

# Leibniz Center for Tropical Marine Ecology (ZMT)

## Potential contributions for The Ocean of Tomorrow

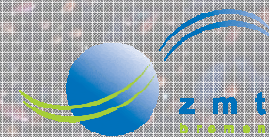
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# Microbes and the future of coral reefs

- Coral reefs are degrading worldwide, with widespread replacement of reef-building corals by benthic algae
- The role of coral reef associated microbes in reef function is not accounted for in predicting the future response of reef ecosystems (Ainsworth et al. 2009)

To be examined:

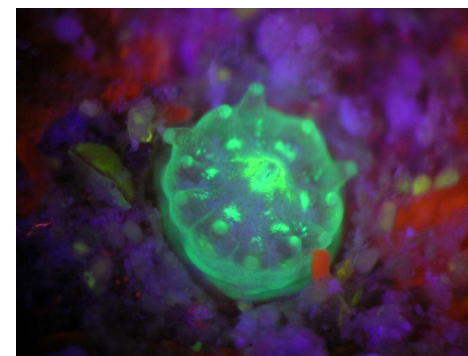
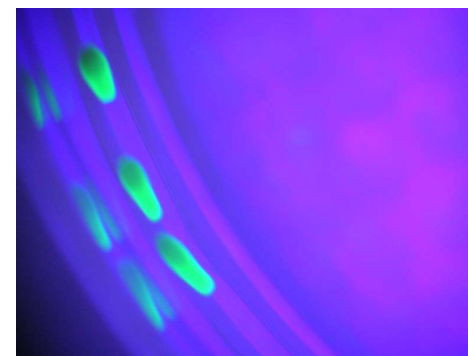
- Microbial diversity and activity in coral reefs of different degradation status/exposure to anthropogenic stressors/protection level – implications for reef ecosystem functioning, goods and services
- Microbes in coral sands – their role for reef ecosystem functioning and resilience
- The role of microbes in interaction between corals and algae

# Role of microbes in coral recruitment

- Successful coral recruitment is essential for the recovery of reefs following coral mortality events
- Chemical cues from the benthic microbial communities influence the settlement of corals

To be examined:

- Links between benthic microbial films and coral settlement and post-settlement survival
- Influence of environmental changes



# Fish, microbes and corals

## - linking fish and microbial communities

- Fishes are important factors in coral reef resilience due to their potential role as grazers of algae, pruners of dead and diseased corals, and vectors of disease (e.g. Raymundo et al. 2009, Rohwer 2010)



To be examined:

- Direct links between fish and microbial diversity via feeding activity (transmission and removal of microbes)
- Indirect links via fish excretion and feeding-induced facilitation (removal of algae and other organisms, alteration of DOC and microenvironment)

# Microbes in ZMT Aquaculture

## Improvement of water treatment

combination of conventional + „bio“modules

several modules

algae reactors + bivalves

wetland-units

Bacteria units?



## Bacteria project

screening in marine effluents

(negative) effects of bacteria in effluents

immobilisation of bacteria

