Trade-off between the rate of embryonic development and adult growth plasticity in *N. furzeri*

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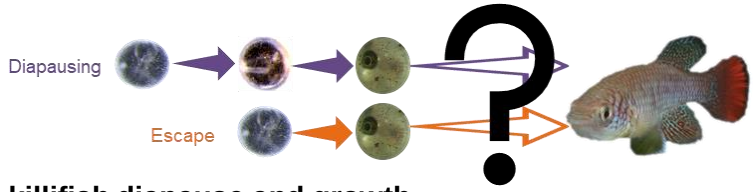
Does embryonic diapause facilitate compensatory growth in adulthood?

Motivation

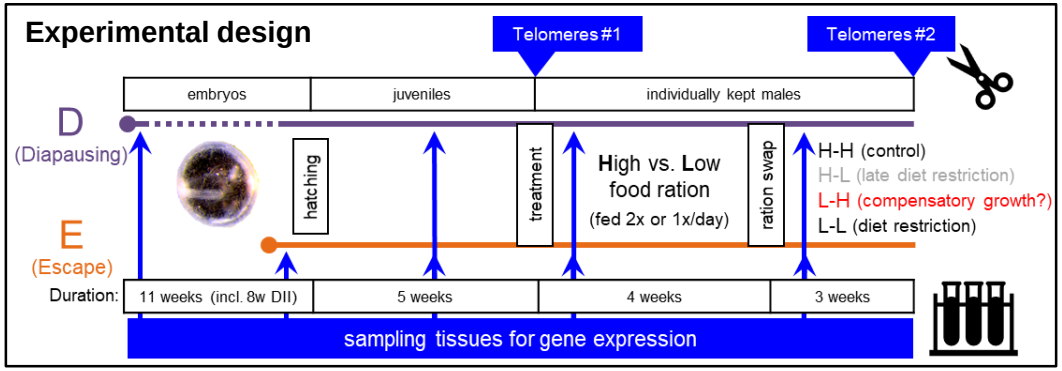
- Dormancy, growth and ageing are all governed by Hypothalamic-Pituitary-Somatotropic axis, mainly through growth hormone and insulin-like growth factor (IGF)
- Reduction of IGF is important for inducing dormant phenotype (*Sim & Denlinger 2008 Proc. Natl. Acad. Sci. 105:6777-6781*)
- Higher concentration of IGF-1 results in bigger body size *(Lewin et al. 2017 Funct. Ecol. 31:894–902)*
- Inhibition of IGF-1 directly extends lifespan (*Kenyon 2011 Philos. Trans. R. Soc. B Biol. Sci. 366:9–16*)



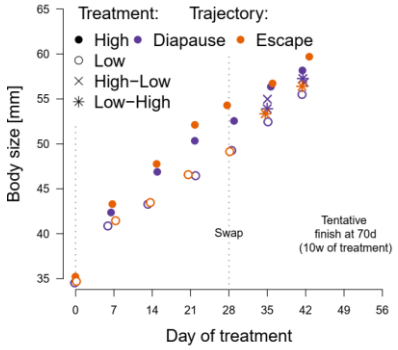
Annual killifish diapause and growth

- Escape embryos of annual killifish show pre-diapause II spike of the IGF-1 abundance (*Woll & Podrabsky 2017 J. Exp. Biol. 220:2777–2786*)
- *N. furzeri* males that skip diapause II as embryos have rapid initial growth but achieve smaller asymptotic body size (*Polačik et al. 2014 J. Evol. Biol. 27:854–865*)
- *N. furzeri* are capable of compensating for temporary poor conditions through accelerated growth (*Vrtílek & Reichard 2015 Ecol. Freshw. Fish 24:616–628*)

Experimental design



Findings so far (the experiment is ongoing…)

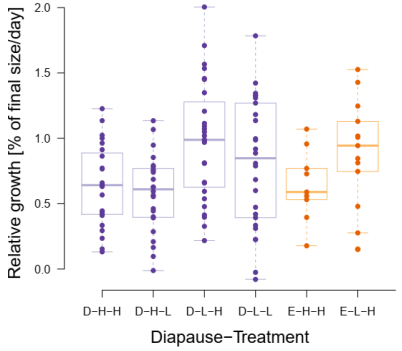


Ration treatment effect:

- low ration fish are smaller (approx. by 10% at ration swap)
- mean body size tends to be higher in high ration Escape fish

Growth during 14d period post-swap:

- treatments originally on low ration grow a bit faster than control;
- compensatory growth treatment (L-H) starts to accelerate growth
- no difference in growth of Diapausing and Escape fish



Outlook

Compensatory growth (further 3 weeks planned)

Analysis of IGF-1 gene expression from embryos and adults in Diapausing and Escape fish.

Diapause and ration effect on telomere length.