PETRA HOEPCKE LENZ

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Pacific Biosciences Research Center, Univ. of Hawaii at Manoa
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Dual Citizenship **–** U.S. and Brazil

Education

U. California, San Diego, CA, B.A. in Biology, 1976
U. California, Santa Barbara, CA, M.A. (1980), Ph.D. (1983) in Biology (J. Melack, advisor)
U. California, Santa Barbara, CA, Post-Doc in Limnology, 1/83-7/84 (J. Melack, advisor)
U. Hawaii, Manoa, HI, Post-Doc in Biological Oceanography, 1/88-4/90 (R. Radtke, advisor)
Smith College, New England BioLabs Workshop in Molecular Biology, 6/03

Professional Positions and Experience

Program Director, rotator, National Science Foundation, Geosciences, Ocean Sciences, 11/20 to present
Researcher, PBRC, Univ. Hawaii, Manoa, 8/11 to present
Associate Researcher, PBRC, Univ. Hawaii, Manoa, 8/00 to 7/11
Assistant Researcher, PBRC, Univ. Hawaii, Manoa, 7/90 to 7/00
Lecturer, University of Hawaii at Manoa and Kapiolani Community College, 8/84 to 5/85, 1/87 to 5/88
Research Affiliate, Hawaii Inst. of Marine Biology, Univ. Hawaii, Manoa, 1/84 to 6/88

Research Interests

Zooplankton ecology and physiology, life-history strategies, diapause and dormancy, predator-prey interactions, behavioral performance, sensory systems, organism-environment interactions, population dynamics, 'omics

Membership in Professional Societies

American Geophysical Union
Association for the Sciences of Limnology and Oceanography
Society for Integrative and Comparative Biology
Mount Desert Island Biological Laboratory, Life Member
SACNAS – Advancing Chicanos/Hispanics and Native Americans in the Sciences, Life Member

Publications - Peer-reviewed Journals

2021

Lenz, P. H., Lieberman, B., Cieslak, M. C., Roncalli, V., and Hartline, D. K. (2021) Transcriptomics and Metatranscriptomics in Zooplankton: Wave of the Future? *Journal of Plankton Research,* **43(1):** 3–9.

Lenz, P. H., Roncalli, V., Cieslak, M. C., Tarrant, A. M., Castelfranco, A. M., & Hartline, D. K. (2021) Diapause vs. reproductive programs: transcriptional phenotypes in a keystone copepod. *Communications Biology,* **4(1):** 1-13.

Roncalli, V., Cieslak, M. C., Castelfranco, A. M., Hopcroft, R. R., Hartline, D. K. & Lenz, P. H. (2021). Post-diapause transcriptomic restarts: Insight from a high-latitude copepod. *BMC Genomics (in press)*

2020

Cieslak, M. C., Castelfranco, A. M., Roncalli, V., Lenz, P. H & Hartline, D. K. (2020) t-Distributed Stochastic Neighbor Embedding (t-SNE): A tool for eco-physiological transcriptomic analysis. *Marine Genomics*, **51**:100723.

Niimoto, K., Kuball, K. J., Block, L. N., Lenz, P. H. & Takagi, D. (2020). Rotational maneuvers of copepod nauplii at low Reynolds number. *Fluids*, **5**:78.

Roncalli, V., Cieslak, M. C., Hopcroft, R. R. & Lenz, P. H. (2020). Capital breeding in a diapausing copepod: a transcriptomics analysis. *Frontiers in Marine Science*, **7**:56.

2019

Fashingbauer, M. C., Tuttle, L. J., Robinson, H. E., Strickler, J. R., Hartline, D. K., & Lenz, P. H. (2019). Predatory posture and performance in a precocious larval fish targeting evasive copepods. *Journal of Experimental Biology*, *222*(9), jeb191411, doi: 10.1242/jeb.191411.

Lenz, P. H. & Roncalli, V. (2019). Diapause within the context of life-history strategies in calanid copepods (Calanoida: Crustacea). *Biological Bulletin*, **237**: 170-179.

Robinson, H. E., Strickler, J. R., Henderson, M. J., Hartline, D. K. & Lenz, P. H. (2019). Predation strategies of larval clownfish capturing evasive copepod prey. *Marine Ecology Progress Series*, **614**: 125-146.

