

# Curriculum Vitae

## Joan M. Bernhard

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### Education

- 1990 **Ph.D.** Biological Oceanography, Scripps Institution of Oceanography, University of California, San Diego. Dissertation: *The Ecology of Benthic Foraminiferida with Emphasis on Their Distribution in Anoxic Sediments*. Advisor: Robert R. Hessler.
- 1984 **M.S.** Geology (Micropaleontology), University of California, Davis. Thesis: *Characteristic Benthic Foraminiferal Assemblages and Morphologies of Anoxic Deposits: Jurassic through Recent*. Advisor: Jere H. Lipps.
- 1982 **B.A.** Geology, *cum laude* with high honors in Geology, Colgate University, Hamilton, N.Y.

### Appointments

- 2004- present **Tenured Associate Scientist**, Woods Hole Oceanographic Institution.
- 1997-2004 **Career Development Professorship**, University of South Carolina Office of Research.
- 1997-2004 **Research Associate Professor**, Dept. Environmental Health Sci., Univ. South Carolina.
- 1997-2004 **Research Associate Professor**, Marine Science Program, University of South Carolina.
- 1996-1997 **Research Scientist II**, Wadsworth Center, New York State Department of Health.
- 1994-1997 **Assistant Professor**, Department of Biomedical Sciences, The University at Albany, State University of New York.
- 1994-1996 **Research Scientist I**, Wadsworth Center, New York State Department of Health.
- 1993-1994 **Research Affiliate II**, Wadsworth Center, New York State Dept. of Health.
- 1992 **Fulbright Fellow**, University of Oslo. (Sponsor: Elisabeth Alve).
- 1990-1992 **Research Affiliate I**, Wadsworth Center, New York State Department of Health. (Postdoctoral advisor: Samuel S. Bowser).

### Scholarships, Fellowships and Awards (excludes WHOI internal awards)

- 2003 **W. Storrs Cole Memorial Research Award**, Geological Society of America.
- 1998 **Research and Productive Scholarship Award**, University of South Carolina.
- 1997 **Career Development Professorship**, University of South Carolina.
- 1996 **Prix International Paul Broennimann 1995 Competition "Prix Extraordinaire"**; Museum d'Histoire Naturelle, Geneve, Switzerland.
- 1992 **Fulbright Fellow**; University of Oslo, Norway.
- 1992 **Norge-Amerika Foreningen Thanksgiving Award**; Oslo, Norway.
- 1991 **Surdna Foundation Scholarship**, Marine Ecology Molecular Biology Course; MBL, Woods Hole.
- 1990 **Terminal Dissertation Fellowship**; U.C. San Diego.
- 1985 **Joseph Cushman Student Research Grant**; Cushman Foundation Foraminiferal Research.
- 1983 **Sigma Xi Grant-in-Aid of Research**.
- 1983 **R.C. Baker Fund Grant**; Geology Department, U.C. Davis.
- 1982 **Summer Field Assistant**; National Association of Geologic Teachers—US Geological Survey.
- 1981 **Mobil Research Grant** through Geology Department; Colgate University.

