P51- COMPARATIVE ANALYSIS OF GONADS FROM WILD AND F1 CULTIVATED ADULT MALES OF SENEGALESE SOLE BY scRNASeq

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SUMMARY

The main constraint in Senegalese sole (*Solea senegalensis*) farming is the low reproductive performance of farm-reared F1 males. This represents a significant obstacle to the growth of the industry, as it severely limits the implementation of selective breeding programmes. To address this problem and to elucidate the changes in the gonads of these infertile F1 males compared to wild fertile males, we have conducted a study comparing the gene expression of their gonads by scRNAseq (10X Chromium). Four samples for adult males, two from F1 cultivated and two from wild origin, were analysed. The sequencing data were processed using STAR software for alignment of the sequences. To ensure data quality, a threshold of 0.20 for the ratio of mitochondrial DNA, nCounts (reads) > 500, and nFeatures (UMIs) > 300 was set. A total of 80,161 cells were retained and logarithmic normalisation was applied. Subsequent analyses were conducted using the Seurat R package for clustering. The analyses identified specific cell subtypes in the gonad, which showed frequency variations between wild and farm-reared individuals. The main clusters were assigned to specific group cells by marker genes. The anti-Müllerian hormone gene characterised an expanded mature population in the wild-type as compared to the farm-reared F1 males. Further analysis was conducted on the expanded clusters, which revealed significant aberrant biological pathways involved in the lack of maturation in the gonads of the farm-reared males.

Keywords: Senegalese sole, reproduction, farm-reared F1 males, scRNAseq