

EUROPEAN EXPERTISE IN RESEARCH ON THERMAL ADAPTATION

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General scope of the group's research: The main goal of our group is to understand the evolutionary dynamics underlying adaptation to captivity and, in more general terms, local adaptation. To achieve this we do real time evolution studies, characterizing the temporal changes, at the phenotypic and molecular level, of laboratory populations from the moment they are introduced from collections in the wild.

Topics & Questions: Evolutionary domestication; convergent vs. divergent evolution during local adaptation; repeatability of adaptive dynamics; the role of genetic drift during adaptation; relation between measures of variability in molecular markers and adaptive dynamics; change of gene expression throughout adaptation; importance of chromosomal polymorphisms in the evolutionary dynamics.

Organisms: *Drosophila subobscura*, *Drosophila madeirensis*

Methods & Expertise we use: Our research at the phenotypic level involves simple laboratory designs, with basic skills of maintenance and manipulation of laboratory populations of *Drosophila*; our molecular studies involve the basic skills for genotyping microsatellites. We are developing skills for future studies involving the analysis of gene expression (with microarray techniques) and chromosomal polymorphisms.

Sample publications:

- MATOS M, ROSE MR, ROCHA PITÉ MT, REGO C & AVELAR T (2000). Adaptation to the laboratory environment in *Drosophila subobscura*. *Journal of Evolutionary Biology* **13**: 9-19.
- MATOS M, AVELAR T & ROSE MR (2002). Variation in the rate of convergent evolution: adaptation to a laboratory environment in *Drosophila subobscura*. *Journal of Evolutionary Biology* **15**: 673-682.
- MATOS M, SIMÕES P, DUARTE A, REGO C, AVELAR T & ROSE MR (2004). Convergence to a novel environment – comparative method *versus* experimental evolution. *Evolution* **58**: 1503-1510.
- REGO, C., M. MATOS & M. SANTOS (2006). Symmetry breaking in interspecific *Drosophila* hybrids is not due to developmental noise. *Evolution* 60(4): 746-761.
- SIMÕES P., M. R. ROSE, A. DUARTE, R. GONÇALVES & M. MATOS (2007). Evolutionary domestication in *Drosophila subobscura*.. *Journal of Evolutionary Biology* doi: 10.1111/j.1420-9101.2006.01244.x (*in press*).