### Research Cruises

- 2004, 2005 **Participating Scientist**, R/V *Western Flyer*, 12/13-17/04; 1/18-22/05, N. California.  
 2003 **Participating Scientist**, R/V *Knorr*, May 10-15, Black Sea.  
 2003 **Participating Scientist**, R/V *Wecoma*, 2/23-3/1, Southern California borderland basins.  
 2002 **Chief Scientist**, R/V *R G Sproul*, Oct 2-6, Santa Barbara Basin.  
 2002 **Chief Scientist**, R/V *Oceanus*, Apr 24-May 1, benthic sampling off Carolinas.  
 2001 **Participating Scientist**, R/V *New Horizon*, Nov 20-Dec 5, Gulf of California basins.  
 2001 **Participating Scientist**, R/V *Atlantis*, Sept 22-30, Blake Ridge seep ecology (1 *Alvin* dive).  
 2001 **Chief Scientist**, R/V *Cape Henlopen*, June 25- July 2, benthic sampling off Carolinas.  
 2001 **Participating Scientist**, R/V *Hermano Gines*, May 1-4, Cariaco Basin, Venezuela.  
 2001, 2002 **Participating Scientist**, R/V *Gyre*, 6/1-21, 6/1-16, G. Mexico, Deep Gulf benthic ecology.  
 2000 **Participating Scientist**, R/V *Atlantis*, October 16-31, G. of Mexico Seeps (3 *Alvin* dives).  
 1999 **Chief Scientist**, R/V *R G Sproul*. 2/17-23 & 9/21-28, Microaerophilic meiofauna.  
 1999 **Participating Scientist**, R/V *Melville*, Oct 26-Nov 22, Paleoceanography off Baja, CA.  
 1998 **Chief Scientist**, R/V *Robert Gordon Sproul*. 2/18-23 & 9/22-28, Meiofauna of SBB.  
 1997 **Participating Scientist**, R/V *Point Sur*. April 24-30, Geochemistry of Santa Barbara Basin.  
 1996 **Chief Scientist**, R/V *Robert Gordon Sproul*. 2/21-25 & 10/1-5, Physiological ecology of foraminifera in dysaerobic environments: Santa Barbara Basin.  
 1995 **Chief Scientist**, R/V *R G Sproul*. 2/15-18, Physiological ecology of foraminifera.  
 1995 **Scientist**, R/V *Point Sur*. November 28-December 4, Santa Barbara Basin Biogeochemistry.  
 1992; 1993 **Co-Chief Scientist**, R/V *Trygve Braarud*. Six 1-3 day cruises in Norwegian fjords.  
 1992 **Co-Chief Scientist**, R/V *Polar Duke*. Mar 19-Apr 15 (Cruise 92-2), Quaternary climatic record from the Antarctic Peninsular region.  
 1990 **Participating Scientist**, R/V *Cape Hatteras*. 5/4-8, Foraminiferal ecology off N. Carolina.  
 1988; 1989 **Participating Scientist**, R/V *Robert Gordon Sproul*. 6/20-25/88; 10/4-9/88; 7/2-8/89, Geochemical studies in Santa Barbara Basin.  
 1987; 1988 **Participating Scientist**, R/V *New Horizon*. Oct 26-Nov 10, 1987; July 14-Aug 3, 1988, Carbon cycling on the continental slope & rise off central CA.

### Antarctic Field Experience

- 1990, 1993, **Participating Scientist**, McMurdo Station and New Harbor camp. Test (shell)  
 2002 morphogenesis of benthic foraminifera (7 months field work, total).  
 1992 **Co-Chief Scientist**, R/V *Polar Duke*; Cruise 92-2, Quaternary climatic record from the Antarctic Peninsular region (1 month ship work).  
 1984, 1986, **Participating Scientist**, McMurdo Station and New Harbor camp. Trophic positions of  
 1987 benthic rhizopoda (15 months field work, total).

### Additional Educational Activities

- 1991 **Participant**, Molecular Microbial Ecology, Marine Biological Laboratory, Woods Hole.  
 2000 **Participant**, Gordon Conference, Origin of Life.

### Teaching Experience

- 2001 **Instructor**, Deep-Sea Biology (3 credit course to USC Honors College undergraduates).  
 1996, 1997 **Mentor**, NIH Minority Initiative: K-12 Teachers & High School Students, Wadsworth.  
 1995, 1996 **Co-Instructor**, Seminar "World Park Antarctica", SUNY Albany.  
 1993-1996 **Mentor**, Research Experience for Undergraduates (REU) program, Wadsworth Center.  
 1992 **Mentor**, REU program aboard R/V *Polar Duke* off Antarctica (administered by Colgate U.).  
 1982-1984 **Teaching Assistant & Laboratory Instructor**, various classes, U.C. Davis.

