Cumulative Bio-Bibliography
Princeton University
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Bess B. Ward

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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, 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 (Summer)	Graduate Teaching Assistant, Friday Harbor Laboratories, Department of Oceanography, University of Washington
1977 (Fall)	Graduate Teaching Assistant, Department of Oceanography, 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, Helmholz Center for Ocean Research, Kiel, Germany, 2016

RESEARCH INTERESTS:

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

PUBLICATIONS

In Press

Jayakumar A., D. Balachandran, A. P. Rees, P. J. Kearns, J. L. Bowen and B. B. Ward. Community composition of nitrous oxide reducing bacteria investigated using a functional gene microarray. Deep-Sea Research

Rich, J. J., P. Arevalo, B. X. Chang, A.H. Devol, B. B. Ward. Anaerobic ammonium oxidation (anammox) and denitrification in Peru margin sediments. Journal of Marine Systems

Van Oostende, N., R. Dussin, C. A. Stock, A. D. Barton, E. Curchitser, J. P. Dunne and B. B. Ward. Simulation of the ocean chlorophyll dynamic range from oligotrophy to coastal upwelling. Progress in Oceanography

X. Peng, S. E. Fawcett, N. C. van Oostende, M. Wolf, D. Marconi, D. M. Sigman, and B. B. Ward. Nitrogen assimilation and nitrification in the subarctic North Atlantic Ocean. Limnology and Oceanography

Published

Angell, J. H., A. Peng, Q. J, I. Craick, A. Jayakumar, P. J. Kearns, B. B. Ward, and J. L. Bowen. Community composition of nitrous oxide related genes and their relationship to nitrogen cycling rates in salt marsh sediments, *Frontiers in Microbiology*, 9: 170 (2018)

Jäntti, H., B. B. Ward, J. W. Dippner, and S. Hietanen. Hydrodynamic conditions shape ammonia-oxidizing communities in the central Baltic Sea water column. *Estuarine, Coastal and Shelf Science*, 202: 280-289 (2018)

Lueders-Dumont, J., X. T. Wang, O. P. Jensen, D. M. Sigman and B. B. Ward. Nitrogen isotopic analysis of otolith-bound organic matter in modern and fossil fish otoliths. *Geochimica et Cosmochimica Acta*, 224: 200-222 (2018)

Marconi, D., D. M. Sigman, K. L. Casciotti, E. C. Campbell, M. A. Weigand, S. E. Fawcett, A. N. Knapp, B. B. Ward, and G. H. Haug. Tropical dominance of nitrogen fixation in the North Atlantic Ocean. *Global Biogeochemical Cycles*, 31: 1608–1623. https://doi.org/10.1002/2016GB005613 (2017)

Lisa, J. A., A. Jayakumar, B. B. Ward and B. Song. *nirS* denitrifying bacterial assemblages respond to environmental conditions of a shallow estuary. *Environmental Microbiology Reports*, doi:10.1111/1758-2229.12594 (2017)

Sun, X., Q. Ji, A. Jayakumar and B. B. Ward. Dependence of nitrite oxidation on nitrite and oxygen in low oxygen seawater. *Geophysical Research Letters*, 44: 7883-7891 DOI: 10.1002/2017GL074355 (2017)

Jayakumar, A., B. X. Chang, B. Widner, P. Bernhardt, M. R. Mullholland and B.B. Ward. Biological nitrogen fixation in the oxygen minimum region of the Eastern Tropical North Pacific Ocean. *ISME Journal*, 11: 2356-2367 DOI: 10.1038/ismej.2017.97 (2017)

Sun, X., A. Jayakumar and B. B. Ward. Community composition of nitrous oxide consuming bacteria in the oxygen minimum zone of the Eastern Tropical South Pacific. *Frontiers of Microbiology* 8, Article Number: 1183 DOI: 10.3389/fmicb.2017.01183 (2017)

Ji, Q. and B. B. Ward. Nitrous oxide production in surface waters of the mid-latitude North Atlantic Ocean. *JGR-Oceans,* 122: 2612-2621 DOI: 10.1002/2016JC012467 (2017)

Babbin, A. R., B. D. Peters, C. W. Mordy, B. Widner, K. L. Casciotti, and B. B. Ward. Multiple metabolisms constrain the anaerobic nitrite budget in the Eastern Tropical South Pacific. *Global Biogeochemical Cycles*, 31: 258-271 (2017)

