

Institute: Institute of Environmental Sciences

Topic: Ecological speciation within the *Brachionus plicatilis* (Rotifera) cryptic species complex

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Background information:

Species representing the *Brachionus plicatilis* cryptic species complex inhabit different aquatic systems all over the world, but the best known and studied is the metapopulation inhabiting the brackish ponds in the Mediterranean coast of Spain, consisting of four known and officially described species and two other not yet named. This metapopulation was already the subject of studies focusing on environmental selection as affecting body size at the inter- and intraspecific levels. This system of studies has a considerable potential to pose hypotheses on the mechanisms of ecological speciation.

The main question to be addressed in the project:

The main project hypothesis is to test whether body size is a 'magic trait' in the ecological speciation within the *Brachionus plicatilis* cryptic species complex.

Information on the methods/description of work:

The project will be realized in three steps: (i) selection of ponds with the most and the least plastic rotifers representing five *Brachionus* species (based on existing database), (ii) field and laboratory work at the University of Valencia, Spain, aiming to link environmental heterogeneity and body size plasticity in *Brachionus* species, (iii) estimation of gene flow in the *B. plicatilis* cryptic species complex, using GWAS approach at Oxford University.

Additional information:

Deep knowledge in evolutionary ecology theory, good manual skills for the work with live rotifers, at least general knowledge in molecular techniques.

Place/name of potential foreign collaborator:

Professor Manuel Serra, University of Valencia, Spain; Professor Timothy Barraclough, Oxford University, UK.

References:

Walczyńska, A. and Serra, M., preprint:

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Campillo, S., Garcia-Roger, E. M., Carmona, M. J., Gomez, A. & Serra, M. Selection on life history traits and genetic population divergence in rotifers. *J Evol Biol* **22**, 2542-2553 (2009).

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Barraclough, T. G. *The Evolutionary Biology of Species*. (2019).

<https://oxford.universitypressscholarship.com/view/10.1093/oso/9780198749745.001.0001/oso-9780198749745>