

BIOGRAPHICAL SKETCH: LARS TOMANEK

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PROFESSIONAL EXPERTISE

COMPARATIVE PROTEOMICS OF MARINE ORGANISMS: The PI has established a laboratory to conduct analyses using various proteomic workflows, including sample preparation, protein separation through 2D gel-electrophoresis and liquid chromatography, quantification of protein abundance, statistical analyses, tandem mass spectrometry (MALDI-ToF-ToF and ion trap) and bioinformatic processing of spectra for identification of proteins and their post-translational modifications.

PROFESSIONAL PREPARATION

Undergraduate Institution:	University of Konstanz, Germany	Biology	BS	1993
Graduate Institutions:	University of Konstanz, Germany	Biology	MS	1995
	Oregon State University, Corvallis	Zoology	PhD	1999
Postdoctoral Institutions:	Stanford University, Hopkins Marine Station (Dr. George Somero)			1999-2003
	University of California, Davis, CA (Dr. Dietmar Kùltz)			2003-2005

APPOINTMENTS

Assistant Professor: Biological Sciences Department, Cal Poly San Luis Obispo 2005 – 2011
Associate Professor: Biological Sciences Department, Cal Poly San Luis Obispo 2011-present

PUBLICATIONS RELEVANT TO PROPOSED PROJECT

Fields, P. A., Zuzow, M. J. and Tomanek, L. (2012): Comparative proteomics of blue mussel congeners (genus *Mytilus*) to temperature acclimation. *Journal of Experimental Biology* 215, 1106-1116.

Serafini, L., Hann, J. B., Kùltz, D., and Tomanek, L. (2011). The proteomic response of sea squirts (genus *Ciona*) to acute heat stress: a global perspective on the thermal stability of proteins. *Comparative Biochemistry Physiology. D Genomics and Proteomics* 6, 322-334.

Tomanek, L., Zuzow, M. J., Ivanina, A. V., Beniash, E., and Sokolova, I. M. (2011): Proteomic responses to elevated CO₂ levels in eastern oysters, *Crassostrea virginica*: evidence for oxidative stress. *Journal of Experimental Biology*. 214, 1836-1844.

Tomanek, L. (2011): Environmental proteomics: changes in the proteome of marine organisms in response to environmental stress, pollutants, infection, symbiosis and development. *Annual Review of Marine Science* 3, 373-399.

Tomanek, L. and M. J. Zuzow (2010). The proteomic response of the mussel congeners *Mytilus galloprovincialis* and *M. trossulus* to acute heat stress: implications for thermal tolerance limits and metabolic costs of thermal stress. *Journal of Experimental Biology* 213, 3559-3574.

OTHER PUBLICATIONS

Campanale, J. J., Tomanek, L., and N. Adams (2011): Exposure to ultraviolet radiation causes proteomic changes in embryos of the purple sea urchin, *Strongylocentrotus purpuratus*. *Journal of Experimental Marine Biology and Ecology* 397, 106-120.

- Tomanek, L. (2010): Variation in the heat shock response and its implication for predicting the effect of global climate change on species' biogeographic distribution ranges and metabolic costs. *Journal of Experimental Biology* 213, 971-979.
- Tomanek, L. (2008): The importance of physiological limits in determining biogeographical range shifts due to global warming: The heat shock response. *Physiological and Biochemical Zoology* 81, 709-717.
- Tomanek, L. (2005): Two-dimensional gel analysis of the heat-shock response in marine snails (genus *Tegula*): interspecific variation in protein expression and acclimation ability. *Journal of Experimental Biology* 208, 3133 - 3143.
- Tomanek, L., and G. N. Somero (2002). Interspecific and acclimation-induced variation in levels of heat-shock protein 70 (hsp70) and 90 (hsp90) and heat-shock transcription factor-1 (HSF-1) in congeneric marine snails (genus *Tegula*): implications for regulation of *hsp* gene expression. *Journal of Experimental Biology* 205, 677-685.

SYNERGISTIC ACTIVITIES

Reviewer:

- Journals: American Journal of Physiology, Aquatic Toxicology, Comparative Physiology and Biochemistry, Functional Genomics and Proteomics, Journal of Experimental Biology, Journal of Experimental Marine Biology and Ecology, Journal of Proteome Research, Marine Ecology Progress Series, Physiological and Biochemical Zoology, PLoSOne, Proceedings of the National Academy of Sciences of the U.S.A., Proteome Science, Proteomics and more (22 different peer-reviewed scientific journals total).
- Granting agencies: National Science Foundation (six grants and one review panel with 18 grants), National Sea Grant Program, California State University Program for Education and Research in Biotechnology (CSUPERB).

Popular contributions to professional journals - Contributor (2004-2006) to the "Outside" section of the Journal of Experimental Biology.

Symposia organized:

- Physiological ecology of rocky intertidal organisms: from molecules to ecosystems, organized for the Society for Integrative and Comparative Biology, California, 2002.
- Temperature-dependent biogeography of aquatic ectotherms: from genes to the effects of climate change, organized for the German Zoological Society, Germany, 2004.
- Cross-tolerance towards environmental stress: molecular mechanisms and ecological case studies, annual meeting of the Society for Experimental Biology, France, 2008.
- Comparative proteomics of environmental and pollution stress, annual meeting of the Society for Integrative and Comparative Biology, South Carolina, 2012.

Coordination of CSU-wide research network on the Environmental Effects on Marine Life (EEML):

A social network project to coordinate and increase research activities in the CSU-system through collaborations and resource sharing (see <http://www.calstate.edu/coast/eeml/>).

COLLABORATORS AND OTHER AFFILIATIONS

Collaborators: Dr. Alexa Tullis, University of Puget Sound; Dr. Peter Fields, Franklin and Marshall College; Drs Jonathon Stillman and Anne Todgham, San Francisco State Univ.; Dr. Bengt Allen, CSU Long Beach; Dr. Inna Sokolova, Univ. South Carolina; for complete list see conflict of interest form.

Graduate and Postdoctoral Advisors: Doctoral advisor: Dr. George Somero, Stanford Univ. Postdoctoral advisor: Dr. George Somero, Stanford Univ., Dr. Dietmar Kultz, Univ. California, Davis.

Current graduate students (MS): Michael Garland and James S. Koman.