# Analysis of Opsin Gene Family of Crimson Snapper (Lutjanus erythropterus)

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## Abstract

Opsin is a fellow of the G protein-coupled receptors (GPCRs) superfamily. It can be divided into visual and non-visual opsins according to whether they are directly involved in visual imaging. Opsin plays an important role in visual image formation and the regulation of non-image forming functions such as circadian entrainment in the growth, development and evolution of fish. Crimson snapper is mainly found in the Indo-West Pacific and the southern part of the East China Sea and the South China Sea. It is one of the most influential economic fish in the South China Sea. In order to study the existence and expression of opsin gene in Crimson snapper, we sequenced the genome and tissue sample transcriptome of Crimson snapper. In this study, 32 opsin genes were identified from the genome with the length of 1061 bp - 86203 bp distributed on 15 different chromosomes. The analysis of opsin gene family of Crimson snapper showed that the sws2 was expanded with two copies than that of Zebrafish. Domain and motif analysis revealed that all the 32 opsin sequences had 7TM receptors, and Crimson snapper opsin family contained 10 common motifs. The expression level of opsin gene, confirmed by RT-qPCR, was analyzed by using nine tissues transcriptome databases of Crimson snapper. The results showed that almost opsin genes were highly expressed in the retina and brain,except opn7a and opn7b which were expressed in intestine and red skin, and almost no expression in other tissues.

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