Sarah Fawcett (Princeton), Ph.D. 2012
 Andrew Babbin (Princeton), Ph.D. 2014
 Xuefeng Peng (Princeton), Ph.D. 2015
 Qixing Ji (Princeton), Ph.D. 2016
 Jessica Lueders-Dumont (Princeton), Ph.D. 2019
 Xin Sun (Princeton), Ph.D. 2020

John Tracey (Princeton), 2016 – present
Julia Carroll (Princeton), 2017 – 2019
Naomi Intrator (Princeton) 2018 – present
Jenna Lee (Princeton) 2018 – present
Moriah Kunes (Princeton) 2020 – present

Thesis Advisor, Biology Masters Students (UCSC)

Robert Harding, M.S., 1998
Brandon Carter, M.S., 1999

Thesis Advisor, Marine Sciences Masters Program Students (UCSC)

Don Bard, M.S., 1995
Mary Hogan, M.S., 1995
Deborah Smalheer, M.S., 1997
Neil Harrington, M.S., 1999
Icarus Solem, 2000

Postdoctoral Scholars:

Dr. Xianhui Wan, 2020 – present
Dr. Weiyi Tang, 2019 – present
Dr. Claudia Frey, 2016 – 2018
Dr. Sarah E. Fawcett, 2012 – 2015
Dr. Nicolas van Oostende, 2012 – 2018
Dr. Bonnie X. Chang, 2010 – 2013
Dr. Jenifer Bowen, 2007 – 2010
Dr. Nicholas Bouskill, 2006 - 2009
Dr. Punyasloke Bhadury, 2006 - 2008
Dr. Gregory O'Mullan, 2005 - 2006
Dr. Jenny Baeseman, 2004 - 2006
Dr. Jeremy Rich, 2004 - 2007
Dr. Caroline Tuit, 2003 - 2006
Dr. Andrew Allen, 2002 - 2006
Dr. Chris Francis, 2001 - 2003
Dr. Bongkeun Song, 2000 - 2004
Dr. Gaspar Taroncher-Oldenburg, 2000 - 2002
Dr. Amal Jayakumar, 2000 - 2004
Dr. Melissa Staid, 1998 - 2000
Dr. Darryl Martino, 1998-2000
Dr. Deborah Bronk, 1992-1994
Dr. Dennis Hansell, 1989-1991

Committee Member for the following Ph.D. Students:

Princeton Gemma Sawell (GEO)
Alliya Akhtar (GEO)
Abigale Wyatt (GEO)
Devan Nisson (GEO)
Yeongjun Ryu (GEO)
Eunah Han (GEO)
Naomi Intrator (GEO)
Zachary Garvin (GEO)
Katje Luxem (GEO)
Patricia Brandt (EEB)
Rachel Harris (GEO)
Cara Magnabosco (GEO)
Brandon Stackhouse (GEO)
Jahnvi Punekar (GEO)
Farhan Narruzamann (GEO)
Johanna Goldman (GEO)
Kristen Karsh (GEO)
Dalin Shi (GEO)
Jenna Losh (GEO)
Kuan Huang (GEO)
Yan Xu (EEB)
Haewon Park (GEO)
Wei Jiang (GEO)
Mark Davidson (GEO)
Bianca Mislwak (GEO)
Sigel Abramovitch (GEO)
Alex Barron (EEB)
Eileen Ekstrom (CHEM ENG)
Eric Egleston (CHEM ENG)
Curtis Deutsch (AOS)
Meredith Galanter-Hastings (GEO)
Jenifer Kiesman (EEB)
Angela Knapp (GEO)
Phoebe Lam (GEO)
Li-Hung Lin (GEO)
Brian Mailleux (GEO)
Philippe Tortell (EEB)

UCSC Jon Ashen
Katherine Courtney
Cristina Diaz
David Hutchins
Peter Miller
Debbie Moon
Angus Murphy

