

## EUROPEAN EXPERTISE IN RESEARCH ON THERMAL ADAPTATION

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General scope of the group's research: We are trying to understand patterns of microevolution, specifically in reproductive traits and with regard to temperature adaptation. Studies are conducted at the behavioural, ecological, physiological, morphological and genetic level.

Topics & Questions: Life-history evolution, phenotypic plasticity, temperature-size rule, clinal variation, cold & heat tolerance, thermal melanism, growth efficiency, determinants of male mating success.

Organisms: Primarily arthropods, particularly butterflies (*Bicyclus anynana*, *Lycaena* sp., *Pieris napi* etc.).

### Methods & Expertise we use:

Ecological and behavioural field and lab experiments, artificial selection & experimental evolution, quantitative genetic methods, population genetics, digitizing equipment for morphometrics, biochemical analyses of small volumes (e.g. eggs), measuring in vivo and in vitro JH titres (LC-MS), ELISA, Western Blot.

### 3-5 Sample publications:

- Fischer, K. & K. Fiedler (2002): Reaction norms for age and size at maturity in response to temperature: A test of the compound interest hypothesis. *Evolutionary Ecology* 16: 333-349.
- Fischer, K., Brakefield, P.M. & B.J. Zwaan (2003): Plasticity in butterfly egg size: Why larger offspring at lower temperatures? *Ecology* 84: 3138-3147.
- Fischer, K., O'Brien, D.M. & C.L. Boggs (2004): Allocation of larval and adult resources to reproduction in a fruit-feeding butterfly. *Functional Ecology* 18: 656-663.
- Steigenga, M.J., Zwaan, B.J., Brakefield, P.M. & K. Fischer (2005): The evolutionary genetics of egg size plasticity in a butterfly. *Journal of Evolutionary Biology* 18: 281-289.
- Fischer, K., Bot, A.N.M., Brakefield, P.M. & B.J. Zwaan (2006): Do mothers producing large offspring have to sacrifice fecundity? *Journal of Evolutionary Biology* 19: 380-391.