### Professional Memberships

Cushman Foundation for Foraminiferal Research  
International Association for Meiobenthologists  
American Society of Limnology & Oceanography

American Geophysical Union  
Society of Protozoologists  
Geological Society of America

### Miscellaneous Professional Activities

**Member, Board of Directors**, Cushman Foundation for Foraminiferal Research, 2004-present.

**Member**, Program Committee, 2004 Ocean Sciences Meeting (American Geophysical Union; Portland OR).

**Invited Speaker**, Geological Society of America Annual Meeting, Microbial S transformations session, 10/02.

**Keynote Speaker**, The Oceanography Society Biennial Scientific Meeting, Miami Beach, April 2001.

**Associate Editor**, *Journal of Foraminiferal Research* (December 2000 – present).

**Editorial Board**, *Marine Micropaleontology* (January 2004 – present).

**Panel Member and Sub-Panel Co-Organizer**, NASA Exobiology (November 2004).

**Panel Member**, NSF Division of Ocean Sciences, Oceanographic Technical Services panel (Feb. 2003).

**Panel Member**, NSF Office of Polar Programs, Polar Biology and Medicine annual panel (October 2001).

**Panel Member**, NOAA National Undersea Research Center 2001 review, UNC Wilmington (Nov. 2000).

**Ad-hoc journal reviewer**: *Antarctic Science*; *Deep-Sea Research*; *Estuarine, Coastal and Shelf Science*; *Geochimica et Cosmochimica Acta*; *Geology*, *Journal of Eukaryotic Microbiology*; *Journal of Foraminiferal Research*; *Journal of Marine Research*; *Limnology and Oceanography*; *Marine Biology*; *Marine Environmental Research*; *Marine Geology*; *Marine Micropaleontology*; *Micropaleontology*; *Palaeogeography Palaeoclimatology & Palaeoecology*; *PNAS*; *Symbiosis*; and *Terra Nova*.

**Ad-hoc proposal reviewer**: NSF (Ocean Sciences; Polar Programs), NOAA (National Undersea Research Program), American Chemical Society, National Oceanographic Partnership Program, Natural Environmental Research Council (United Kingdom), Netherlands Org. for Scientific Research.

**Chair or Co-Chair** of three sessions at regional, national & international meetings (details available).

**Co-Editor**, *Journal of Foraminiferal Research* Special Issue, v. 27, #4 (1997).

**Invited speaker** in >30 university seminar series (US and abroad; details available upon request).

**SCUBA-diving certification**: NAUI Basic, NAUI Sport, NAUI Advanced, University of California Research (1984-1988), Antarctic Approved (1984, 1986, 1987, 1990, 1993).

**Judge**, Albany Academy for Girls, Science Symposium, March 1996.

**Participant**, Wadsworth Center High School Open Houses, 1993, 1994, 1995 (SEM demonstration).

**Cover Photograph Contributor**, *BioProbes* (#22), Molecular Probes, Eugene OR, November 1995.

**Interviewee**, Various radio, television and print media over the years (NPR, abcnews.com, local, etc).

**Nominator and Evaluator**, MacArthur Fellows Program, 2004.

### WHOI service

Geology & Geophysics Space Committee

TenSEC committee (Tenured Scientific Executive Committee)

### Publications in Peer-Reviewed Journals (44 total; omits submitted, in revision, or in press manuscripts)

Berelson, W.M., M. Prokopenko, F.J. Sansone, A.W. Graham, J. McManus, **J. M. Bernhard** (2005) Anaerobic diagenesis of silica and carbon in continental margin sediments: discrete zones of TCO<sub>2</sub> production. *Geochimica et Cosmochimica Acta*, **69**: 4611-4629.

Robinson, C.A., **J.M. Bernhard**, L.A. Levin, G.F. Mendoza, J.K. Blanks (2004) Surficial hydrocarbon seep infauna from the Blake Ridge (Atlantic Ocean, 2150 m) and the Gulf of Mexico (690-2240 m), *Marine Ecology* **25**: 313-336.

