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Review

## Microbial disease and the coral holobiont

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Tropical coral reefs harbour a reservoir of enormous biodiversity that is increasingly threatened by direct human activities and indirect global climate shifts. Emerging coral diseases are one serious threat implicated in extensive reef deterioration through disruption of the integrity of the coral holobiont – a complex symbiosis between the coral animal, endobiotic alga and an array of microorganisms. In this article, we review our current understanding of the role of microorganisms in coral health and disease, and highlight the pressing interdisciplinary research priorities required to elucidate the mechanisms of disease. We advocate an approach that applies knowledge gained from experiences in human and veterinary medicine, integrated into multidisciplinary studies that investigate the interactions between host, agent and environment of a given coral disease. These approaches include robust and precise disease diagnosis, standardised ecological methods and application of rapidly developing DNA, RNA and protein technologies, alongside established histological, microbial ecology and ecological expertise. Such approaches will allow a better understanding of the causes of coral mortality and coral reef declines and help assess potential management options to mitigate their effects in the longer term.



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