Van Oostende, N., S. E. Fawcett, D. Marconi, J. Lueders-Dumont, A. Sabadel, W. M. S. Woodward, B. Jonsson, D. M. Sigman, and B. B. Ward. Variation of summer phytoplankton community composition and its relationship to nitrate and ammonium assimilation across the North Atlantic Ocean. *Deep-Sea Research I*, 121: 79-94 (2017)

Peters, B. D., A. R. Babbin, B. B. Ward, K. A. Lettmann, C. W. Mordy, O. Ulloa, and K. L. Casciotti. Vertical modeling of the nitrogen cycle in the eastern tropical south Pacific oxygen deficient zone using high resolution concentration and isotope measurements *Global Biogeochemical Cycles*, 30: 1661-1681 (2016)

Horak, R. E. A., W. Reuf, B. B. Ward and A.H. Devol. Expansion of denitrification and anoxia in the eastern tropical North Pacific from 1972 to 2012. *Geophysical Research Letters*, 43(10): 5252-5260 (2016)

Peng, X., C. A. Fuchsman, A. Jayakumar, M. J. Warner, A. H. Devol, and B. B. Ward. Revisiting nitrification in the Eastern Tropical South Pacific: A focus on controls, *J. Geophys. Res. Oceans*, 121, doi:10.1002/2015JC011455. (2016)

Peng, Xuefeng, Qixing Ji, Angell J. H, Kearns, P. J., Yang, H. J., Bowen, J. L. and Ward B. B., Long-term fertilization alters the relative importance of nitrate reduction pathways in salt marsh sediments. J. Geophys. Res. Biogeosci., 121, doi:10.1002/2016JG003484. (2016)

Rees, A. P., I. J. Brown, A. Jayakumar and B. B. Ward. The inhibition of N_2O production by ocean acidification in cold temperate and polar waters. Deep-Sea Research Part II, 127:93-101 (2016)

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)

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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)

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Babbin, A. R., D. Bianchi, A. Jayakumar, B. B. Ward. Rapid nitrous oxide cycling in the suboxic ocean. *Science* 348:1127-1129 (2015)

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)

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Babbin, A. R., R. Keil, A. H. Devol, and B. B. Ward. Organic matter stoichiometry, flux, and oxygen control nitrogen loss in the ocean. *Science* 344:406-408 (2014)

Fawcett, S. E., Lomas, M. W., Ward, B. B. and Sigman, D. M. The counterintuitive effect of summer-to-fall mixed layer deepening on the eukaryotic new production in the Sargasso Sea. *Global Biogeochemical Cycles* 28 doi:10.1002/2013GB004579 (2014)

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Bowen, J. L., Kearns, P. J., Holcomb, M. and Ward, B. B. Acidification alters the community composition of ammonia oxidizing microbial assemblages in marine mesocosms. *Marine Ecology Progress Series* 492: 1-8 (2013)

Francis, C. A., O'Mullan, G. D., Cornwell, J. C., and Ward, B. B. Transitions in *nirS*-type denitrifier diversity, community composition, and biogeochemical activity along the Chesapeake Bay Estuary. *Frontiers of Microbiology* doi: 10.3389/fmicb.2013.00237 (2013)

Ward, B. B. How Nitrogen is Lost. *Science* 341:352-353 (2013)

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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Babbin, A. R and B. B. Ward. Controls on nitrogen loss processes in Chesapeake Bay sediments. *Environmental Science and Technology* 47: 4189-4196 (2013)

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Bouskill, N. J., D. Eveillard, D. M. Chien, A. Jayakumar, and B. B. Ward, Distribution and abundance of ammonia-oxidizing organisms across environmental gradients. *Environmental Microbiology* 14:714-729*,* DOI: 10.1111/j.1462-2920.2011.02623.x (2012)

Newell, S.E., Babbin, A. R., Jayakumar, A. and B.B. Ward. Ammonia oxidation rates and nitrification in the Arabian Sea. *Global Biogeochemical Cycles*, 25 GB4016*,* 2011 doi:10.1029/2010GB003940 (2011)

Fawcett, S. E., M. W. Lomas, J. R. Casey, B. B. Ward and D. M. Sigman. Eukaryotes dominate new production in the Sargasso Sea. *Nature Geosciences,* 4: 717-722 (2011)

