

# Metabolomics characterization of life-history strategies of scleractinian corals in the South China Sea: comparison of a dominant coral (*Pocillopora meandrina*) and a nondominant coral (*Seriatopora hystrix*)

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## Abstract

Life-history strategies play a critical role in susceptibility to environmental stresses for scleractinia coral. Metabolomics, which is regarded as the ultimate response of biological systems to genetic and environmental changes, is competent for the characterization of species' biological traits. In this study, we combined untargeted mass spectrometry metabolomics and molecular networking to characterize the differential metabolic pathways between *Pocillopora meandrina*, one of the dominant species in South China Sea (SCS) with the life-history strategy of “competitive”, and *Seriatopora hystrix*, one of the nondominant species with the life-history strategy of “weedy” in SCS. The results show that lyso-PAF, DGCC, aromatic amino acids, and sulfhydryl compounds were more enriched in *P. meandrina*, whereas new phospholipid, de-PG DHC, MAG, FA (C<18), peptides, and guanidine compounds were more enriched in *S. hystrix*. The metabolic pathways involving immune response, energy metabolism, cellular membrane structure regulation, oxidative stress system, secondary metabolite synthesis, and et al. were speculated to relate to coral's physiological traits, which finally resulted in the faster growth rate of *P. meandrina* and more robust environmental adaptability of *S. hystrix*. This study contributed to understanding of the potential molecular traits underlying life-history strategies of different coral species.

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