Roncalli, V., Cieslak, M. C., Germano, M., Hopcroft, R. R., & Lenz, P. H. (2019). Regional heterogeneity impacts gene expression in the subarctic zooplankter *Neocalanus flemingeri* in the northern Gulf of Alaska. *Communications Biology*, **2(1)**: 1-13. **DOI :** 10.1038/s42003-019-0565-5 COMMSBIO-18-1375

Tuttle, L. J., Robinson, H. E., Takagi, D., Strickler, J. R., Lenz, P. H. & Hartline, D. K. (2019). Going with the flow: hydrodynamic cues trigger directed escapes from a stalking predator. *Journal of the Royal Society Interface*, **16(151)**: p.20180776.

2018

Christie, A. E., Cieslak, M. C., Roncalli, V., Lenz, P. H., Major, K. M., & Poynton, H. C. (2018) Prediction of a peptidome for the ecotoxicological model *Hyalella azteca* (Crustacea; Amphipoda) using a *de novo* assembled transcriptome. *Marine Genomics*, **38**: 67-88 Doi: 10.1016/j.margen.2017.12.003.

Lenz, P. H., & Hartline D. K. (2018) High-speed videos of larval clownfish, *Amphiprion ocellaris*, predators and copepod prey. Biological and Chemical Oceanography Data Management Office (BCO-DMO) 801215–227. http://lod.bco-dmo.org/id/dataset/747926

Mathews, L., Faithfull, C. L., Lenz, P. H. and Nelson, C. E. (2018) The effects of food stoichiometry and temperature on copepods are mediated by ontogeny. *Oecologia*, **188**: 75-84. DOI: 10.1007/s00442-018-4183-6.

Roncalli, V., Cieslak, M. C., Sommer, S. A., Hopcroft, R. R., & Lenz, P. H. (2018) *De novo* transcriptome assembly of the calanoid copepod *Neocalanus flemingeri*: a new resource for emergence from diapause. *Marine Genomics*, **37**: 114-119. Doi: 10.1016/j.margen.2017.09.002.

Roncalli, V., Sommer, S. A., Cieslak, M. C., Clarke, C., Hopcroft, R. R., & Lenz, P. H. (2018) Physiological transitions during emergence from diapause: a transcriptomic approach. *Scientific Reports,* **8(1)**: 12577.

Selph, K. E., Goetze, E., Jungbluth, M. J., Lenz, P. H., & Kolker, G. (2018) Microbial food web connections and rates in a subtropical embayment. *Marine Ecology Progress Series*, **590**: 19-34. Doi: 10.3354/meps12432.

2017

Buskey, E. J., Strickler, J. R., Bradley, C. J., Hartline, D. K., & Lenz, P. H. (2017). Escapes in copepods: comparison between myelinate and amyelinate species. *Journal of Experimental Biology* **220**: 754-758. DOI: 10.1242/jeb.148304

Jungbluth, M. J., Selph, K. E., Lenz, P. H. & Goetze, E. (2017). Incubation duration effects on copepod naupliar grazing estimates. *Journal of Experimental Marine Biology and Ecology* **494**: 54-62.

Jungbluth, M. J., Selph, K. E., Lenz, P. H., & Goetze, E. (2017). Species-specific grazing and significant trophic impacts by two species of copepod nauplii, *Parvocalanus crassirostris* and *Bestiolina similis*. *Marine Ecology Progress Series* **572**: 57-76.

Porter, M. L., Steck, M., Roncalli, V., & Lenz, P. H. (2017) Molecular characterization of copepod photoreception. *Biological Bulletin*, **233**: 96-110. DOI: 10.1086/694564.

Roncalli, V., Lenz, P. H., Cieslak, M. C., & Hartline, D. K. (2017) Complementary mechanisms for neurotoxin resistance in a copepod. *Scientific Reports*, **7**, 14201. Doi: 10.1038/s41598-017-14545-z.

Roncalli, V., Christie, A. E., Sommer, S. A., Cieslak, M. C., Hartline, D. K. & Lenz, P. H. (2017) A deep transcriptomic resource for the copepod crustacean *Labidocera madurae*: a potential indicator species for assessing near shore ecosystem health. *PloS One*, **12(10)**: e0186794. Doi: 10.1371/journal.pone.0186794.