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Bowen, J. L., B. B. Ward, H. G. Morrison, J. E. Hobbie, I. Valiela, L. A. Deegan, and M. L. Sogin. Microbial community composition in sediments resists perturbation by nutrient enrichment. *ISME Journal,* 5: 1540-1548 doi:10.1038/ismej.2011.22 (2011)

Fawcett, S. E., and Ward, B. B. Phytoplankton succession and nitrogen utilization during the development of a simulated upwelling bloom. *Marine Ecology Progress Series*, 436: 13-31 (2011)

Ward, B. B. Nitrification in the Ocean. In: B. B. Ward, M. G. Klotz and D. A. Arp, Editors. Nitrification, ASM Press, Washington, D.C. Pp. 325-345 (2011)

Ward, B. B. Measurement and distribution of nitrification rates in the oceans. In Microbial Nitrification and Related Processes. M. G. Klotz, editor, *Methods in Enzymology,* 486, 307-323 (2011)

Ward, B. B. and N. J. Bouskill. The utility of functional gene arrays for assessing community composition, relative abundance and distribution of ammonia-oxidizing bacteria and archaea. In Microbial Nitrification and Related Processes. M. G. Klotz, editor. *Methods in Enzymology*, 496: 373-396 (2011)

Campbell, M., Chain, P., Dang, H., El Sheik, A., Norton, J., Ward, N., Ward, B. B., Klotz, M. G. *Nitrosococcus watsonii sp. nov.,* a new species of marine obligate ammonia-oxidizing bacteria that is not omnipresent in the world's oceans. *FEMS Microbiology Ecology,* 76: 39-48 (2011)

Bouskill, N. J., Eveillard, D., O'Mullan, G. D., Jackson, G. A., and Ward, B. B. Seasonal and annual reoccurrence in Ammonia-oxidizing bacterial population structure. *Environmental Microbiology* 13: 872-886 (2011)

Malcolm, E. G., J. K. Schaefer, E. B. Ekstrom, C. B. Tuit, A. Jayakumar, H. Park, B. B. Ward and F. M. M. Morel. Mercury methylation in oxygen deficient zones of the oceans: No evidence for the predominance of anaerobes. *Marine Chemistry*, 122: 11-19. (2010)

Bulow, S.E., Rich, J.J., Naik, H, Pratihary, A. and Ward, B.B. Denitrification and not anammox is dominant in the Arabian Sea Oxygen Minimum Zone. *Deep-Sea Res*. Pt 1, 57: 384-393 (2010)

Bhadury, P. and B. B. Ward. Molecular diversity of marine phytoplankton communities based on key functional genes. *Journal of Phycology* 45: 1335-1347 (2009)

Jayakumar, A. O'Mullan, G, Naqvi, S.W.A and Ward B.B. Distribution and Relative Quantification of key Genes Involved in Fixed Nitrogen Loss From the Arabian Sea Oxygen Minimum Zone. In, *Indian Ocean Biogeochemical Processes and Ecological Variability* eds., Wiggert J.D., Hood R.R., Naqvi, S.W.A., Brink, K.H., and Smith, S.L. American Geophysical Union, pp 187-203 (2009)

Ward, B.B., Devol, A.H., Rich, J.J., Chang, B.X., Bulow, S.E., Naik, H, Pratihary, A. and Jayakumar A. Denitrification as the dominant nitrogen loss process in the Arabian Sea. *Nature* 461: 78-82 (2009)

Jayakumar, A. O'Mullan, G, Naqvi, S.W.A and Ward B.B. Denitrifying bacterial community composition changes associated with stages of denitrification in oxygen minimum zones *Microb. Ecol*. 58, 350-362 (2009)

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Granger, J. and B. B. Ward. Accumulation of nitrogen oxides in copper-limited cultures of denitrifying bacteria. *Limnology and Oceanography*, 48: 313-318 (2003)

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Casciotti, K. A. and B. B. Ward. Nitrite reductase genes in ammonia-oxidizing bacteria. *Applied and Environmental Microbiology*, 67: 2213-2221 (2001)

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Voytek, M.A. and B.B. Ward. Detection of ammonium-oxidizing bacteria of the beta-subdivision proteobacteria in aquatic samples using the polymerase chain reaction. *Applied and Environmental Microbiology*, 61: 1441-1450. (1995)

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Ward, B.B. The subsurface methane maximum in the Southern California Bight. *Continental Shelf Research*, 12: 735-752. (1992)

