MBGE THESIS PROPOSAL

- 2022/2023 -

TITLE	Consistency of behaviour- energetics associations in wild lizards	
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SHORT ABSTRACT *(overview, objectives and methods)*	The use of energy is universal to all life forms and all levels of biological organization, setting limits to physiological performance and consequently to fitness. But surprisingly, very little is known about energetic constraints to animal´s capacity for aerobic performance. In the current project we will perform a range of tests, both in the outdoor enclosures and in the laboratory, to understand temporal persistence of physiological performance. Long term phenotypic persistence, i.e. repeatability, can set upper limit to heritability (trait additive genetic component), informing how fast it response to natural selection. We will study the maximum metabolic rate on the Bocage's wall lizards (*Podarcis bocagei*) performing on the designed for lizards treadmill. The lizards will be maintained in the 16 outdoor enclosures, in simulated natural habitae. This project will test upper limits to evolvability hypothesis, the potential of a phenotypic trait to response to natural selection. The expected outcomes will open opportunities to study links between metabolic performance and behaviors (such as voluntary mobility and digging capacity) in captive and wild animals. Optimization of energy budgets will be tested in context of territoriality and ranging behaviors. Selected student(s) will join laboratory in the BIOPOLIS, CIBIO-InBIO (University of Porto) to take part in all laboratory experiments. Student(s) will be given opportunity to take part in field and experimental research on bioenergetics of behaviour (doi: 10.1098/rsbl.2021.0374). Relevant references: Gomes at al. 2018. Run for your life, but bite for your rights? How interactions between natural and sexual selection shape functional morphology across habitats. *The Science of Nature*, 105. Gomes et al. 2022. Is It Function or Fashion? An Integrative Analysis of Morphology, Performance, and Metabolism in a Colour Polymorphic Lizard. *Diversity*, 14:116. Enriquez-Urzelai & Boratyński 2022. Energetic dissociation of individual and species ranges. *Biology Letters* 18:20210374	

	Boratyński et al. 2020.The metabolic performance predicts home range size of bank voles: a support for the behavioral-bioenergetic theory. *Oecologia* 193:547-556	
PROJECT	*Name*	Miguel A. Carretero
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