Sommer, S. A., Van Woudenberg, L., Lenz, P. H., Cepeda, G., & Goetze, E. (2017) Vertical gradients in species richness and community composition across the twilight zone in the North Pacific Subtropical Gyre. *Molecular Ecology*, **26**: 6136-6156. Doi: 10.1111/mec.14286.

2016

Jackson, J. M. and Lenz, P. H. (2016). Predator-prey interactions in the plankton: larval fish feeding on evasive copepods. *Scientific Reports* **6**: 33585; doi: 10.1038/srep33585 (2016).

Christie, A. E., Roncalli, V., & Lenz, P. H. (2016). Diversity of insulin-like peptide signaling system proteins in *Calanus finmarchicus* (Crustacea; Copepoda) – Possible contributors to seasonal pre-adult diapause. *General and Comparative Endocrinology* **236**: 157-173.

Roncalli, V., Jungbluth, M. J., & Lenz, P. H. (2016). Glutathione S-transferase regulation in *Calanus finmarchicus* feeding on the toxic dinoflagellate *Alexandrium fundyense*. *PloS One* **11(7)**: e0159563.

Roncalli, V., Cieslak, M. C., & Lenz, P. H. (2016). Transcriptomic responses of the calanoid copepod *Calanus finmarchicus* to the saxitoxin producing dinoflagellate *Alexandrium fundyense*. *Scientific Reports*, *6*, 25708; doi:10.1038/srep25708.

Roncalli, V., Cieslak, M. C., & Lenz, P. H. (2016) Data from: Transcriptomic responses of the calanoid copepod *Calanus finmarchicus* to the saxitoxin producing dinoflagellate *Alexandrium fundyense*. Dryad Digital Repository. http://dx.doi.org/10.5061/dryad.11978

Roncalli, V., Turner, J. T., Kulis, D., Anderson, D. M., & Lenz, P. H. (2016). The effect of the toxic dinoflagellate *Alexandrium fundyense* on the fitness of the calanoid copepod *Calanus finmarchicus*. *Harmful Algae*, *51*, 56-66.

2015

Roncalli, V., Cieslak, M. C., Passamaneck, Y., Christie, A. E., & Lenz, P. H. (2015). Glutathione S-Transferase (GST) Gene diversity in the crustacean *Calanus finmarchicus*–contributors to cellular detoxification. *PloS One*, *10*(5), e0123322.

Lenz, P. H., Takagi, D., & Hartline, D. K. (2015). Choreographed swimming of copepod nauplii. *Journal of The Royal Society Interface*, *12*(112), 20150776.

2014

Christie, A. E., Fontanilla, T. M., Roncalli, V., Cieslak, M. C., & Lenz, P. H. (2014). Diffusible gas transmitter signaling in the copepod crustacean *Calanus finmarchicus*: Identification of the biosynthetic enzymes of nitric oxide (NO), carbon monoxide (CO) and hydrogen sulfide (H_2S) using a *de novo* assembled transcriptome. *General and Comparative Endocrinology*, *202*, 76-86.

Lenz, P. H., Roncalli, V., Hassett, R. P., Wu, L. S., Cieslak, M. C., Hartline, D. K., & Christie, A. E. (2014). *De novo* assembly of a transcriptome for *Calanus finmarchicus* (Crustacea, Copepoda) – the dominant zooplankter of the North Atlantic Ocean. *PloS One*, *9*(2), e88589.

Christie, A.E., Fontanilla, T.M., Roncalli, V., Cieslak, M.C. and Lenz, P.H. (2014). Identification and developmental expression of the enzymes responsible for dopamine, histamine, octopamine and serotonin biosynthesis in the copepod crustacean *Calanus finmarchicus. General and Comparative Endocrinology*, **195**:28-39.

2013

Jungbluth, M.J., Goetze, E., Lenz, P.H. (2013). Measuring copepod naupliar abundance in a subtropical bay using quantitative PCR. *Marine Biology*, **160**:3125-3141.

Unal, E., Bucklin, A., Lenz, P.H. and Towle, D.W. (2013). Gene expression of the marine copepod *Calanus finmarchicus*: Responses to small-scale environmental variation in the Gulf of Maine (NW Atlantic Ocean). *Journal of Experimental and Marine Biology and Ecology*, **446**: 76-85.

