EUROPEAN EXPERTISE IN RESEARCH ON THERMAL ADAPTATION

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General scope of the group's research: We explore the evolutionary physiology of ectotherms on different time scales, from rapid evolution in natural populations to long-term, phylogenetic trends.

Topics & Questions: Evolution of thermal sensitivity, thermal preferences, phenotypic plasticity; rapid evolution in introduced species; responses of ectotherms to climate change; physiological influences on distributions and ecology; adaptation to hypoxia and altitude; paleophysiology.

Organisms: Primarily *Drosophila* and various lizards.

Methods & Expertise We Use: Organismal level studies of the thermal dependence of performance and fitness in ectotherms; phylogenetic comparative approaches; artificial selection & experimental evolution; statistical analyses of competing acclimation hypotheses; theoretical models of thermoregulatory behavior and thermal adaptation of ectotherms

Sample publications:

Huey, R.B., Gilchrist, G.W., Carlsen, M. & Serra, L. 2000. Rapid evolution of a latitudinal cline in body size in an introduced fly. Science 287:308-9.

Huey, R.B., Hertz, P.E., & Sinervo, B. 2003. Behavioral drive versus behavioral inertia in evolution: a null model approach. American Naturalist 161:357-366.

Huey, R.B., & Ward, P.D. 2005. Hypoxia, global warming, and terrestrial Late Permian extinctions. Science 308:398-401.

Balanyá, J., Oller, J.M., Huey, R.B., Gilchrist, G.W., & Serra, L. 2006. Global genetic change tracks global climate warming in *Drosophila subobscura*. Science 313:1773-1775.

Frazier, M., Huey, R.B., & Berrigan, D. 2006. Thermodynamics constrains the evolution of insect population growth rates: "warmer is better." American Naturalist 168:512-520.