

## VITA

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### EDUCATION

B.A.: 1969, University of Delaware, Newark, Delaware (in Biological Sciences)  
Ph.D.: 1974, Scripps Institution of Oceanography, University of California,  
San Diego, California (in Oceanography) with R.R. Hessler  
Dissertation: "Dispersion patterns and species diversity of macrobenthos in two bathyal communities"  
Postdoctoral work: 1974-1975, USC, with Kristian Fauchald in polychaete systematics

### HONORS AND AWARDS

1969 Beta Beta Beta  
1969 Phi Kappa Phi  
1969 Phi Beta Kappa  
1969 Sigma Xi  
1969-1970 Woodrow Wilson Fellow  
1969-1971 National Science Foundation Fellow  
1982 Certificate of Commendation from the Chief of Naval Research  
1983 H. Burr Steinbach Visiting Scholar at the Woods Hole Oceanography Institution  
1986 First Annual College of Ocean and Fishery Sciences Research Award  
1989-1992 ONR Ocean Educator Award  
1993 Previously supervised student, Deborah Penry, received Alan T. Waterman Award  
1994 G. Evelyn Hutchinson Medal of the American Society of Limnology and Oceanography  
1995 Fellow of the American Geophysical Union  
1996 Honorable Mention, COFS Annual Teaching Award  
2006 Ph.D. Student, Kelly Dorgan, chosen as one of Popular Science's "brilliant ten"  
2008 Distinguished Service Award, American Society of Limnology and Oceanography

### EMPLOYMENT

1964 - 1969 Research Assistant, Department of Entomology and Applied Ecology,  
University of Delaware, Newark, Delaware  
1971 - 1974 Research Assistant, Scripps Institution of Oceanography, La Jolla,  
University of California, San Diego, California  
1974 - 1975 Postdoctoral Research Associate, Allan Hancock Foundation,  
University of Southern California, Los Angeles, California  
1975 - 1979 Assistant Professor, Department of Oceanography,  
University of Washington, Seattle, Washington  
1979 - 1983 Associate Professor, Department or School of Oceanography,  
University of Washington  
1980 - 1982 Oceanic Biology Program (Code 422CB) and Sediment  
(on leave) Dynamics Program (Code 425GG), Office of Naval Research, Arlington, Virginia  
1983 - 1999 Professor, School of Oceanography, University of Washington  
1986 - 1992 Editor, Limnology and Oceanography  
1992 - 1993 Acting Director, University Research Initiative in Marine Bioremediation  
1999 - present Professor of Oceanography, Darling Marine Center & School of Marine  
Sciences, University of Maine  
2007 - present Director, School of Marine Sciences, University of Maine

### CURRENT RESEARCH INTERESTS

Environment-organism interactions at the level of the individual, including biomechanics and bio-acoustics in water and sediments; functional diversity among infauna; deposit feeding; digestion theories and observations, both for animals with guts and for bacteria; and, biology of polychaetes.

## PROFESSIONAL ACTIVITIES

### **Miscellaneous activities** (Partial list since 1998)

Co-Chair, OEUUVRE, 1998 (NSF planning activity for the future of Biological Oceanography)  
Invited speaker on the future of biological oceanography, National Academy of Sciences celebration of "50 Years of Ocean Discovery" (by NSF-funded programs), October 1998  
Member, "Decadal planning committee" that produced "Ocean Sciences at the New Millennium" (2001)  
Ocean Observing Initiative (OOI) planning activities: CROW (San Francisco) workshop 2003; ORION (San Juan, PR) and CBED (St. Petersburg) workshops 2004  
Scientific Advisory Committee Member, Netherlands Institute of Ecology, Appointed by the Royal Netherlands Academy of Sciences, 1998-2006  
Invited Lecturer, European Union Advanced Study Course, "Concepts and models of marine microbial food webs," Denmark, October 1998  
Invited participant, Belle Baruch Symposium on "Animal-Sediment Interactions," Columbia, SC, October 1998  
Selection Committee, American Geophysical Union Fellows, 1998-2000.  
Hutchinson Award Committee, ASLO, 2000-2002  
Program Committee, Ocean Sciences 2000 and ASLO 2000 (first ASLO meeting outside N. America; Copenhagen)  
Member, Board on Atmospheres and Oceans, NASULGC, 2007-  
Chair, Maine Marine Research Coalition, 2007-