Mike Murrell
Michele Nishiguchi
Jonathon Phinney
Swarup Wood
Lief Abrell

Elsewhere Caroline Miller Solomon, Horn Point Laboratory, University of Maryland
Alex Parker, University of Delaware
Yuko Sukano, Rutgers
Marshall Bowles, University of Georgia
Charles Schutt, University of Georgia
Vani Motit, Laval University, Canada
Jessica Lisa, Virginia Institute of Marine Sciences
David Capelle, University of British Columbia
Stephanie Wilson, Virginia Institute of Marine Sciences

Committee Member for the following Marine Sciences Masters Students (UCSC):

Khalil Abu-Saba
Graeme Haywood
Eric Millbrecht
Roman Marin
Susan Rose
Miranda Sanders
Patricia Smith
Kira Steinberg
Peter Walz

Senior Thesis Advisor

Spring 1991 Gabriela Tobal: The Effect of Nitrous Oxide on Nitrate Reductase Activity in the Process of Denitrification in *Pseudomonas perfectomarina*.
Francine A. Stanton: Construction and Applications of Xyl E Probe for Detection of TOL+ Bacteria Strains in the Santa Cruz Harbor.
Cindy Smith MacConnell: The Diversity of Luminescent Bacterial Isolates from the Monterey Bay, Characterized through Nutritional Capabilities and Restriction Fragment Length Polymorphism.

Fall 1991 Lara Hansen: The Effect of UVB Radiation on *Pseudomonas perfectomarina* in Simulated Surface Waters of Monterey Bay.

Spring 1992 Christina De La Rocha: Tannin Tolerance in Bacteria isolated from the Guts of Herbivorous Marine Invertebrates and Fish.

Spring 1994 Chris Francis: Quantitative Hybridization Method for Detection and Enumeration of the xylE Gene in a Microbial Mat Community.

- Alisa Kirk: Depth Profile of Plasmid DNA Extracted from the Microbial Mats of Elkhorn Slough.
- Spring 1997 Jeremy Factor, Detection of ammonia monooxygenase and methane monooxygenase genes using the PCR.
L.C. Gorham: Endosulfan Residue in Sediments of Elkhorn Slough.
Julia Muldoon: Construction of a Gene Probe for the Detection of the 2,4-D Degrading Plasmid pJP4 in *A. eutrophus* JMP134.
Jan Purl: A Study of Zooplankton Fecal Pellet Contents as an Indicator of Variation in Diet.
- Spring 1998 Kiersten Ballard: Characterization of ammonia monooxygenase genes in nitrifying bacteria using PCR and sequence analysis.
Erin Osborne: Detection and quantification of gene fragments homologous with the *tfdD* gene for 2,4-D degradation in marine sediments
Caroline Jenkins: Genetic diversity of functional genes in denitrifying bacteria investigated via PCR amplification of *NiR* gene in unidentified denitrifying bacterial isolates
- Spring 1999 Margaret Harrison: Biology of Doliolids (EEB)
- Spring 2002 Erin Griner: Optimization of microarray hybridization analysis for functional genes (CEM)
Katrina Jessoe: Diversity of *Synechococcus* and *Prochlorococcus* in the California Current Investigated by *rpo*-gene sequencing (EEB)
- Spring 2004 Evan Chyun: Real-time PCR quantification of nitrate transporter gene expression in diatoms (GEO)
- Spring 2007 Erin Lough: Diversity of microbial communities associated with Mediterranean shipwrecks (EEB)
- Spring 2010 Diana Chien (EEB); Phytoplankton Species Composition Investigated using functional Gene microarrays
- Spring 2012 Owen Coyle (GEO): A High-Definition Examination of Nitrogen Transformation in Marine Sediments
Alisa Tao (GEO): Sequence of Dissolved Inorganic Nitrogen Production During Denitrification by Marine Bacterial Strains
- Spring 2015 Martin Wolf (CBE): No Nitrification, No NO₃? The Importance of Nitrification in the Epipelagic North Atlantic
- Spring 2016 Sophia Myers (GEO): Regional variation in North Atlantic Bight baseline N isotopes and its relation to isotope signatures in fish otoliths
Atleigh Forden (GEO): Reconstructing fish ecology from otolith geochemistry: Past and present
Sunyoung Wang (CEE): Determination of key functional traits for environmentally important phytoplankton
- Spring 2018 Henry Ogilby (GEO): The role of encapsulin nanocompartments in anaerobic ammonium oxidation
Keo Chan (GEO): Nitrogen isotopic ($\delta^{15}\text{N}$) variation with fish length in the global ocean: a potential indicator for global anthropogenic impact
- Spring 2019 Katherine DuRussel (GEO): Estimating rates of anaerobic nitrite oxidation in the Eastern Tropical North Pacific oxygen minimum zone through incubation experiments

