Morphogenesis of free neuromasts in the larvae of brown-marbled grouper Epinephelus fuscoguttatus

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Abstract

Newly hatched larvae had one pair of free neuromasts behind the eyes. As the larvae grew, free neuromasts increased in number. The apical surface of sensory epithelium widened and subsequently elongated. The number of sensory hair cells increased and the directions of maximum sensitivity became both anteroposterior and dorsoventral on the trunk. Before notochord flexion, only the anteroposterior type was observed. After notochord flexion, two types of neuromasts were observed on the trunk. On the head, the orientation of free neuromasts formed a tangential line to concentric circles around the eyes and nostrils. Free neuromasts on the head could therefore receive stimuli from various angles from predators or zooplanktons. This suggests that these free neuromasts play a role in compensating for a dead angle of vision, and an important role in detecting zooplankton under scotopic vision. Canal organs were observed on the head and operculum in 40-d-old animals.

Keywords

Author Keywords: fish larvae; lateral line; maximum sensitivity; neuromast morphology; Free neuromasts; cupulae
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