### **Invited Presentations since 2003** (excludes talks given at ASLO meetings):

Clifford Lectures in Applied Mathematics, March 2003, Tulane University, New Orleans, "Flow memory in unsteady particle motions at low Reynolds numbers"  
First Annual Distinguished Lecturer in Oceanography, April 2003, Rutgers University, "Clear as mud: Non-imaging acoustics to assess activities and effects of marine benthos, a progress report" [N.B.: This invited lectureship is organized by graduate students.]  
Maritime Reconnaissance for NATO's Recognized Environmental Picture, May 2003, SACLANT Undersea Research Center, La Spezia, Italy, "Emergence of scatters from the seabed and near the seabed: Modulation by light and tides"  
Bigelow Labs, West Boothbay Harbor, ME, July 2003, "Flow memory in unsteady particle motions at low Reynolds numbers"  
Department of Organismic Biology, Ecology and Evolution, UCLA, November 2003, "Unsteady as she goes: Mechanisms of motion by phytoplankton in the upper ocean and by bubbles and animals in the seabed"  
Department of Biology, Woods Hole Oceanographic Institution, January 2004, "Unsteady as she goes: Mechanics of motion by phytoplankton and burrowing animals"  
Congress of Chilean Society of Marine Science, Coquimbo, Chile, May 2004, "Urgency and opportunity as agents of change in biological oceanography" (invited plenary)  
Red Universitaria Nacional, Santiago, Chile, May 2004, "4D views of the Sea: Methods and challenges"  
Departamento de Biología Marina, Universidad Católica del Norte, Coquimbo, Chile, May 2004, "Partially realized potential: Acoustic methods to assess seabed processes and benthic-pelagic coupling"  
SACLANTCEN, La Spezia, Italy, June 2004, "Clear as mud: Non-imaging acoustics to assess activities and effects of marine benthos, a progress report"  
Maine Maritime Academy, February 2005, "Advances in observation of macrofaunal activities: emergence and burrowing"  
MIT Parsons Laboratory, April 2006, "Unsteady motion through the ocean—two vignettes: phytoplankton in turbulence and animals in mud"  
Ohio State University Mathematical Biosciences Institute, May 2006, "Unsteady environments of benthic marine microbes"  
UMaine School of Marine Sciences, September 2006, "Scientific Methods Revisited: Which One Should I Use?"  
University of Southern Maine, September 2006, "Biological-physical approaches to understanding full-time and part-time, soft-sediment benthos"  
Stazione Zoologica Anton Dohrn, Naples, October 2006, "Unsteady motion in the ocean, from plankton to benthos"  
Scripps Institution of Oceanography, April 2007, "Methods, morphologies and sedimentary consequences of burrowing by crack propagation"  
Bodega Bay Laboratories, UC Davis, March 2008, The fast pace of soft-sediment life REVEALED, acoustically  
Dept. Integrative Biology, UC Berkeley, March 2008, Turbulence effects on plankton: A new cartoon

### **Elective Offices**

President Elect, American Society of Limnology and Oceanography 2000-2002  
President, American Society of Limnology and Oceanography 2002-2004  
Past President, American Society of Limnology and Oceanography 2002-2006  
Member-at-Large, Council of Scientific Society Presidents, 2003  
Secretary, Council of Scientific Society Presidents, 2004  
Treasurer, Council of Scientific Society Presidents, 2005  
Past Treasurer, Council of Scientific Society Presidents, 2006  
Chair Elect, Council of Scientific Society Presidents, 2007  
Chair, Council of Scientific Society Presidents, 2008

### **Editorial Services**

Editorial Board: *Continental Shelf Research*, 1982-1991; *Limnology and Oceanography*, 1984-1986  
Editor-in-Chief, *Limnology and Oceanography*, 1986-1992  
Editorial Advisory Board, *ISI Atlas of Science*, 1987-1989  
Editorial Advisory Committee, ASLO, 1995-1997  
Editorial Advisory Committee, AGU, 1996-1998  
Associate Editor for Scholarly Reviews, *Limnology and Oceanography*, 2005 - present

