

The first cryo-repository for coral larvae: safeguarding corals for future generations

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Abstract

Research on the development of innovative cryobanking techniques will aid coral restoration and conservation. To date, there are no published studies on long term cryo-repository of coral larvae. The aim of this study was to apply our customized freezing device and cryojig together with vitrification and laser warming techniques to create the first cryo-repository for coral larvae. In this study, pelagic phase larvae from the corals *Seriatopora caliendrum*, *Pocillopora verrucosa*, *P. acuta* and *Stylophora pistillata* were used for cryobanking. Three vitrification solutions were formulated with Ficoll and gold nanoparticles. The results showed that over a thousand coral larvae of *S. caliendrum*, *P. verrucosa*, *P. acuta* and *St. pistillata* were successfully stored in the cryo-repository. Our customized innovative technology enabled the long term cryobanking of coral larvae which has never been accomplished before. We believe the methods applied in this study have the potential to be a critical research and conservation tool for wild reef restoration and reef habitat diversity.

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