Christie, A.E., Fontanilla, T.M., Nesbit, K.T. and Lenz, P.H. (2013). Prediction of the protein components of a putative *Calanus finmarchicus* (Crustacea, Copepoda) circadian signaling system using a de novo assembled transcriptome. *Comparative Biochemistry and Physiology Part D*, *Genomics & Proteomics*, **8**:165-193.

Christie, A.E., Roncalli, V., Wu, L.-S., Garrote, C.L., Doak, T. and Lenz, P.H. (2013). Peptidergic signaling in *Calanus finmarchicus* (Crustacea: Copepoda): *in silico* identification of putative peptide hormones and their receptors using a *de novo* assembled transcriptome. *General and Comparative Endocrinology*, **187**:117-135.

Jungbluth, M.J. and Lenz, P.H. (2013). Copepod diversity in a subtropical bay based on a fragment of the mitochondrial COI gene. *Journal of Plankton Research*, **35**:630-643.

Bradley, C.J., Strickler, J.R., Buskey, E.J. and Lenz, P.H. (2013). Swimming and escape behavior in two species of calanoid copepods from nauplius to adult. *Journal of Plankton Research*, **35**:49-65.

Christie, A.E., Roncalli, V., Batta Lona, P., McCoole, M.D., King, B.L., Bucklin, A., Hartline, D.K. and Lenz, P.H. (2013). *In silico* characterization of the insect diapause-associated protein

couch potato (CPO) in *Calanus finmarchicus* (Crustacea: Copepoda). *Comparative Biochemistry and Physiology. Part D, Genomics & Proteomics*, **8**:45-57.

2012

Buskey, E.J., Lenz, P.H. and Hartline, D.K. (2012) Sensory perception, neurobiology, and behavioral adaptations for predator avoidance in planktonic copepods. *Adaptive Behavior,* **20:**57-66

Lenz, P.H. (2012) The biogeography and ecology of myelin in marine copepods. *Journal of Plankton Research*, 34:575-589 (journal cover, featured article)

Lenz, P.H., Unal, E., Hassett, R.P., Smith, C.M., Bucklin, A., Christie, A.E. and Towle, D.W. (2012) Functional genomics resources for the North Atlantic copepod, *Calanus finmarchicus*: EST database and physiological microarray. *Comparative Biochemistry Physiology Part D, Genomics & Proteomics,* **7:**110-123

2011

Christie, A.E., McCoole, M.D., Harmon, S.M., Baer, K.N. and Lenz, P.H. (2011) Genomic analysis of the *Daphnia pulex* peptidome. *General and Comparative Endocrinology*, **171**:131-150

Christie, A.E., Chapline, M.C., Jackson, J.M., Dowda, J.K., Hartline, N., Malecha, S.R. and Lenz, P.H. (2011) Identification, tissue distribution and orexigenic activity of neuropeptide F (NPF) in penaeid shrimp. *Journal of Experimental Biology*, **214**:1386-1396

Christie, A.E., Nolan, D.H., Garcia, Z.A., McCoole, M.D., Harmon, S.M., Congdon-Jones, B., Ohno, P., Hartline, N., Congdon, C.B., Baer, K.N. and Lenz, P.H. (2011) Bioinformatic prediction of arthropod/nematode-like peptides in non-arthropod, non-nematode members of the Ecdysozoa. *General and Comparative Endocrinology*, **170**:480-486

Christie, A.E., Nolan, D.H. Ohno, P., Hartline, N. and Lenz, P.H. (2011) Identification of chelicerate neuropeptides using bioinformatics of publicly accessible expressed sequence tags. *General and Comparative Endocrinology*, **170**:144-155

2010 and earlier

Christie, A.E., Durkin, C.S., Hartline, N., Ohno, P. and Lenz, P.H. (2010) Bioinformatic analyses of the publicly accessible crustacean expressed sequence tags (ESTs) reveal numerous novel neuropeptide-encoding precursor proteins, including ones from members of several little studied taxa. *General and Comparative Endocrinology*, **167**:164-178