### **Current Membership in Professional Societies**

American Association for the Advancement of Science  
American Geophysical Union (Fellow)  
American Society of Limnology and Oceanography  
Society for Integrative and Comparative Biology  
The Oceanography Society

### PUBLICATIONS

1. Jumars, P.A., F. J. Murphey and R. W. Lake. 1969. Can blood-fed *Culex pipiens* L. Overwinter? Proc. 56th Ann. Mtg., New Jersey Mosquito Extermination Assoc.: 219-225.
2. Hessler, R.R., and P.A. Jumars. 1974. Abyssal community analysis from replicate box cores in the central North Pacific. *Deep-Sea Res.* **21**: 185-209.
3. Jumars, P.A. 1974. A generic revision of the Dorvilleidae (Polychaeta), with six new species from the deep North Pacific. *Zool. J. Linnean Soc.* **54**: 101-135.
4. Jumars, P.A. 1974. Two pitfalls in comparing communities of differing diversities. *Am. Nat.* **108**: 389-391.
5. Jumars, P.A. 1975. Methods for measurement of community structure in deep-sea macrobenthos. *Mar. Biol.* **30**: 245-252.
6. Jumars, P.A. 1975. Environmental grain and polychaete species diversity in a bathyal benthic community. *Mar. Biol.* **30**: 253-266.
7. Jumars, P.A. 1975. Target species for deep-sea studies in ecology, genetics, and physiology. *Zool. J. Linnean Soc.* **57**: 341-348.
8. Jumars, P.A. 1976. Deep-sea species diversity: does it have a characteristic scale? *J. Mar. Res.* **34**: 217-246.
9. Newman, W.A., P.A. Jumars and A. Ross 1976. Diversity trends in coral-inhabiting barnacles (Cirripedia, Pyrgomatinae). *Micronesica* **12**: 69-82.
10. Carlucci, A.F., S.L. Shimp, P.A. Jumars and H.W. Paerl (1976) In situ morphologies of deep-sea and sediment bacteria. *Can. J. Microbiol.* **22**: 1667-1671.
11. Jumars, P.A. and R.R. Hessler. 1976. Hadal community structure: Implications from the Aleutian Trench. *J. Mar. Res.* **34**: 547-560.
12. Hessler, R.R. and P.A. Jumars . 1977. Abyssal communities and radioactive waste disposal. *Oceanus* **20**: 41-46.
13. Jumars, P.A., D. Thistle and M.L. Jones . 1977. Detecting two-dimensional spatial structure in biological data. *Oecologia* **28**: 109-123.
14. Jumars, P.A. and K. Fauchald. 1977. Between-community contrasts in successful polychaete feeding strategies. Pp. 1-20 in B.C. Coull, Ed., *Ecology of Marine Benthos*. University of South Carolina Press, Columbia, South Carolina.

