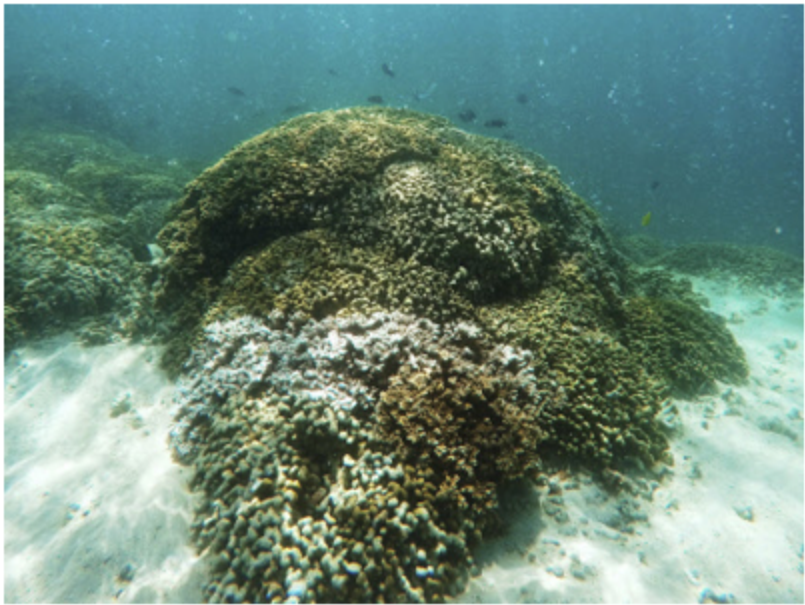


'Superalgae' to protect world's corals from bleaching

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Fish swim over a patch of bleached coral in Hawaii's Kaneohe Bay off the island of Oahu. (AP File Photo)

MELBOURNE: Researchers have found a solution to reduce coral bleaching by genetically engineering the micro-algae found in corals, enhancing their stress tolerance to ocean warming.

These micro-algae are called Symbiodinium, a genus of primary producers found in corals that are essential for reef health and, thereby, critical to ocean productivity, said

researchers from University of New South Wales in Australia.

Symbiodinium photosynthesise to produce molecules that feed the corals, which is necessary for corals to grow and form coral reefs.

Coral bleaching is caused by changes in ocean temperatures which harm Symbiodinium, leading corals to lose their symbiotic Symbiodinium and therefore starve to death.

Different species of Symbiodinium have large genetic variation and diverse thermal tolerances which effect the bleaching tolerance of corals.

The researchers used sequencing data from Symbiodinium to design genetic engineering strategies for enhancing stress tolerance of Symbiodinium, which may reduce coral bleaching due to rising ocean temperatures.

"Very little is known about Symbiodinium, thus very little information is available to improve coral reef conservation efforts," said Rachel Levin from The University of New South Wales, Australia.

"Symbiodinium is very biologically unusual, which has made it incompatible with well-established genetic engineering methods," said Levin.

"We therefore aimed to overcome this roadblock by conducting novel genetic analyses of Symbiodinium to enable much needed research progress," she said.

The researchers have now highlighted key Symbiodinium genes that could be targeted to prevent coral bleaching.

"We have developed the first, tailored genetic engineering framework to be applied to Symbiodinium. Now this framework must be comprehensively tested and optimised. This is a tall order that will be greatly benefited by collaborative efforts," researchers said.

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"Symbiodinium that have been genetically enhanced to maintain their symbiosis with corals under rising ocean temperatures has great potential to reduce coral bleaching globally," they said.

"If lab experiments successfully show that genetically engineered Symbiodinium can prevent coral bleaching, these enhanced Symbiodinium would not be immediately released onto coral reefs," Levin added.

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