

NSF Award OCE-0623383: Collaborative research: Thermal biology of alvinellid worms. R. Lee (PI), P. Girguis (Co-I).

Field programs to date: AT15-22 (25 Aug - 06 Sept, 2007) and AT15-36 (18 Aug - 7 Sep, 2008).

The objective of this program is to better understand the thermal limits of metazoan life, in particular of the alvinellid polychaetes that inhabit high temperature sulfides.

During these field programs, we conducted the following experiments and efforts:

- 1) Collected *P. sulfincola* and *P. palmiformis* worms from known structures in the MEF and Mothra hydrothermal fields. Collections were videotaped and photographed. Samples were used in shipboard experiments. We will provide ancillary data (temperature, LAT LONG, biomass estimates, diversity assessments) to the R2K data portal by July 2009.
- 2) Collected *Ridgeia piscesae* worms from known structures in the MEF and Mothra hydrothermal fields. Collections were videotaped and photographed. Samples were used in shipboard experiments. Here again, we will provide ancillary data (temperature, LAT LONG, biomass estimates, diversity assessments) to the R2K data portal by July 2009.
- 3) In situ temperature logger (HOBO) from near sample collection site. Temperature data and ancillary data (deployment dates, LAT LONG, co-occurring animals) to be provided to the R2K data portal by July 2009.
- 4) Other data, including respiration rates and thermotolerance of two species of alvinellid worm will be provided upon completion of a manuscript (part of a student's thesis), no later than December 2009.

Products to date

Society of Integrative and Comparative Biology Annual Meeting. Dilly, G.F., **Girguis, P.R.** *Exploring the Boundaries of Metazoan Thermotolerance at Hydrothermal Vents: Respiration and Protein Expression of Paralvinellid Worms*

The European Society for Comparative Physiology and Biochemistry Annual Meeting. Dilly, G.F., **Girguis, P.R.** *Hydrothermal vents and eukaryotic thermotolerance: profiling heat shock proteins expression in Paralvinella sulfincola.*

Yancey, P., Lee, R., and **Girguis, P.** Accepted. Thiotaaurine and hypotaaurine

contents in hydrothermal-vent polychaetes without thiotrophic endosymbionts:
Correlation with sulfide exposure. *Journal of Experimental Biology*.

Additional expected products

We are currently working on three manuscripts to be submitted by the end of this year. These manuscripts will be submitted to *Journal of Exp. Biology*, *PLoS One*, and *Comparative Physiology and Zoology*. At that time, we will provide to the R2K portal any and all data that are requested or required.