15. Jumars, P.A. . 1978. Deep-sea fauna. Pp. 134-136 in *McGraw-Hill Yearbook of Science and Technology*. McGraw-Hill Book Co., New York.
16. Bernstein, B.B., R.R. Hessler, R. Smith and P.A. Jumars. 1978. Spatial dispersion of benthic Foraminifera in the abyssal central North Pacific. *Limnol. Oceanogr.* **23**: 401-416.
17. Taghon, G.L., R.F.L. Self and P.A. Jumars. 1978. Predicting particle selection by deposit feeders: a model and its implications. *Limnol. Oceanogr.* **23**: 752-759.
18. Jumars, P.A. 1978. Spatial autocorrelation with RUM (Remote Underwater Manipulator): vertical and horizontal structure of a bathyal benthic community. *Deep-Sea Res.* **25**: 589-604.
19. Self, R.F.L. and P.A. Jumars. 1978. New resource axes for deposit feeders? *J. Mar. Res.* **36**: 627-641.
20. Armstrong, J.W. and P.A. Jumars . 1979. Branchiate Dorvilleidae (Polychaeta) from the North Pacific. *Bull. S. Calif. Acad. Sci.* **77**: 133-138.
21. Fauchald, K. and P.A. Jumars. 1979. The diet of worms: a study of polychaete feeding guilds. *Oceanogr. Mar. Biol. Ann. Rev.* **17**: 193-284.
22. Hessler, R.R. and P.A. Jumars . 1979. The relation of benthic communities to radioactive waste disposal in the deep sea. *Ambio Spec. Rept.* **6**: 93-96.
23. Feller, R.J., G.L. Taghon, E.D. Gallagher, G.E. Kenney and P.A. Jumars. 1979. Immunological methods for food-web analysis in a soft-bottom benthic community. *Mar. Biol.* **54**: 61-74.
24. Taghon, G.L., A.R.M. Nowell and P.A. Jumars . 1980. Induction of suspension feeding in spionid polychaetes by high particulate fluxes. *Science* **210**: 562-564.
25. Jumars, P.A. 1980. Rank correlation and concordance tests in community analysis: an inappropriate null hypothesis. *Ecol.* **61**: 1553-1554.
26. Jumars, P.A. 1981. Limits in predicting and detecting benthic community response to manganese nodule mining. *Mar. Mining* **3**: 213-229.
27. Nowell, A.R.M., P.A. Jumars and J.E. Eckman. 1981. Effects of biological activity on the entrainment of marine sediments. *Mar. Geol.* **42**: 155-172.
28. Eckman, J.E., A.R.M. Nowell and P.A. Jumars. 1981. Sediment destabilization by animal tubes. *J. Mar. Res.* **39**: 361-374.
29. Jumars, P.A., A.R.M. Nowell, and R.F.L. Self. 1981. A simple model of flow-sediment-organism interaction. *Mar. Geol.* **42**: 155-172.
30. Jumars, P.A. and E.D. Gallagher. 1982. Deep-sea community structure: three plays on the benthic proscenium. Pp. 217-285 in W.G. Ernst and J.G. Morin, Eds., *The Environment of the Deep Sea*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.
31. Jumars, P.A., R.F.L. Self and A.R.M. Nowell. 1982. Mechanics of particle selection by tentaculate deposit feeders. *J. Exp. Mar. Biol. Ecol.* **64**: 47-70.
32. Nowell, A.R.M., C.D. Hollister and P.A. Jumars. 1982. High Energy Benthic Boundary Layer Experiment: HEBBLE. *EOS* **63**: 594-595.
33. Jumars, P.A. and J.E. Eckman. 1983. Spatial structure within deep-sea benthic communities. Pp. 399-452 in G.T. Rowe (ed.), *The Sea, Vol. 8* 399-452. Wiley-Interscience, New York.
34. Gallagher, E.D., P.A. Jumars and D.D. Trueblood. 1983. Facilitation of soft-bottom succession by tube builders. *Ecol.* **64**: 1200-1216.
35. Jumars, P.A. 1983. Tau as an index of similarity in community comparisons: the inaccuracy of its nominal confidence limits. *Can. J. Zool.* **61**: 2634-2635.
36. Hollister, C.D., A.R.M. Nowell and P.A. Jumars. 1984. The dynamic abyss. *Scient. Am.* **250**: 42-53.
37. Taghon, G.L., A.R.M. Nowell and P.A. Jumars. 1984. Transport and breakdown of fecal pellets: biological and sedimentological consequences. *Limnol. Oceanogr.* **29**: 64-72.
38. Jumars, P.A. and A.R.M. Nowell . 1984. Fluid and sediment dynamic effects on benthic community structure. *Am. Zool.* **24**: 45-55.
39. Taghon, G.L. and P.A. Jumars. 1984. Variable ingestion rate and its role in optimal foraging behavior of marine deposit feeders. *Ecol.* **65**: 549-558.
40. Jumars, P.A., R.C. Newell, M.V. Angel, S.W. Fowler, S.A. Poulet, G.T. Rowe and V. Smetacek. 1984. Detritivory. Pp. 583-593 in M.J. Fasham, Ed., *Flows of Energy and Materials in Marine Ecosystems: Theory and Practice*. Plenum Press, New York.
41. Nowell, A.R.M., P.A. Jumars and K. Fauchald. 1984. The foraging strategy of a subtidal and deep-sea deposit feeder. *Limnol. Oceanogr.* **29**: 645-649.

