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A MEDIUM-THROUGHPUT METHOD TO PHENOTYPE FISH FOR INDIVIDUAL FEED EFFICIENCY

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Background

Feed conversion ratio (FCR) = ability of fish to convert feed into biomass

$$\text{FCR} = \frac{\text{feed intake}}{\text{weight gain}}$$

Easy to measure

Individual feed intake unknown

Genetic parameters of FCR are unknown

Our innovation

Phenotyping fish in individual aquariums

Fish kept in aquariums 6 weeks

→ Weight gain
Weight measured every 2 weeks

→ Feed intake
Automatic delivery of restricted ration
Uneaten pellets counted daily

Extra results

Individual phenotype

+ Individual genotype
(3000 SNPs)

= Individual FCR can be improved through selective breeding

$$h^2 = 0.26$$