Dive Into the Molecular Timeline Analysis of the Acropora Genus: Characterization of Biological Development, Overall Growth Since Gametic Stages Through Establishment, And Environmental Resilience Against Common Stressors in Coral Reefs

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Abstract : The Acropora coral genus, comprising reef-building corals in a global distribution, has been extensively studied due to its critical role as a builder for coral reef formation, along with preservation functions, but that has nonetheless experienced impactful consequences of climate change, especially in terms of population reduction related to limited thermal tolerance. A substantial increase in scientific output, particularly regarding omic studies to answer several questions about Acropora spp. overall biology, developmental factors, symbiosis characterization, environmental interactions, and response to climate change-related environmental factors have been observed; however, comprehensive resources characterizing the existing genetic responses of these corals to aforementioned phenomena are lacking. Thus, this study aims to identify key genes expressed across different developmental stages and conditions of Acropora spp. Highlighted in published studies given the shared tissue and polyp-level characteristics among the species comprising the genus, it is hypothesized that common reproductive, developmental, and stress response mechanisms are conserved. The presented resources, aiming to streamline the genus' biology, elucidate several key factors of development and stress response that contribute to the understanding of researchers of overall biological responses while providing a genetic framework for potential further studies that might contribute to reef preservation strategies.

Keywords : acropora, development, genes, transcriptomics
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