42. Jumars, P.A. and A.R.M. Nowell . 1984. Effects of benthos on sediment transport: difficulties with functional grouping. *Cont. Shelf Res.* **3**: 115-130.
43. Nowell, A.R.M. and P.A. Jumars. 1984. Flow environments of aquatic benthos. *Ann Rev. Ecol. Syst.* **15**: 303-328.
44. Miller, D.C., P.A. Jumars and A.R.M. Nowell. 1984. Effects of sediment transport on deposit feeding: scaling arguments. *Limnol. Oceanogr.* **29**: 1202-1217.
45. Penry, D.L., and P.A. Jumars. 1986. Chemical reactor analysis and optimal digestion. *BioSci.* **36**: 310-315
46. Jumars, P.A., and R.F.L. Self. 1986. Gut-marker and gut-fullness methods for estimating field and laboratory effects of sediment transport on ingestion rates of deposit feeders. *J. Exp. Mar. Biol. Ecol.* **98**: 293-310.
47. Miller, D.C., and P.A. Jumars. 1986. Pellet accumulation, sediment supply and crowding as determinants of surface deposit-feeding rate in *Pseudopolydora kempii japonica* Imagima and Hartman (Polychaeta: Spionidae). *J. Exp. Mar. Biol. Ecol.* **99**: 1-17.
48. Smith, C.R., P.A. Jumars and D.J. DeMaster. 1986. *In situ* studies of megafaunal mounds indicate rapid sediment turnover and community response at the deep-sea floor. *Nature* **323**: 251-253.
49. Penry, D.L., and P.A. Jumars. 1987. Modeling animal guts as chemical reactors. *Am. Nat.* **129**: 69-96.
50. Nowell, A.R.M., P.A. Jumars and J.H. Kravitz. 1987. Sediment Transport Events on Shelves and Slopes (STRESS) and Biological Effects of Coastal Ocean Sediment Transport (BECOST). *EOS* **68**: 722-724.
51. Nowell, A.R.M., and P.A. Jumars. 1987. Flumes: theoretical and experimental considerations for simulation of benthic environments. *Oceanogr. Mar. Biol. Ann. Rev.* **25**: 91-112.
52. Wheatcroft, R.A., and P.A. Jumars. 1987. Statistical re-analysis for size dependency in deep-sea mixing. *Mar. Geol.* **77**: 157-163.
53. The Boulder Group (includes P.A. Jumars). 1987. Coastal physical oceanography: the next decade. *EOS* **68**: 1581-1591.
54. Hill, P.S., A.R.M. Nowell and P.A. Jumars. 1988. Flume evaluation of the relationship between suspended sediment and excess shear. *J. Geophys. Res.* **93**: 12499-12509.
55. Self, R.F.L., and P.A. Jumars. 1988. Cross-phyletic patterns of particle selection by deposit feeders. *J. Mar. Res.* **46**: 119-143.
56. Ertman, S.C., and P. A. Jumars. 1988. Effects of bivalve siphonal currents on the settlement of inert particles and larvae. *J. Mar. Res.* **46**: 797-813.
57. Gallagher, E.D., P.A. Jumars and G.L. Taghon 1988. The production of monospecific antisera to soft-bottom benthic taxa. Pp. 74-98 in C.M. Yentsch, F.C. Mague and P.K. Horan, Eds. *Immunochemical approaches to coastal, estuarine and oceanographic questions*. Springer-Verlag, NY.
58. Jumars, P.A., and K. Banse. 1989. Benthos and its interaction with bottom boundary layer processes. pp. 349-365 in M.R. Landry and B.M. Hickey, Eds. *Coastal Oceanography of Washington and Oregon*. Elsevier, Amsterdam.
59. Wheatcroft, R.A., C.R. Smith and P.A. Jumars. 1989. Dynamics of surficial traces in the deep sea. *Deep-Sea Res.* **36**: 71-91.
60. Jumars, P.A., and R.A.W. Wheatcroft. 1989. Responses of benthos to changing food quality and quantity, with a focus on deposit feeding and bioturbation. Pp. 235-253 in W.H. Berger, V.S. Smetacek and G. Wefer, Eds. *Productivity of the Ocean: Present and Past*. Wiley, Chichester.
61. Jumars, P.A., A.V. Altenbach, G.J. De Lange, S.R. Emerson, B.T. Hargrave, F.G. Prah, C.E. Reimers, T. Steiger, and E. Suess. 1989. Transformation of Seafloor-arriving fluxes into the sedimentary record. Pp. 291-311 in W.H. Berger, V.S. Smetacek and G. Wefer, Eds. *Productivity of the Ocean: Present and Past*. Wiley, Chichester.
62. Self, R.F.L., A.R.M. Nowell and P.A. Jumars. 1989. Factors controlling critical shears for deposition and erosion of individual grains. *Mar. Geol.* **86**: 181-199.
63. Jumars, P.A. and D.L. Penry. 1989. Digestion theory applied to deposit feeding. Pp. 114-128 in G.R. Lopez, G.L. Taghon, and J.S. Levinton, Eds. *Ecology of Marine Deposit Feeders*. Springer-Verlag, NY.
64. Nowell, A.R.M., P.A. Jumars, R.F.L. Self and J.B. Southard. 1989. The effects of sediment transport and deposition on infauna: Results obtained in a specially designed flume. Pp. 247-268 in G.R. Lopez, G.L. Taghon and J.S. Levinton, Eds. *Ecology of Marine Deposit Feeders*. Springer-Verlag, NY.
65. Jumars, P.A., D.L. Penry, J.A. Baross, M.J. Perry, and B.W. Frost. 1989. Closing the microbial loop: Dissolved carbon pathway to heterotrophic bacteria from incomplete ingestion, digestion and absorption in animals. *Deep-Sea Res.* **36**: 483-495.