**Publications in Peer-Reviewed Journals (continued)**

- Bernhard, JM**, KR Buck (2004) Eukaryotes of the Cariaco, Soledad, and Santa Barbara Basins: Protists and metazoans associated with deep-water marine sulfide-oxidizing microbial mats and their possible effects on the geologic record. In Amend, JP, KJ Edwards & TW Lyons (Eds), *Sulfur Biogeochemistry-- Past and Present: GSA Special Paper 379*: 35-47.
- Bernhard, J.M.**, J.K. Blanks, C.J. Hintz, G. T. Chandler (2004) Use of the fluorescent calcite marker calcetin to label foraminiferal tests. *Journal of Foraminiferal Research*, **34**: 96-101.
- Hintz, C.J., G.T. Chandler, **J.M. Bernhard**, D.C. McCorkle, S.M. Havach, J.K. Blanks, T.J. Shaw (2004) A physicochemically-constrained seawater culturing system for production of viable, calcite-producing, paleoceanographically-important benthic foraminifera. *Limnology & Oceanography Methods*, **2**: 160-170.
- A. van Geen, Y. Zheng, **J. M. Bernhard**, K. G. Cannariato, J. Carriquiry, W. E. Dean, B. W. Eakins, J. Pike, J. D. Ortiz (2003). On the preservation of laminated sediments along the western margin of North America. *Paleoceanography*. **18**: doi:10.1029/2003PA000911.
- Van Dover, C. L., P. Aharon, **J. M. Bernhard**, E. Caylor, M. Doerries, W. Flickinger, W. Gilhooly, S. K. Goffredi, K. Knick, S. A. Macko, S. Rapoport, E. C. Raulfs, C. Ruppel, J. Salerno, R. D. Seitz, B. K. Sen Gupta, T. Shank, M. Turnipseed, R. Vrijenhoek (2003). Blake Ridge methane seeps: characterization of a soft sediment, chemosynthetically based ecosystem. *Deep-Sea Research I* **50**: 281-300.
- Bernhard, J.M.** (2003) Potential symbionts in bathyal foraminifera. *Science*, **299**: 861.
- Bernhard, J.M.**, P. T. Visscher, S. S. Bowser (2003) Sub-millimeter life positions of bacteria, protists, and metazoans in laminated sediments of the Santa Barbara Basin. *Limnology and Oceanography*. **48**: 813-828.
- Bowser, S. S., **J. M. Bernhard**, A. Habura, A. J. Gooday (2002) Structure, taxonomy and ecology of *Astrammmina triangularis* Earland, an allogromiid-like agglutinated foraminifer from Explorers Cove, Antarctica. *Journal of Foraminiferal Research*, **32**: 364-374.
- Grzymski, J., O.M. Schofield, P.G. Falkowski, **J.M. Bernhard** (2002) The function of plastids in the deep-sea benthic foraminifer, *Nonionella stella*. *Limnology and Oceanography*, **47**: 1569-1580.
- Stott, L.D., T. Bunn, M. Prokopenko, C. Mahn, J. Gieskes, **J.M. Bernhard** (2002) Does the oxidation of methane leave an isotopic fingerprint in the geologic record? *Geochemistry, Geophysics, Geosystems*, **3**: 10.1029/2001GC000196.
- DeLaca, T.E., **Bernhard, J.M.**, Reilly, A.A., Bowser, S.S. (2002) *Notodendrodes hyalinosphaira* (sp. nov.): Structure and autecology of an allogromiid-like agglutinated foraminifer. *Journal of Foraminiferal Research*, **32**: 177-187.
- Bernhard, J.M.**, Buck, K.R., Barry, J.P. (2001) Monterey Bay cold-seep biota: Assemblages, abundance, and ultrastructure of living foraminifera. *Deep-Sea Research I*, **48**: 2233-2249.
- Vecchione, M., Young, R.E., Guerra, A., Lindsay, D.J., Clague, D.A., **Bernhard, J.M.**, Sager, W.W., Gonzalez, A.F., Rocha, F.J., Segonzac, M. (2001). Worldwide observations of remarkable deep-sea squids. *Science* **294**: 2505-2506.
- Pike, J., **Bernhard, J.M.**, Moreton, S.G., Butler, I.B. (2001) Microbioirrigation of marine sediments in dysoxic environments: implications for early sediment fabric formation and diagenetic processes. *Geology*, **29**: 923-926.
- Müller, M.C., **Bernhard, J.M.**, Jouin-Toulmond, C. (2001) A new member of Nerillidae (Annelida: Polychaeta), *Xenonerilla bactericola* nov. gen., nov. sp., collected off California, USA. *Cahiers de Biologie Marine*, **42**: 203-217.
- Bernhard, J.M.**, Buck, K.R., Farmer, M.A., Bowser, S.S. (2000) The Santa Barbara Basin is a symbiosis oasis. *Nature*, **403**: 77-80.

