Meeting Abstract

P3.50  Friday, Jan. 6  Proteomic response of tidal-rhythm entrained *Mytilus californianus* to acute aerial heat stress  HERNANDEZ, D*; SCHUMAN, M; TOMANEK, L; California Polytechnic State University; California Polytechnic State University; California Polytechnic State University dherna07@calpoly.edu

The rocky intertidal mussel species *Mytilus californianus* is native to the Pacific coast of North America. It is frequently exposed to temperatures that can induce the cellular stress response due to the tidal rhythm. Instead of acclimating mussels to common conditions in the laboratory for several weeks, we collected mussels from a site with mussel body temperature recordings (specimens' thermal history) and immediately started experimentation by mimicking the tidal rhythm with different levels of heat stress over multiple low tides and with different recovery periods. By using individuals that were entrained to the tidal rhythm and by maintaining it, we were able to simulate natural conditions and control levels of thermal stress. Immediately after collection, mussels were placed in the artificial tidal cycle so as not to interrupt their entrainment. During the first subsequent low low tide, air temperature was gradually raised to either 10°C, 28°C, or 35°C for the duration of the low tide. Following this low low tide, individuals were able to recover at 10°C water and air temperature (depending on tidal conditions) until the next low tide. Gill tissues from all individuals were prepared for analysis with 2D gel electrophoresis and subsequent 2D gel image analysis (two-way ANOVA; p<0.02). 19% of the proteins showed time-dependent heat stress (interaction) effect and about as many showed a heat stress or time (main) effect, with only half of those also showing an interaction effect. Proteins that changed significantly will be identified by matrix-assisted laser desorption ionization (MALDI) tandem time-of-flight (ToF-ToF) mass spectrometry.