66. Plante, C.J., P.A. Jumars and J.A. Baross. 1989. Rapid bacterial growth in the hindgut of a marine deposit feeder. *Microbial Ecol.* **18**: 29-44.
67. Smith, C.R., H. Kukert, R.A. Wheatcroft, P.A. Jumars, and J.W. Deming. 1989. Vent fauna on whale remains. *Nature* **341**: 27-28.
68. Gambi, M.C., A.R.M. Nowell and P.A. Jumars. 1990. Flume observations on flow dynamics in *Zostera marina* L. (eelgrass) beds. *Mar. Ecol. Progr. Ser.* **61**: 159-169.
69. Penry, D.L., and P.A. Jumars. 1990. Gut architecture, digestive constraints and feeding ecology of deposit-feeding and carnivorous polychaetes. *Oecologia* **82**: 1-11.
70. Dade, W.B., P.A. Jumars and D.L. Penry. 1990. Supply-side optimization: maximizing absorptive rates. Pp. 531-556 in R.N. Hughes, Ed. *Behavioural Mechanisms of Food Selection*. Springer-Verlag, Berlin.
71. Wheatcroft, R.A., P.A. Jumars, A.R.M. Nowell and C.R. Smith. 1990. A mechanistic view of the particulate biodiffusion coefficient: Step lengths, rest periods and transport directions. *J. Mar. Res.* **48**: 177-207.
72. Plante, C.J., P.A. Jumars and J.A. Baross 1990. Digestive associations between marine detritivores and bacteria *Ann. Rev. Ecol. Syst.* **21**: 93-127.
73. Gallagher, E.D., G.B. Gardner and P.A. Jumars. 1990. Competition among the pioneers in a seasonal soft-bottom benthic succession: field experiments and analysis of the Gilpin-Ayala model. *Oecologia* **83**: 427-442.
74. Jumars, P.A., L.M. Mayer, J.W. Deming, J. A. Baross, and R.A. Wheatcroft. 1990. Deep-sea deposit-feeding strategies suggested by environmental and feeding constraints. *Phil. Trans. Roy. Soc. London A* **331**: 85-101.
75. Dade, W.B., A.R.M. Nowell and P.A. Jumars 1991. Mass arrival mechanisms and clay deposition at the seafloor. Pp. 161-165 in R. H. Bennett, W.R. Bryant and M.H. Hulbert, Eds. *Microstructure of Fine-Grained Sediments — from mud to shale*. Springer-Verlag, NY.
76. Shimeta, J.S. and P.A. Jumars. 1991. Mechanisms of particle encounter by suspension feeders. *Oceanogr. Mar. Biol. Ann. Rev.* **29**: 191-257.
77. Dade, W.B., A.R.M. Nowell and P.A. Jumars. 1992. Predicting the erosion resistance of muds. *Mar. Geol.* **105**: 285-297.
78. Plante, C. J., and P.A. Jumars 1992. Microbial microenvironments of marine deposit-feeder guts characterized via microelectrodes. *Microbial Ecol.* **23**: 257-277.
79. Hill, P.S., A.R.M. Nowell, and P.A. Jumars. 1992. Encounter rate by turbulent shear of particles similar in diameter to the Kolmogorov scale. *J. Mar. Res.* **50**: 643-668.
80. Jumars, P.A. 1993. Gourmands of mud: Diet selection in marine deposit feeders. pp. 124-156 in R.N. Hughes, Ed. *Mechanisms of Diet Choice*, Blackwell Scientific Publishers, Oxford.
81. Yager, P.L., A.R.M. Nowell and P.A. Jumars. 1993. Enhanced deposition to pits: A local food source for benthos. *J. Mar. Res.* **51**: 209-236.
82. Jumars, P.A. 1993. *Concepts in Biological Oceanography: An Interdisciplinary Primer*. Oxford Univ. Press, NY, 348 pp.
83. Plante, C.J., and P.A. Jumars. 1993. Immunofluorescence assay for effects on field abundance of a naturally occurring pseudomonad during passage through the gut of a marine deposit feeder, *Abarenicola pacifica*. *Microb. Ecol.* **26**: 247-266.
84. Mayer, L.M., P.A. Jumars, G.L. Taghon, S. Macko and S. Trumbore. 1993. Low-density particles as potential nitrogenous foods for benthos. *J. Mar. Res.* **51**: 373-389.
85. Jumars, P.A., J.W. Deming, P.S. Hill, L. Karp-Boss, P.L. Yager and W.B. Dade. 1993. Physical constraints on marine osmotrophy in an optimal foraging context. *Mar. Microbial Food Webs* **7**: 121-159.
86. Hentschel, B.T., and P.A. Jumars. 1994. In situ chemical inhibition of benthic diatom growth and the response of recruiting permanent and temporary meiofauna. *Limnol. Oceanogr.* **39**: 816-838.
87. Mayer, L.M., L.L. Schick, T. Sawyer, C.J. Plante, P.A. Jumars and R.F.L. Self. 1995. Bioavailable amino acids in sediments: A biomimetic, kinetics-based approach. *Limnol. Oceanogr.* **40**: 511-520.
88. Shimeta, J., P.A. Jumars and E.J. Lessard. 1995. Influences of turbulence on suspension feeding by planktonic protozoa; experiments in laminar shear fields. *Limnol. Oceanogr.* **40**: 845-859.
89. Self, R.F.L., P.A. Jumars and L.M. Mayer. 1995. In vitro amino acid and glucose uptake rates across the gut wall of a surface deposit feeder. *J. Exp. Mar. Biol. Ecol.* **192**: 289-318.

