How does domestication change the behaviour of the first generation of fish in captivity?

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INTRODUCTION

Domestication is a new context of evolution where species adapt to human selected and controlled conditions. This leads to genetic and phenotypic changes over generations, with **behavioural traits among the first to alter at the outset of domestication**. This study aims to examine potential behavioural changes in the first domesticated generation of zebrafish (*Danio rerio*).

MATERIALS AND METHODS

F0 : Wild (Bengladesh)

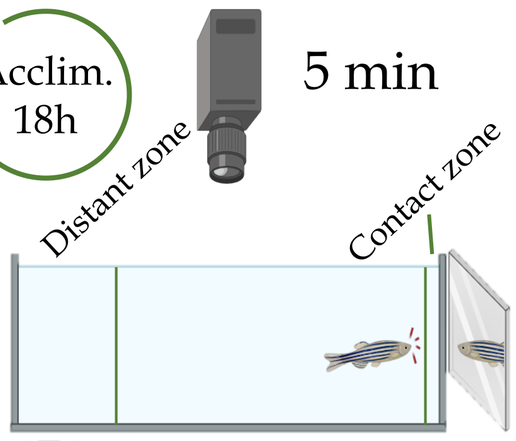
Random pair reproduction
Without inbreeding

+ Laboratory population = reference domesticated (**Lab**)