Ma, M., Xiang, X., Wang, J., Davoodian, N., Gard, A.L., Lenz, P.H., Malecha, S.R., Christie, A.E. and Li, L. (2010) Combining *in silico* transcriptome mining and biological mass spectrometry for neuropeptide discovery in the Pacific white shrimp *Litopenaeus vannamei*. *Peptides,* **31**:27-43

Gard, A.L., Lenz, P.H., Shaw, J.R., and Christie, A.E. (2009) Identification of putative peptide paracrines/hormones in the water flea *Daphnia pulex* (Crustacea; Branchiopoda; Cladocera) using transcriptomics and immunohistochemistry. *General and Comparative Endocrinology*, **160**: 271-287

VanderLugt, K., Cooney, M.J., Lechner, A., and Lenz, P.H. (2009) Cultivation of the paracalanid copepod, *Bestiolina similis* (Calanoida: Crustacea). *Journal of the World Aquaculture Society* **40:** 616-628

Sousa, G.L., Lenz, P.H., Hartline, D.K., and Christie, A.E. (2008) Distribution of pigment dispersing hormone- and tachykinin-related peptides in the central nervous system of the copepod crustacean *Calanus finmarchicus*. *Comparative and General Endocrinology* 156: 454-459

VanderLugt, K. and P.H. Lenz. (2008) Management of nauplius production in the paracalanid, *Bestiolina similis* (Crustacea: Copepoda): Effects of stocking densities and culture dilution. *Aquaculture* **276**: 69-77

Burdick, D.S., Hartline, D.K., and Lenz, P.H. (2007) Escape strategies in co-occurring calanoid copepods. *Limnology and Oceanography* **52**: 2373-2385

Lenz, P.H., Hower, A.E., and Hartline, D.K. (2005) Temperature compensation in the escape response of a marine copepod, *Calanus finmarchicus* (Crustacea). *Biological Bulletin* **209**: 75-85

Lenz, P.H., Hower, A.E., and Hartline, D.K. (2004) Force production during pereiopod power strokes in *Calanus finmarchicus*. *Journal of marine Systems* **49:** 133-144

Voznesensky, M., Lenz, P.H., Spanings-Pierrot, C., and Towle, D.W. (2004) Genomic approaches to detecting thermal stress in *Calanus finmarchicus* (Copepoda: Calanoida). *Journal of Experimental Marine Biology and Ecology* **311:** 37-46

Buskey, E.J., Lenz, P.H., and Hartline, D.K. (2002) Escape behavior of planktonic copepods to hydrodynamic disturbances: high-speed video analysis. *Mar. Ecol. Prog. Ser.* **235:** 135-146

Marine Zooplankton Colloquium 2 (2001) Future marine zooplankton research – a perspective. *Marine Ecology Progress Series* **222:** 297-308 (contributing author)

Weatherby, T.M. and Lenz, P.H. (2000) Mechanoreceptors in calanoid copepods: designed for high sensitivity. *Arthropod Structure and Development* **29**: 275-288

Lenz, P.H., Hartline, D.K., and Davis, A.D. (2000) The need for speed. I. Fast reactions and myelinated axons in copepods. *Journal of Comparative Physiology A* **186**: 337-345

Weatherby, T.M., Davis, A.D., Hartline, D.K., and Lenz, P.H. (2000) The need for speed. II. Myelin in calanoid copepods. *Journal of Comparative Physiology A* **186**: 347-357

Davis, A.D., Weatherby, T.M., Hartline, D.K., and Lenz, P.H. (1999) Myelin-like sheaths in copepod axons. *Nature* **398**: 571

Hartline, D.K., Buskey, E.J., and Lenz, P.H. (1999) Rapid jumps and bioluminescence elicited by controlled hydrodynamic stimuli in a mesopelagic copepod, *Pleuromamma xiphias*. *Biological Bulletin* **197**: 132-143

Lenz, P.H. and Hartline, D.K. (1999) Reaction times and force production during escape behavior of a calanoid copepod, *Undinula vulgaris. Marine Biology* **133**: 249-258

Hartline, D.K., Lenz, P.H. and Herren, C.M. (1996) Physiological and behavioral studies of escape responses in calanoid copepods. *Marine Freshwater Behavior and Physiology* **27**: 199-212

