

## Evolution of Chemosynthetic Community: From an Evo-Devo perspective

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Recent paleontological, phylogenetic and phylogeographic researches have revealed the evolutionary patterns of chemosynthetic ecosystems. However, the mechanisms of their evolution remain to be solved. What were the essential genetic mechanisms driving to their evolution. Whether ancestral organisms had the molecular mechanisms responsible for the adaptation to the environment, or not. If not, how did the mechanisms evolve? To understand the origin of organisms in the chemosynthetic ecosystem, we should elucidate both the patterns and processes of their evolution.

Evolutionary and developmental biology (Evo-Devo) is a field of biology that addresses the mechanism of the evolution through the development of characteristics. To understanding the mechanisms of evolution, we investigate how the characteristics, such as shape, behavior and physiology, arise and compare the results with that of related taxa. To carry out these researches, fundamental biological information, such as life cycle, behavior, about organisms of interest is necessary. However, because of the difficulty of collecting and rearing animals in chemosynthetic ecosystem, these kinds of knowledge are limited. To overcome the situation, we have established methods to culture animals in a laboratory condition. And also, we have succeeded in applying some modern techniques of developmental and cellular biology to them. In this presentation, we will introduce some results about the Deep-sea Evo-Devo in siboglinid polychaetes.