28°C 200 lx

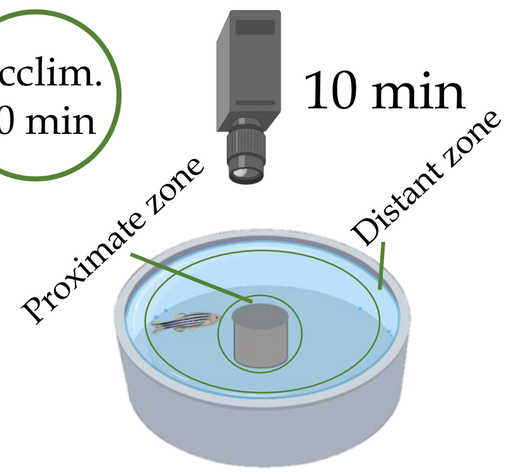
Mirror test

Acclim. 18h — 5 min



Open field test

Acclim. 10 min — 10 min



Individual tracking by R package *trackR*

MIRROR TEST

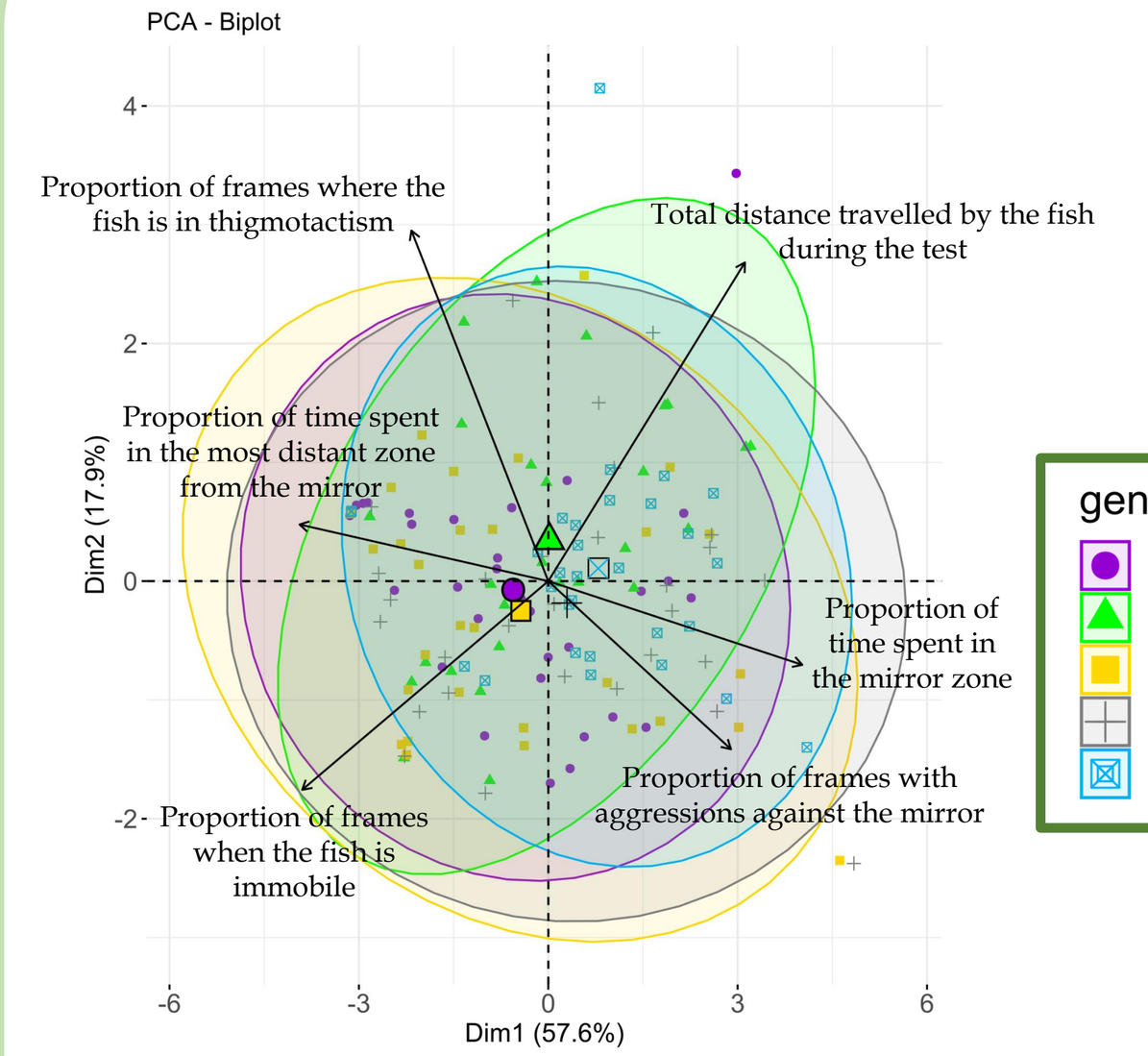


Fig.1: Principal component analysis of the mirror test for 5 generations of *Danio rerio* (F0, n = 33; F1, n = 27; F2 and Lab, n = 30; F3, n = 29)

- No differences between 1st domesticated generations
- Lab is different from F0 and F2 (permANOVA; p = 0.0317)

OPEN FIELD TEST

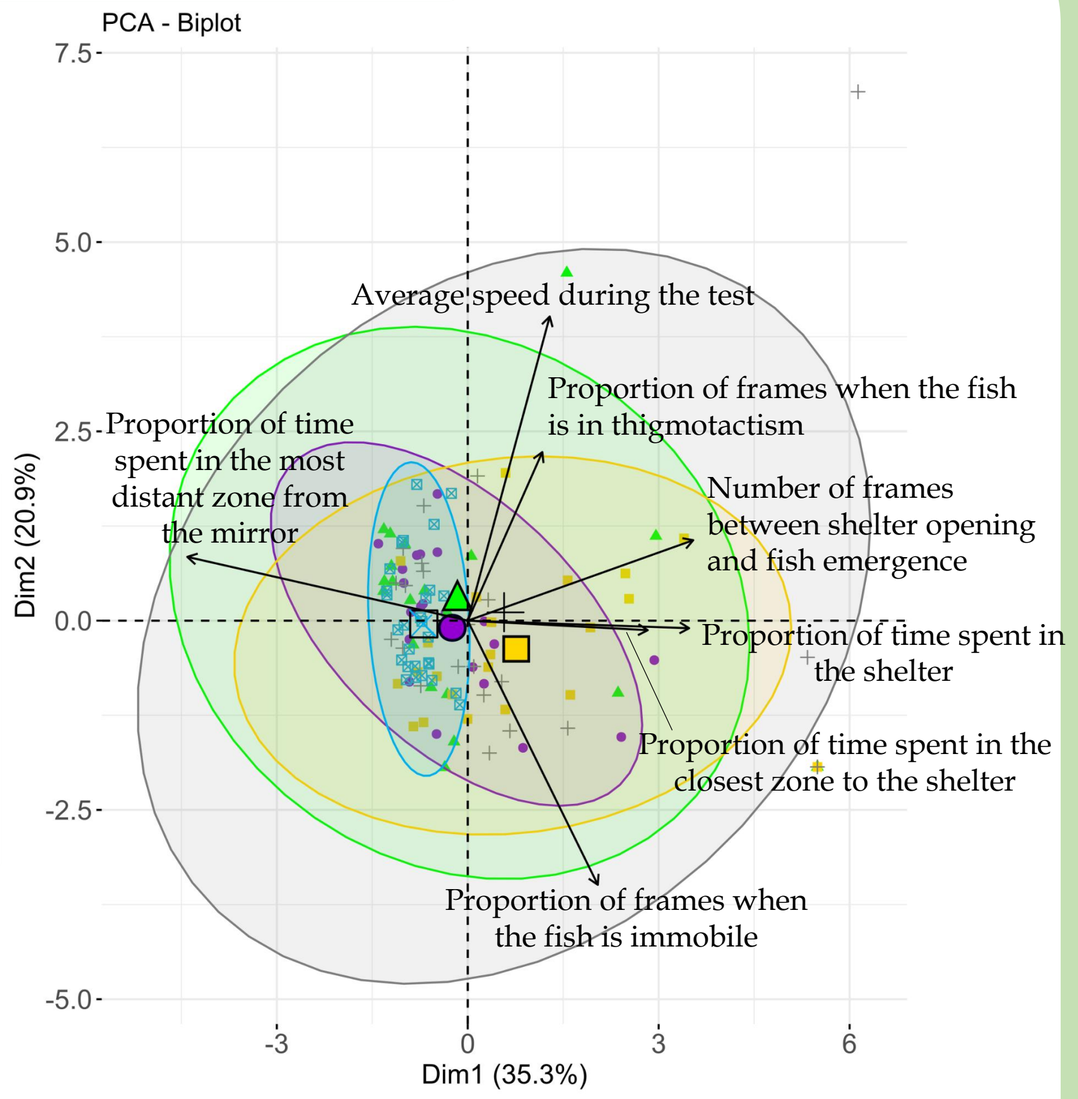


Fig.2: Principal component analysis of the open field test for 5 generations of *Danio rerio* (F0, n = 21; F1, F2 and F3, n = 22; Lab, n = 26)

- Lab is different from all the others (ANOSIM; p =9.9e-05)
- F1 is different from F2

DISCUSSION

Our study indicates that there were no substantial changes in the aggressive response of the first generations born in captivity compared to the wild population.
However, the population that has been domesticated the longest is the most explorative.