

California State University, Fresno
Department of Biology presents

Proteomes in changing environments: global warming and ocean acidification

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Organisms often have to respond to multiple environmental stressors simultaneously. They do so at various levels of biological organization. At the cellular level, changes in protein abundance can cause shifts in metabolism, cell shape and cell fate. Together, these changes modify the proteome and therefore the functional status of the cell. Our research focuses on how organisms that occupy different environments vary in their proteomic responses to environmental change, especially in the marine environment. We investigated the proteomic responses of bivalves, crabs and fish to changing conditions in temperature, salinity, oxygen and pH and identified responses that are common to all and ones that are specific to a particular stressor or tissue. The picture that emerges suggests that an unbiased systems approach is necessary to identify the multiple cellular processes that set environmental tolerance limits and stress-specific cellular responses. Comparisons across phylogenetic groups show that there are common themes to how multiple simultaneous stressors affect cells and organisms, providing a cell-based framework for predicting the future capacities of these organisms to respond to global change.

For further information: www.csufresno.edu/biology or phone 278-2001

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