POSTER

EFFECTS OF CHRONIC LOW-TEMPERATURE EXPOSURE ON THE BEHAVIOUR OF ADULT ZEBRAFISH (DANIO RERIO)

A.S. Sanchez Garcia[1], F. Frabetti[2], M. Toni[1]

[1]Dep. of Biology and Biotechnologies "Charles Darwin", Sapienza University, Rome, Italy; [2]Dep. of Medical and Surgical Sciences—DIMEC, University of Bologna, Bologna, Italy

Global warming is causing profound alterations in aquatic ecosystems, critically affecting ectothermic organisms whose physiology depends directly on environmental temperature. Among these, the zebrafish (Danio rerio) has become an established model organism due to its wide thermal tolerance, biomedical relevance, and the availability of standardised molecular and behavioural analyses. This study investigates the effects of chronic exposure to low temperature (18 °C) on the behaviour of adult zebrafish. While the literature provides data on acute cold exposure and on both acute and chronic heat exposure [1,3], systematic studies addressing prolonged hypothermic conditions are still lacking. This gap hampers our understanding of adaptive processes and behavioural strategies deployed under unfavourable environmental conditions. Animals were subjected to a battery of validated behavioural assays (Novel Tank Test, Light–-Dark Test, Social Preference Test, Mirror Biting Test, and Y-Maze Test), allowing the assessment of anxiety-related behaviours, boldness, spatial orientation, and aggression. The results highlight the effects of prolonged low-temperature exposure at the level of individual experimental subjects, as well as differences in behavioural responses to the same thermal condition in isolated fish versus those housed in small social groups [4], underscoring the importance of conspecific presence in modulating behavioural responses to stressors.

Acknowledgements: This work was supported by Sapienza University of Rome (Progetti di Ricerca RP1251999B4ABABF).

References

1. Toni M et al. J. Proteomics 2019; 204: 103396.
2. Angiulli E et al. Sci. Rep. 2020; 10: 5385.
3. Nonnis S et al. Sci. Rep. 2021; 11, 2521.
4. Toni M Animals 2025; 15, 2006.