Lenz, P.H., Weatherby, T.M., Weber, W. and Wong, K.K. (1996) Sensory specialization along the first antenna of a calanoid copepod, *Pleuromamma xiphias* (Crustacea). *Marine Freshwater Behavior and Physiology* **27**: 213-221

Radtke, R.L., Showers, W., Mokness, E. and Lenz, P.H. (1996) Environmental information stored in otoliths: insights from stable isotopes. *Marine Biology* **127**: 161-170

Weatherby, T.M., Wong, K.K. and Lenz, P.H. (1994) Fine structure of the distal sensory setae on the first antennae of *Pleuromamma xiphias* Giesbrecht (Crustacea: Copepoda). *Journal of Crustacean Biology* **14**: 670-685

Lenz, P.H. and Yen, J. (1993) Distal setal mechanoreceptors of the first antennae of marine copepods. *Bulletin of Marine Science* **53**: 170-179

Linkowski, T.B., Radtke, R.L. and Lenz, P.H. (1993) Otolith microstructure, age and growth of two species of *Ceratoscopelus* (Osteichthyes: Myctophidae) from the Eastern North Atlantic. *Journal of Experimental Marine Biology and Ecology.* **167**: 237-260

Radtke, R.L., Hubold, G., Folsom, S.D. and Lenz P.H. (1993) Otolith structural and chemical analyses: the key to resolving age and growth of the Antarctic silverfish, *Pleurogramma antarcticum*. *Antarctic Science* **5**: 51-62

Gassie, D.V., Lenz, P.H., Yen, J., and Hartline, D.K. (1993) Mechanoreception in zooplankton first antennae: Electrophysiological techniques. *Bulletin of Marine Science* **53**: 96-105

Yen, J., Lenz, P.H., Gassie, D.V. and Hartline, D.K. (1992) Mechanoreception in marine copepods: electrophysiological studies on the first antennae. *Journal of Plankton Research* **14**: 495-512

Lenz, P.H., Melack, J.M., Robertson, B., and Hardy, E. (1986) Ammonium and phosphate regeneration by zooplankton in an Amazon floodplain lake. *Freshwater Biology* **16**: 821-830

Lenz, P.H., Cooper, S.D., Melack, J.M., and Winkler, D.W. (1986) Spatial and temporal distribution patterns of three trophic levels in a saline lake. *J. Plankton Res*. **8**: 1051-1064

Dana, G.L. and Lenz, P.H. (1986) Effects of increasing salinity on an *Artemia* population from Mono Lake, California. *Oecologia* **68**: 428-436

Cooper, S.D., Winkler, D.W., and Lenz, P.H. (1984) The effect of grebe predation on a brine shrimp population. *J. Anim. Ecol.* **53**: 51-64

Lenz, P.H. (1984) Life-history analysis of an *Artemia* population in a changing environment. *J. Plankton Res*. **6**: 967-983

Invited contributions and reviews

Lenz, P. H., and D. K. Hartline (2018) The biology of myelin in calanoid copepods. In: Uttieri, M. (ed) *Trends in Copepod Studies - Distribution, Biology and Ecology*. New York: Nova Science Publishers, Inc, pp. 219-240 (*peer reviewed*)

Lenz, P.H. and Hartline, D.K. (2014) Mechanoreception in Crustaceans of the Pelagic Realm. In: Derby, C. Thiel, M. (eds), *Nervous Systems and the Control of Behavior. The Natural History of the Crustacea*, pp. 295-320 (*peer reviewed*)

Lenz, P.H. (1993) Vibration sensitivity in marine copepods Pp. 423-430. In *Sensory Systems and Communication in Arthropods II*, Wiese, K., Gribakin, F.G., Popov, A.V. and Renninger, G.H. (eds.), Birkhäuser, Basel, Switzerland. 682 pp.

