

Effects of Epinephrine on Gene Expressions during the Metamorphosis of Pacific Oyster *Crassostrea gigas*

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Abstract : Many major marine invertebrate phyla are characterized by indirect development. These animals transit from planktonic larvae to benthic adults via settlement and metamorphosis, which has many advantages for organisms to adapt marine environment. Studying the biological process of metamorphosis is thus a key to understand the origin and evolution of indirect development. Although the mechanism of metamorphosis has been largely studied on their relationships with the marine environment, microorganisms, as well as the neurohormones, little is known on the gene regulation network (GRN) during metamorphosis. We treated competent oyster pediveligers with epinephrine, which was known to be able to effectively induce oyster metamorphosis, and analyzed the dynamics of gene and proteins with transcriptomics and proteomics methods. The result indicated significant upregulation of protein synthesis system, as well as some transcription factors including Homeobox, basic helix-loop-helix, and nuclear receptors. The result suggested the GRN complexity of the transition stage during oyster metamorphosis.

Keywords : indirect development, gene regulation network, protein synthesis, transcription factors

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