- Yaakov Garfin (Mitch) Mitchell (GEO): *Prochlorococcus* and the secondary chlorophyll maximum in the eastern Tropical North Pacific oxygen deficient zone
- Spring 2020 Elizabeth Wallace (GEO): Retention and loss of fixed nitrogen in a Pacific oxygen minimum zone
- Spring 2021 Levy Nathan (GEO): Pathways of nitrous oxide production and consumption in Chesapeake Bay
- William Ueberroth (GEO): Nitrous oxide database and global flux modeling

Independent Study Advisor (UCSC)

- Fall 1992 Kristy Paterson, Estimating Bacterial Production in Southern California Bight from the Simultaneous Incorporation of Thymidine and Leucine.

Junior Paper Advisor (Princeton)

- Fall 1998 Kristin Coleman: Ancient DNA
- Spring 1998 Hadley Owen: Sargasso Sea Thermocline
- Fall 2002 Steven Andrews: Analysis of the Physical and Biological Structure of a Dynamic Estuary: A Transect of the Upper Chesapeake Bay
- Evan Chyun: Anaerobic Toluene Metabolism by Halobenzoate-Degrading Denitrifying Bacteria
- Spring 2003 Evan Chyun: Arsenite oxidase Genes in Bacteria from Various Aquatic Habitats
- Spring 2006 Erin Lough: Fragment Length Analysis for Investigation of Microbial Diversity in Natural Waters
- Fall 2008 Diana Chien: Phytoplankton community composition from microarray data compared to biogeochemical model predictions (EEB)
- Spring 2009 Diana Chien: Phytoplankton Species Composition Investigated using functional Gene microarrays
- Fall 2010 Owen Coyle: Stoichiometric Constraints on Nitrogen transformations: Interpreting Mesocosm Experimental Results
- Fall 2011 Elisabeth Shouten: Regulation of the Denitrification Sequence by Marine Bacterial Strains
- Spring 2014 Sean McIntee: Partitioning uptake of nitrogen among phytoplankton taxa in the North Atlantic
- Spring 2015 Clair Zarakas: Spatial and Seasonal Variations in the Size Structure of North Atlantic Phytoplankton Assemblages
- Sophia Myers: Nitrogen Isotopes in Fish Otoliths and their Intra-Organism Correlation
- Fall 2015 Henry Ogilby: Phytoplankton community composition from functional gene microarrays
- Jana Suriano: Determination of key functional traits for environmentally important phytoplankton species
- Spring 2016 Keo Chan: Factors influencing carbon burial in Fjord Sediments
- Fall 2018 Elizabeth Wallace: Depth and regional variation of nitrite oxidation rate in the Eastern Tropical North Pacific Oxygen Depleted Zone

- Spring 2019 Elizabeth Wallace: Distribution and Diversity of Nitrous-Oxide-Consuming Bacteria in the Eastern Tropical North Pacific Oxygen Deficient Zone
- Fall 2019 Levy Nathan: Ammonium, Nitrate, and Nitrite Distribution in the Water Column of the Chesapeake Bay
- Spring 2020 Levy Nathan: Investigating spatial and temporal patterns of water parameters in the Chesapeake Bay
- Fall 2020 Samuel Cryan: Global distribution of SAR11 in marine metagenomes
- Spring 2021 Samuel Cryan: Influence of metabolic pathways on SAR11 abundance in an oxygen minimum zone
- Galen Cadley: Novel nitrite oxidizing bacteria found in the oxycline of expanding oxygen minimum zones