



## **P49- DIFFERENTIAL GENE EXPRESSION AT DIFFERENT STAGES OF GONADAL DEVELOPMENT IN MALE AND FEMALE SENEGALESE SOLE (*Solea senegalensis*)**

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### **SUMMARY**

*Solea senegalensis* is one of the most promising and appreciated European aquaculture species due to its high commercial value and excellent meat quality. One of the principal cultivation challenges is the control of reproduction, including the identification and characterisation of genes involved in sex determination and gonadal development. A comparative analysis of gene expression by RNAseq between male and female gonads at different developmental stages (84, 98, and 126 days, juveniles, and mature adults) was carried out. Furthermore, a set of genes known to be involved in fish sex determination and differentiation was evaluated in these samples. RNAseq analyses indicated a temporal lag in sexual development between sexes. At 84-days and 96-days post fertilization (dpf), samples formed a single cluster according to their gene expression pattern with no differentiation between sexes. However, female samples at 126 dpf exhibited a similar expression pattern to juvenile males, clustering together. The 126 dpf male samples clustered with those at 84 and 96 dpf samples. Finally, the juvenile female samples clustered separately from all other clusters, while the male and female adult samples were found in a separate and simple cluster. This lag was also observed when specific genes involved in the sexual development were analysed. *gsdf*, *fshr*, and *ar* exhibited overexpression in males, specially at the juvenile stage. However, *aromatase*, *amh-r2*, and *vasa* exhibited overexpression in females, but with the greatest differences at 126 dpf.

**Keywords:** Senegal sole, RNAseq, sex determination, and gonadal development