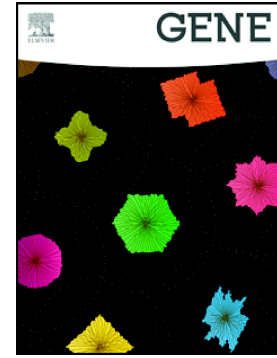


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A transcriptomic investigation of digestive processes in orange-spotted grouper, *Epinephelus coioides*, before, during, and after metamorphic development

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Abstract

The orange-spotted grouper (OG), *Epinephelus coioides*, is an ecologically and economically important species with strong market demand. However, larval rearing for this species is especially difficult, with mass mortality occurring at multiple stages including the period coinciding with metamorphic development. The aim of the present study was to characterise the molecular ontogenesis of genes that influence appetite, feeding, and digestion in OG larvae head and body tissue at 12, 18, and 50 days post hatch (dph), which coincides with the beginning and end of metamorphic development. The sequences of many transcripts involved in the regulation of appetite, feeding and digestive processes were detected from 12 dph in OG larvae, including those that were differentially expressed in body tissue in fish at different stages of development such as cholecystokinin, peptide Y, and meprin A. Of the transcripts encoding digestive enzymes, only the expression level of bile salt-activated lipase decreased as development progressed. In contrast, a dramatic increase in expression for other body-expressed transcripts encoding digestive enzymes and a proton pump subunit was observed at 50 dph, which is indicative of an increase in digestive capacity. In addition, we have provided evidence suggesting that various trypsinogen isoforms are present, and have differing expression patterns throughout larval development in whole body tissue. We also report on the presence of a prey-specific transcript encoding α -amylase that was present in

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