Lenz, P.H. and Browne, R.A. (1991) Ecology of *Artemia*, pp. 237-253. In R.A. Browne, P. Sorgeloos and C.N.A. Trotman (eds), *Artemia* Biology, CRC Press, Boca Raton

Lenz, P.H. and Dana, G.L. (1987) Life-cycle studies in *Artemia*: a comparison between a sub-tropical and a temperate population. Pp. 89-100. Sorgeloos, P., Bengston, D.A., Decleir, W., and Jaspers, E. (eds.), *Artemia Research and its Applications. Vol. 3. Ecology, Culturing, Use in Aquaculture*. Universa Press, Wetteren, Belgium

Lenz, P.H. (1987) Ecological studies on *Artemia*: a review. Pp. 5-18. Sorgeloos, P., Bengston, D.A., Decleir, W., and Jaspers, E. (eds.), *Artemia Research and its Applications. Vol. 3. Ecology, Culturing, Use in Aquaculture*. Universa Press, Wetteren, Belgium

Melack, J.M., Lenz, P.H., and Cooper, S.D. (1985) The ecology of Mono Lake. *National Geographic Soc. Res. Repts.* 20: 461-470

Books

Lenz, P.H., Hartline, D.K., Purcell, J.E. and Macmillan, D.L. (eds) (1996) *Zooplankton: sensory ecology and physiology*. Gordon and Breach Publishers, Amsterdam. 590 pp.

Recent Research Awards (since 2009)

"Collaborative Research: Molecular profiling of the ecophysiology of diapause induction in calanid copepods of the Northern Gulf of Alaska LTER site." UHM Lead Institution: Lenz (P.I.),

Christie, Hartline (UHM) & Hopcroft (U. Alaska Fairbanks). Total: $1,117,513; UHM: $676,391 (NSF OCE 1756767), 03/01/2018-02/28/2022.

"Collaborative Research: Optimizing recruitment of *Neocalanus* copepods through strategic timing of reproduction and growth in the Gulf of Alaska", UHM Lead Institution: Lenz (P.I.), Christie & Hopcroft (U. Alaska Fairbanks). Total: $1,039,953; UHM: $624,992 (NSF OCE 1459235), 03/01/2015-02/28/2019, no-cost-extension to 08/31/2020

"Interannual and spatial variability in the physiological ecology of a key forage species, the copepod *Neocalanus flemingeri* during the spring growth phase", NPRB 1709 (North Pacific Research Board), 09/01/2017-08/31/2019, $51,270 (P.I.)

"The drive to survive: copepods vs. ichthyoplankton", NSF OCE 1235549, 09/15/2012 – 08/31/2016 (no-cost extension to: 08/31/2018), $542,383 (P.I., D.K. Hartline, co-P.I.)

"Eager: New molecular methods for studying copepod nauplii in the field", NSF OCE 1255697, 01/01/2013-12/31/2015 (no cost extension to 12/31/2016), $298,507 (co-P.I., E. Goetze, P.I., K. Selph, co-P.I.)

"Maximizing Access to Research Careers", NIH 2T34GM007684-29A1, 06/01/2010 – 05/31/2015, ~ $1,800,000 (co-Director with Pat Couvillon)

"EAGER: Application of transcriptomics to investigate organism-environment relationships in marine zooplankton", NSF OCE 1040597, 07/01/2010 – 06/30/2014, $213,960 (P.I.)

"Comparative and computational approaches to the evolution of myelin", NSF IOS 0923692, 08/01/2009 – 07/31/2013, $482,775 (co-P.I., Dan Hartline, P.I.)

Graduate Students (Committee chair)

Kira Monell, Marine Biology Graduate Program, Univ. Hawai Manoa, M.S. program
Christina Bradley, Dept. Oceanography, Univ. Hawaii Manoa, M.S. (5/2009)
Kyle VanderLugt, Dept. Animal Sciences, Univ. Hawaii Manoa, M.S. (5/2007)

Graduate Students (Committee member)

Marisa McDonald, Marine Biology Graduate Program, Univ. Hawaii Manoa, Ph.D. program
Mireille Steck, Marine Biology Graduate Program, Univ. Hawaii Manoa, M.S. (2016)
Michelle Jungbluth, Department of Oceanography, Univ. Hawaii Manoa, M.S (2012), Ph.D. (2016)
Vittoria Roncalli, Department of Zoology, Univ. Hawaii Manoa, Ph.D. (2015)
James Jackson, Department of Zoology, Univ. Hawaii Manoa, M.S. (2011)
Brad Gemmell, Marine Science, Univ. Texas at Austin, Ph.D. (2011)
Cecelia Sheridan Hannides, Biological Oceanography, Univ. Hawaii Manoa, Ph.D. (2007)
Kevin Funk, Department of Zoology, Univ. Hawaii Manoa, M.S. (2005)
Rebecca Waggett, Marine Science, Univ. Texas at Austin, Ph.D. (2005)

Teaching and Course Development

MBIO725 – Topics in Marine Physiology, Behavior and Organismal Biology. Specific topic: Transcriptomics of non-model eukaryotes (2 credits, Fall 2015), new course.