**Publications in Peer-Reviewed Journals (continued)**

- Bernhard, J.M.** (2000) Distinguishing live from dead foraminifera: Methods review and proper applications. *Micropaleontology*, **46** supplement 1: 38-46.
- Today, M.A., **Bernhard, J.M.**, Hummon, W.D. (2000) A new species of *Urodasys* (Gastrotricha, Macrotrichida) from dysoxic sediments of the Santa Barbara Basin. *Bull. Marine Science*, **66**: 467-476.
- Gooday, A.J., **Bernhard, J.M.**, Levin, L.A., Suhr, S., (2000) Foraminifera in the Arabian Sea oxygen minimum zone and other oxygen-deficient settings: taxonomic composition, diversity, and relation to metazoan faunas. *Deep-Sea Research II*, **47**: 25-54.
- Bernhard, J.M.**, Bowser, S.S. (1999) Benthic foraminifera of dysoxic sediments: Chloroplast sequestration and functional morphology, *Earth-Science Reviews*, **46**: 149-165.
- Kuwabara, J.S., van Geen, A., McCorkle, D.C., **Bernhard, J.M.** (1999) Dissolved sulfide distributions in the water column and sediment pore waters of the Santa Barbara Basin, *Geochimica et Cosmochimica Acta*, **63**: 2199-2209.
- Bernhard, J.M.**, Sen Gupta, B.K., Borne, P.F. (1997) Benthic foraminiferal proxy to estimate dysoxic bottom-water oxygen concentrations: Santa Barbara Basin, U.S. Pacific Continental Margin, *Journal of Foraminiferal Research*, **27**: 301-310.
- Sen Gupta, B.K., Platon, E., **Bernhard, J.M.**, Aharon, P. (1997) Foraminiferal colonization of hydrocarbon-seep bacterial mats and underlying sediment. Gulf of Mexico slope, *Journal of Foraminiferal Research*, **27**: 292-300.
- Bernhard, J.M.** (1996) Microaerophilic and facultative anaerobic benthic foraminifera: a review of experimental and ultrastructural evidence. *Revue de Paléobiologie*, **15**: 261-275.
- Gooday, A.J., Bowser, S.S., **Bernhard, J.M.** (1996) Benthic foraminiferal assemblages in Explorers Cove, Antarctica: A shallow-water site with deep-sea characteristics. *Progress in Oceanography*, **37**: 117-166.
- Bernhard, J.M.**, Alve, E. (1996) Survival, ATP pool, and ultrastructural characterization of benthic foraminifera from Drammensfjord (Norway): response to anoxia. *Marine Micropaleontology*, **28**: 5-17.
- Bernhard, J.M.**, Alve, E., Reilly, A.A. (1996) Response to the comment by Moodley et al. *Marine Ecology Progress Series*, **145**: 305-307.
- Bernhard, J.M.**, Bowser, S.S. (1996) Novel epifluorescence microscopy method to determine life position of foraminifera in sediments. *Journal of Micropalaeontology*, **15**: 68.
- Bowser, S.S., Gooday, A.J., Alexander, S.P., **Bernhard, J.M.** (1995) Giant, agglutinated foraminifera of McMurdo Sound, Antarctica: Are *Astrammmina rara* and *Notodendrodes antarctikos* allogromiids incognito? *Marine Micropaleontology*, **26**: 75-88.
- Bernhard, J.M.**, Newkirk, S.G., Bowser, S.S. (1995) Towards a non-terminal viability assay for foraminiferan protists. *Journal of Eukaryotic Microbiology*, **42**: 357-367.
- Gooday, A.J., **Bernhard, J.M.**, Bowser, S.S. (1995) The taxonomy and ecology of *Crithionina delacai* (n. sp.), a dominant giant foraminifer in Explorers Cove, Antarctica. *Journal of Foraminiferal Research*, **25**: 290-298.
- Alve, E., **Bernhard, J.M.** (1995) Vertical migratory response of benthic foraminifera to controlled decreasing oxygen concentrations in an experimental mesocosm. *Marine Ecology Progress Series*, **116**: 137-151.
- Bernhard, J.M.** (1993) Experimental and field evidence of Antarctic foraminiferal tolerance to anoxia and hydrogen sulfide. *Marine Micropaleontology*, **20**: 203-213.
- Bowser, S.S., **Bernhard, J.M.** (1993) Structure, bioadhesive distribution and elastic properties of the agglutinated test of *Astrammmina rara* (Protozoa: Foraminiferida). *Journal of Eukaryotic Microbiology*, **40**: 121-131.