Ward, B.B. Nitrogen cycle of the sea. *Encyclopedia of Earth System Science, Academic Press, Inc.*, 3: 295-206. (1992)

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Ward, B.B. and K.A. Kilpatrick. Relationship between substrate concentration and oxidation of ammonium and methane in a stratified water column. *Continental Shelf Research*, 10: 1193-1208. (1990)

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Ward, B.B. Kinetics of ammonia oxidation by a marine nitrifying bacterium: Methane as a substrate analogue. *Microbial Ecology*, 19: 211-226. (1990)

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Codispoti, L.I., G.E. Friederich, T.T. Packard, H.E. Glover, R.T. Barker, J.W. Elkins, B.B. Ward, F. Lipschultz, and N. Lostaunau. Extremely high nitrite levels off northern Peru: A signal of instability in the marine denitrification rate. *Science*, 233: 1200-1202. (1986)

Ward, B.B. and A.F. Carlucci. Marine ammonium- and nitrite-oxidizing bacteria: Serological diversity determined by immunofluorescence in culture and in the environment. *Appl. Environ. Microbiol.,* 50: 194-201. (1985)

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Ward, B.B. Light and substrate concentration effects on marine ammonium assimilation and oxidation rates. *Mar., Chem.,* 16: 301-316. (1985)

Ward, B.B., M.C. Talbot, and M.J. Perry. Contributions of phytoplankton and nitrifying bacteria to ammonium and nitrite dynamics in coastal water. *Cont. Shelf Res.,* **3**: 383-398. (1984)
Ward, B.B. Photosynthesis and bacterial utilization of phytoplankton exudates: Results from pre- and post-incubation size fractionation. *Oceanol. Acta,* 7: 337-343. (1984)
Karl, D.M., G.A. Knauer, J.H. Martin, and B.B. Ward. Bacterial chemolithotrophy in the ocean is associated with sinking particles. *Nature,* 309: 54-56. (1984)
Ward, B.B. Autotrophic activity of ammonium-oxidizing bacteria: Combined autoradiography and immunofluorescence for estimation of single cell activity in the primary nitrite maximum off the coast of Washington. *Limnol. Oceanogr.,* 29: 402-410. (1984)
Ward, B.B. Oceanic distribution of ammonium-oxidizing bacteria determined by immunofluorescent assay. *J. Mar. Res.,* 40: 1155-1172. (1982)
Ward, B.B., R.J. Olson, and M.J. Perry. Microbial nitrification rates in the primary nitrite maximum off Southern California. *Deep-Sea Res*., 29: 247-255. (1982)
Ward, B.B. and M.J. Perry. Immunofluorescent assay for the marine ammonium-oxidizing bacterium *Nitrosococcus oceanus*. *Appl. Environ. Microbiol*, 39: 913-918. (1980)

CURRENT RESEARCH PROGRAMS

National Science Foundation, Biological Oceanography: Novel genome-based method to measure taxon-specific phytoplankton growth rates in natural communities.
National Science Foundation, Chemical Oceanography: Collaborative Research: Mechanisms and Controls of Nitrous Oxide Production in the Eastern Tropical North Pacific Ocean.
Gordon and Betty Moore Foundation: Exploring anammox from the macro to molecular scale.

RESEARCH CRUISES AND EXPEDITIONS

2018	Chief Scientist, R/V Sally Ride, Eastern Tropical North Pacific, 34 days, Mar-Apr.
2014	Chief Scientist, R/V Endeavor, Subarctic North Atlantic, 27 days, May.
2013	Chief Scientist, R/V Endeavor, Subarctic North Atlantic, 27 days, Aug-Sep.
2013	R/V N. B. Palmer, Eastern Tropical South Pacific, 35 days, Jun-Jul.
2012	R/V T. G. Thompson, Eastern Tropical North Pacific, 30 days, Mar-Apr.
	Chief Scientist, R/V Atlantic Explorer, Bermuda, 4 days, Aug.
2012	R/V Atlantic Explorer, Bermuda, 5 days, Aug.
2011	R/V Atlantic Explorer, Bermuda, 4 days, Nov.
2009	R/V Atlantic Explorer, Bermuda, 5 days, Dec.
2007	Chief Scientist, R/V Roger Revelle, 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, Eastern Tropical South 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.
R/V T. G. Thompson, DOE-sponsored Northwest Marine Sciences Group cruise, Northeastern Pacific Ocean, 21 days, July.

