REEF RESTORATION & ADAPTATION PROGRAM

Coral Cryopreservation

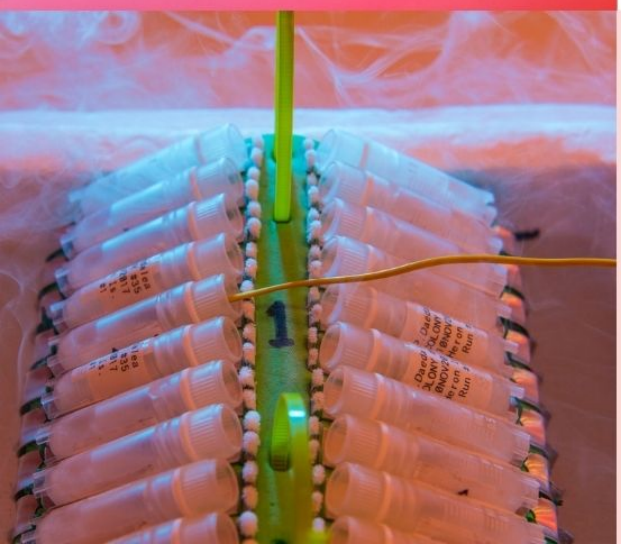
This intervention utilises coral cryopreservation techniques to secure the biodiversity of Great Barrier Reef corals and supply viable coral broodstock for aquaculture and reef restoration at scale.

We are focused on applying and up-scaling existing coral cryopreservation methods to secure living genetic material (gametes) during spawning, and the concurrent development of new techniques for cryopreserving coral larvae, tissues, and symbionts.

We have established a dedicated coral cryopreservation laboratory that also expands on existing biorepository facilities of living coral reef cells. By developing these new technologies and facilities, research will transition from proof-of-concept to upscaling and high-throughput semi-automation.

Outcomes to Date

- **Over a trillion coral sperm across 30 species now stored in the Taronga CryoDiversity Bank, the largest frozen biorepository of living coral cells globally**
- **Development of a system to enable production of coral larvae using cryopreserved sperm and fresh eggs at the scale required to support coral aquaculture (>90% fertilisation success)**
- **Application of new cryomesh technology in collaboration with US scientists and engineers, which has the potential to enable cryopreservation of GBR coral larvae at scale**
- **International collaboration underway to develop a global network of biorepository nodes for coral**



Next Steps:

- Integration of sperm cryopreservation into our coral aquaculture processes
- Development of cryopreservation technologies for coral larvae and algal symbionts
- Expansion of the frozen biorepository to include more local and regional species
- Regional knowledge sharing, collaboration, and training including partnerships with Traditional Custodians to ensure biobanking processes are culturally safe