## CONTEXT & OBJECTIVES

The optimization of *D. labrax* aquaculture involves both genetic criteria for selecting traits of commercial interest, and control criteria of fish welfare for ensuring the long-term sustainability of commercial production systems. Estimation of these criteria mainly relies on the analysis of empirical growth curves, obtained under different rearing conditions or for different genetic families. Such curves, however, do not enable to test explicitly and to quantify if any variation in feeding patterns (e.g. feed intake, conversion efficiency) can affect the fish growth performances.

By using a bio-energetic growth model, 3 main questions are addressed:

1. Any differences of the energy budget among different selected strains?
2. Disruption of energy balance by chronic stress?
3. Effect of the selection on the stress sensitivity of fish?

## MATERIAL & METHODS

**Dynamic Energy Budget model**

Kooijman 2000

- Assimilation energy ($\gamma_1$) & $1 - \gamma_1$
- Maintenance energy ($\gamma_2$)
- Strain: $\gamma_4$
- Structural volume (18)
- Maintenance/Reproduction $\gamma_5$

**Experimental data**

4 strains of sea bass (Vandeputte et al. 2009)

- Wild fish
- Domesticated fish (1 cycle of reproduction in captivity)
- Fish from Massal selection (1 generation)
- Fish from PROSPER selection (1 generation)

Growth (50 fish per tank, 3 triplicates per strain) during 91 days; fish fed with self-feeder

**RESULTS**

1. Any differences of the energy budget among different selected strains?

   **WHY SELECTED FISH ARE BIGGER THAN NON SELECTED FISH?**

   - Higher feed intake or better transformation of the ingested food?

2. Disruption of energy balance by chronic stress?

   - Effect of stress on food intake and utilisation
   - Measurement of the interaction between selection and stress factors

3. Effect of selection on stress sensitivity?

   - The increase of assimilation and metabolism caused by the chronic stress did not vary among strains
   - There is no difference in terms of sensitivity to stress among selected and non-selected strains

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**REFERENCES**