

Tiago Jesus

MSc

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Education

2011
2015

Doctor of Philosophy in Evolutionary Biology, *University of Lisbon, Faculty of Science, Lisbon, In progress.*

2008
2010

Master of Science in Conservation Biology, *University of Lisbon, Faculty of Science, Lisbon, 18.*

2005
2008

Graduation in Environmental Biology, *University of Lisbon, Faculty of Science, Lisbon, 15.*

PhD thesis

title *Adaptation of freshwater fish to thermal stress - a study in two environmental contexts*

supervisors Prof. Maria Manuela Coelho and Prof. Vera Almeida e Val

description Currently ongoing

Master thesis

title *Insights from gene expression patterns of heat shock proteins in thermal adaptation of iberian Cyprinids and its implications for conservation*

supervisors Prof. Maria Manuela Coelho and Dr. Maria Ângela Inácio

abstract The freshwater fish of the *Squalius* genus are distributed throughout a latitudinal gradient in the river basins of the Iberia Peninsula, namely in Portugal, in which distinct species are exposed to different river regimes. *S. carolitertii* inhabits in the northern region, *S. pyrenaicus* in the central and southern region and *S. torgalensis* is restricted to a river in the southwestern region. Watercourses from these distinct regions differ in their environmental conditions, namely in temperature. The Heat Shock Proteins are a widely studied group of proteins involved in stress responses such as heat stress. Aiming to provide new insights on the molecular mechanisms involved in thermal adaptation of three species of the *Squalius* genus distributed throughout a latitudinal cline, several experimental assays were performed, exposing fish to different temperature treatments. Results suggest the existence of latitudinal variation in the expression patterns of the hsp70 gene, with the southern species, *S. torgalensis*, having the higher induction of hsp70. Similarly to *S. torgalensis*, *S. pyrenaicus* presented an increment in hsp70 mRNA levels when exposed to high temperatures. Despite it had not been possible to test the existence of a similar pattern for hsc70 gene, a significant induction of this gene was observed for *S. torgalensis*. On the other hand, *S. carolitertii* did not present a significant increment in both genes, though many other genes may be involved in thermal tolerance. All together, these results point that *S. torgalensis* is well adapted to a harsher environment. However, careful should be taken when interpreting these results because climate change may increase the severity of the intermittent river regime in the southern region, with the increasing occurrence of extreme drought events. The comprehension of these mechanisms by which fish deal with harsh environments is of extreme importance for conservation purposes in a context of climate change.

Complementary Education

2012

Online Course on Laboratory Animals, *SPCAL*, Sociedade Portuguesa de Ciências em Animais de Laboratório.

2011

BPB11 - Bioinformatics using Python for Biologists, *Instituto Gulbenkian de Ciência*, Oeiras.

Languages

Portuguese **Native**

Mother Tongue

English **Fluent**

Daily practice, all work performed in English

Experience

Participation in Research Projects

2013

Team member, *The mystery of sex bias in *Squalius alburnoides* complex*". An environmental and genetic approach, PTDC/BIA-BIC/110277/2009, Center for environmental biology (CBA).

2011
2012

Team member, *Adaptação de peixes a mudanças ambientais por meio da identificação de marcadores moleculares: Estudo de espécies adaptadas a diferentes regimes climáticos, a diferentes ambientes de criação e submetidas á fragmentação recente no ambiente natural*, CAPES/FCT nº 320/11, Center for environmental biology (CBA) and Instituto Nacional de pesquisas na Amazônia (INPA).

2010
2011

Research fellow, *Evolutionary processes in the origin of "hotspots for biodiversity": insights from southern Portuguese areas based on novel nuclear multilocus approaches in target freshwater fishes and amphibians*, PTDC/BIA-BDE/69769/2006, Center for environmental biology (CBA).

2009
2010

Team member, *Evolutionary processes in the origin of "hotspots for biodiversity": insights from southern Portuguese areas based on novel nuclear multilocus approaches in target freshwater fishes and amphibians*, PTDC/BIA-BDE/69769/2006, Center for environmental biology (CBA).

Skills

Programming

Languages Python, Latex, Bash, R

Publications

Journal Publications

2013

Jesus T.F.; Inácio A. and Coelho M.M., *Different levels of hsp70 and hsc70 mRNA expression in Iberian fish exposed to distinct river conditions*, Genetics and Molecular Biology, 36:61-69.

Other Publications

2009

Jesus, T.F., *Bioficha de peixe - Aequidens diadema*, Bioaquaria, Edição 16, 35 - 36.

2009

Jesus, T.F., *O Ciclídeo Papagaio - o passado cinzento por detrás das cores*, Bioaquaria, Edição 12, 28 - 33.

Communications in scientific meetings

Oral Communications

2013

Jesus, T. F.; Val, V; Coelho, M. M., *Respostas de stress térmico em peixes de água doce da Amazônia e da Península Ibérica*, Workshop "Biodiversidade na Amazônia", Lisboa, Portugal.

Posters

2013

Jesus, T. F.; Val, V; Coelho, M. M., *Transcriptome responses to thermal stress in two Iberian Squalius (Cyprinidae) species living in distinct river regimes*, XIV Congress of the European Society for Evolutionary Biology, Lisboa, Portugal.

2012

Jesus, T. F.; Inácio, A.; Val, V; Coelho, M. M., *Gene expression of hsp70s: a glimpse into thermal adaptation of Iberian Squalius*, First Joint Congress on Evolutionary Biology, Ottawa, Canada.

2010

Jesus, T. F.; Inácio, A.; Coelho, M. M., *The role of hsp70 and hsc70 gene expression in the adaptive mechanisms to extreme temperatures of Iberian Squalius*, Trends in Biodiversity and Evolution 2010, Porto, Portugal.

2010

Jesus, T. F.; Inácio, A.; Coelho, M. M., *Thermal adaptation in Iberian Cyprinids: insights from gene expression patterns of heat shock proteins (hsp70)*, 9th International Congress on the Biology of Fish, Barcelona, Spain.

Other Interests

- Gaming Computer Games, Board Games
- Sport Cycling, Runing, Tennis
- Travel Culture, Nature, Cities
- Technology Computers, Robots, Almost any kind of gadgets