Creationism, Evolution and Intelligent Design – Honors Seminar (Honors 491): upper division seminar to introduce students to the interaction between science, religion, law and politics. Co-instructor with Helen Baroni, Religion Dept.); Spring 2009, new course.

Plankton bloom dynamics – new insights from molecular and genomic tools. Marine Genomics Europe, summer course: Instructor of Zooplankton Module (co-instructor: Ann Bucklin); June 18-19, 2008, new course.

Research Methods (Honors 495): Upper division course designed to prepare students for completing an Honors thesis. Univ. Hawaii at Manoa, Spring 2001, 2002, 2003, 2004, 2005, 2006, 2008 (contribution praised by Program Director)

Oceanography (201): General introductory course providing a survey of the biology, chemistry, physics and geology of the oceans. Kapiolani Community College, U. Hawaii System, Fall and Spring, 1984-1985; 1987-1988

General Science (187L): Introductory laboratory course on the principles of science with special emphasis on the ecology of the Hawaiian Islands. Univ. Hawaii at Manoa, Spring, 1987

Service

Editorial Boards

Journal of Plankton Research (Member)
Integrative and Comparative Biology (Assistant Editor)
Ocean and Coastal Research (Associate Editor)

Peer-reviewer

National Science Foundation (Panelist, Ad Hoc)
Deutsche Forschungs Gemeinschaft (Ad Hoc)
PNAS, *PLoS One*, *Invertebrate Neuroscience*, *Journal of Experimental Biology*, *Hydrobiologia*, *Comparative Physiology and Biochemistry*, *Marine Ecology Progress Series, Philosophical Transactions of the Royal Society, London, Biological Bulletin, Science of the Total Environment, General and Comparative Endocrinology*, *Progress in Oceanography*, *Journal of Plankton Research, Integrative and Comparative Biology, Marine Genomics*, *Biochemie* (journal reviewer)

Search Committees

Program Director, NSF, Office of Polar Program (2020)
Faculty Search, PBRC, U. Hawaii Manoa (2014-2015, 2015-2016 [chair])
Honor's Program Director, U. Hawaii Manoa (2013)

Other Committees

Diversity, Equity and Inclusion, NSF, Ocean Section (2019-current)
Faculty Mentoring, PBRC, U. Hawaii Manoa (2016-2019)
Research Council, SOEST, U. Hawaii Manoa (2019)
Director's Advisory, Mt. Desert Island Biological Laboratory (2009-2011)
Environmental Sciences, Mt. Desert Island Biological Laboratory (2009-2011)
Helen Cserr Lecture, Mt. Desert Island Biological Laboratory (2005-2011)
Education, Mt. Desert Island Biological Laboratory (2003-2010)

Affiliate Graduate Faculty (U. Hawaii Manoa)

Zoology (CNS)
Food and Animal Sciences and Human Nutrition (CTAHR)
Oceanography (SOEST)
Marine Biology Graduate Program (SOEST & CNS)

Current Collaborators

Edward Buskey (Univ. Texas Austin), *J. Rudi Strickler* (Univ. Wisconsin Milwaukee), *Daisuke Takagi* (Mathematics, UHM) and *Dan Hartline* (PBRC) on copepod neuroethology and predator-prey interactions

Russell Hopcroft (Univ. Alaska Fairbanks), *Ann Tarrant* (WHOI), *Vittoria Roncalli* (Stazione Zoologica Anton Dohrn, Naples, Italy), *Andrew Christie*, *Ann Castelfranco* and *Dan Hartline* (PBRC) on the application of transcriptomics to investigate ecological physiology of zooplankton

Janet Bradford-Grieve (NIWA, New Zealand), *Grace Wyngaard* (James Madison University) on introductory chapters on the Copepoda and Calanoida for the *Treatise on Zoology* (Carel von Vaupel Klein, editor)

Tina Carvalho (PBRC) on morphology