**Publications in Peer-Reviewed Journals (continued)**

- Bernhard, J.M.**, Bowser, S.S. (1992) Bacterial biofilms as a trophic resource for certain benthic foraminifera. *Marine Ecology Progress Series*, **83**: 263-272.
- Bernhard, J.M.** (1992) Benthic foraminiferal distribution and biomass related to pore-water oxygen content: Central California Continental Slope and Rise. *Deep-Sea Research*, **39**: 585-605.
- Bernhard, J.M.**, Reimers, C.E. (1991) Benthic foraminiferal population fluctuations related to anoxia: Santa Barbara Basin. *Biogeochemistry*, **15**: 127-149.
- Reimers, C.E., Lange, C.B., Tabak, M., **Bernhard, J.M.** (1990) Seasonal spillover and varve formation in the Santa Barbara Basin, California. *Limnology and Oceanography*, **35**: 1577-1585.
- Bernhard, J.M.** (1989) The distribution of benthic foraminifera with respect to oxygen concentration and organic carbon levels in shallow-water Antarctic sediments. *Limnology and Oceanography*, **34**: 1131-1141.
- Bernhard, J.M.** (1988) Postmortem vital staining in benthic foraminifera: Duration and importance in population and distributional studies. *Journal of Foraminiferal Research*, **18**: 143-146.
- Bernhard, J.M.** (1987) Foraminiferal biotopes in Explorers Cove, McMurdo Sound, Antarctica. *Journal of Foraminiferal Research*, **17**: 286-297.
- Bernhard, J.M.** (1986) Characteristic assemblages and morphologies of benthic foraminifera from anoxic, organic-rich deposits: Jurassic through Holocene. *Journal of Foraminiferal Research*, **16**: 207-215.

**Book Chapters (peer-reviewed)**

- Bernhard, J.M.** and Sen Gupta, B. K. (1999) Foraminifera of Oxygen-Depleted Environments. In: Sen Gupta, B.K. (Ed.) *Modern Foraminifera*, Kluwer Academic, pp. 201-216.
- Buck, K. R., **Bernhard, J. M.** (2001) Protistan-Prokaryotic symbioses in deep-sea sulfidic sediments. In: Seckbach, J. (Ed.) *Symbiosis*, Kluwer Academic, pp. 507-517.