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

1977	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.

SELECTED PROFESSIONAL ACTIVITIES / UNIVERSITY SERVICE (last 10 years)

2018	Visiting Committee to review Oceanography Ph.D. program, Oregon State University
2017	Visiting Committee to review Oceanography Ph.D. program, University of California, Santa Barbara
2016-2017	Committee on Promotion and Tenure, Princeton University (C/3)
2016	Visiting Committee to review Georgia Tech, School of Earth and Environmental Sciences
2016-present	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-present	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-present	Chair, Department of Geosciences, Princeton University
2004-present	Nitrification Network RCH and International Conference on Nitrification,
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 and others).

CLASSROOM TEACHING (last five years)

Quarter/ Semester	Course Number	Course Name	Enrollment
Spring 2018	GEO 428	Biological Oceanography	14
Fall 2017	GEO 506	Fundamentals of Geosciences	6 Team taught
Spring 2017	GEO 417	Environmental Microbiology	18

Fall 2016	GEO 506	Fundamentals of Geosciences	5 Team taught
Spring 2016	GEO 428	Biological Oceanography	15
Spring 2015	GEO 417	Environmental Microbiology	17
Fall 2014	GEO 505	Fundamentals of Geosciences	6 Team taught
Fall 2014	GEO 503	Ethical Conduct of Research	10 Team taught
Spring 2014	GEO 428	Biological Oceanography	14

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), 2012 – present
Xin Sun (Princeton), 2015 – present
John Tracey (Princeton), 2016 – present
Julia Carroll (Princeton), 2017 – 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 (where they are now):

Dr. Claudia Frey, 2016 – 2018 (University of Basel)
Dr. Sarah E. Fawcett, 2012 – 2015 (University of Cape Town)

Dr. Nicolas van Oostende, 2012 – 2015 (Princeton University)
Dr. Bonnie X. Chang, 2010 – 2013 (PMEL, NOAA)
Dr. Jenifer Bowen, 2007 – 2010 (Northeastern University)
Dr. Nicholas Bouskill, 2006 – 2009 (LBL, DOE)
Dr. Punyasloke Bhadury, 2006 – 2008 (University of Kolkhatta)
Dr. Gregory O'Mullan, 2005 – 2006 (Queens College SUNY)
Dr. Jenny Baeseman, 2004 – 2006 (Baeseman Consulting, WI)
Dr. Jeremy Rich, 2004 – 2007 (University of Maine)
Dr. Caroline Tuit, 2003 – 2006 (Gradient Corporation, MA)
Dr. Andrew Allen, 2002 – 2006 (JCVI, USCD)
Dr. Chris Francis, 2001 – 2003 (Stanford University)
Dr. Bongkeun Song, 2000 – 2004 (VIMS)
Dr. Gaspar Taroncher-Oldenburg, 2000 – 2002 (Publishing, PA)
Dr. Amal Jayakumar, 2000 – 2004 (Princeton University)
Dr. Melissa Staid, 1998 - 2000
Dr. Darryl Martino, 1998-2000
Dr. Deborah Bronk, 1992-1994 (Bigelow Laboratory for Ocean Sciences)
Dr. Dennis Hansell, 1989-1991 (University of Miami)

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 tfbD 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; Phytoplankton Species Composition Investigated using functional Gene microarrays (EEB)

Spring 2012 Owen Coyle: A High-Definition Examination of Nitrogen Transformation in Marine Sediments
Alisa Tao: Sequence of Dissolved Inorganic Nitrogen Production During Denitrification by Marine Bacterial Strains

Spring 2015 Martin Wolf (CBE): No Nitrification, No NO_3? The Importance of Nitrification in the Epipelagic North Atlantic

Spring 2016 Sophia Myers: Regional variation in North Atlantic Bight baseline N isotopes and its relation to isotope signatures in fish otoliths
Atleigh Forden: Reconstructing fish ecology from otolith geochemistry: Past and present
Sunyoug Wang (CEE): Determination of key functional traits for environmentally important phytoplankton

Spring 2018 Henry Ogilby (GEO): The role of encapspulin nanocompartments in anaerobic ammonium oxidation
Keo Chan(GEO): Nitrogen isotopic ($\delta^{15}N$) variation with fish length in the global ocean: A potential indicator for global anthropogenic impact.

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 Denitrifyng 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