

## Tara Pacific Expedition Participants

Coral reefs are the most diverse habitats in the marine realm. Their productivity, structural complexity, and biodiversity critically depend on ecosystem services provided by corals that are threatened because of climate change effects—in particular, ocean warming and acidification. The coral holobiont is composed of the coral animal host, endosymbiotic dinoflagellates, associated viruses, bacteria, and other microeukaryotes. In particular, the mandatory photosymbiosis with microalgae of the family Symbiodiniaceae and its consequences on the evolution, physiology, and stress resilience of the coral holobiont have yet to be fully elucidated. The functioning of the holobiont as a whole is largely unknown, although bacteria and viruses are presumed to play roles in metabolic interactions, immunity, and stress tolerance.

The Tara Pacific project aims to provide a baseline of the “-omics” complexity of the coral holobiont and its ecosystem across the Pacific Ocean and for various oceanographically distinct defined areas.

The Tara Pacific expedition (2016–2018) has applied a pan-ecosystemic approach on coral reefs throughout the Pacific Ocean, drawing an east–west transect from Panama to Papua New Guinea and a south–north transect from Australia to Japan, sampling corals throughout 32 island systems with local replicates. Tara Pacific has developed and applied state-of-the-art technologies in very-high-throughput genetic sequencing and molecular analysis to reveal the entire microbial and chemical diversity as well as functional traits associated with coral holobionts, together with various measures on environmental forcing. This ambitious project aims at revealing a massive amount of novel biodiversity, shedding light on the complex links between genomes, transcriptomes, metabolomes, organisms, and ecosystem functions in coral reefs and providing a reference of the biological state of modern coral reefs in the Anthropocene.

**The Tara Pacific expedition would not have been possible without the participation and commitment of over 200 scientists, sailors, artists and citizens. We wish to acknowledge their personal contribution in this document.**

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