

# Internship Proposal

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## **Project Title:**

Advancing Zebrafish Welfare: the use of functional feeds

## **Level:**

Master Student

## **Project Summary:**

Zebrafish is steadily gaining importance as a research model, which must be paralleled by advancements in Refinement to safeguard zebrafish welfare. Mitigating the effects of stress and pain of zebrafish kept in captivity in the laboratory is essential to promote animal welfare and to improve the validity of the animal model in biomedical research. In this regard, this project goal is to develop fortified functional foods with bioactive peptides capable of reducing the impact of stress and pain in zebrafish.

## **Work to be developed by the student:**

The student will be involved in the study of the impact of different diets on the pain of zebrafish, evaluating animal behaviour and some biomarkers. The student will apply pain induction protocols, including the use of anaesthesia and muscle injections. The behaviour will be recorded and analysed with tracking software to assess activity, swimming patterns and space occupation, which can be altered when the animal feels pain. Physiological analysis will also be performed using mainly the ELISA technique.

## **References:**

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- Magalhães, F. E. A., de Sousa, C. Á. P. B., Santos, S. A. A. R., Menezes, R. B., Batista, F. L. A., Abreu, A. O., ... & Campos, A. R. (2017). Adult zebrafish (*Danio rerio*): an alternative behavioral model of formalin-induced nociception. *Zebrafish*, 14(5), 422-429.
- Herrera, M., Mancera, J. M., & Costas, B. (2019). The use of dietary additives in fish stress mitigation: Comparative endocrine and physiological responses. *Frontiers in endocrinology*,