90. Dade, W.B., R.L. Self, N.B. Pellerin, A. Moffet, P.A. Jumars and A.R.M. Nowell. 1996. The effects of bacteria on the flow behavior of clay-seawater suspensions. *J. Sed. Res.* **66**: 39-42.
91. Mayer, L.M., Z. Chen, R.H. Findlay, R.H. Fang, S. Sampson, R.F.L. Self, P.A. Jumars, C. Quézel and O.F.X. Donard. 1996. Bioavailability of sedimentary contaminants subject to deposit-feeder digestion. *Env. Sci. Technol.* **30**: 2641-2645.
92. Karp-Boss, L., E. Boss and P.A. Jumars. 1996. Nutrient fluxes to planktonic osmotrophs in the presence of fluid motion. *Oceanogr. Mar. Biol., Ann. Rev.* **34**: 71-107.
93. Jumars, P.A., D.R. Jackson, T.F. Gross and C. Sherwood. 1996. Acoustic remote sensing of benthic activity: A statistical approach. *Limnol. Oceanogr.* **41**: 1220-1241.
94. Mayer, L.M., L. Schick, R. Self, P. Jumars, R. Findlay, Z. Chen and S. Sampson. 1997. Digestive environments of benthic macroinvertebrate guts: enzymes, surfactants and dissolved organic matter. *J. Mar. Res.* **55**: 785-812.
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