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Emerging biotechnology for Aquaculture: Cryopreservation

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Abstract: Cryopreservation is the only reliable method for long-term storage of biological material that guarantees genetic stability. This technique can be extremely useful for the conservation of endangered species and restock natural populations for declining species. Cryopreservation has also become a powerful tool for improvement of hatchery spat and enhance competitiveness of the aquaculture industry. Cryopreservation can provide a sustainable supply of competent shellfish juveniles irrespective of the season; hence it can avoid the reliance to wild catches. It has been really promising to ensure the implementation of selective breeding programs on aquaculture, enabling the possibility to make crosses of preserved families whose genes provide resistance to adverse events or certain diseases, which is also really encouraging for the restock of natural populations and decrease of fishing pressure on shellfisheries. The cryopreservation knowledge focused on aquatic species is scarce and it is under development in many areas. In our lab we have developed and tested cryopreservation of species of aquaculture interest like mussels, clams, sea urchins or sea cucumbers. The aim of this work is to showcase successful applications of cryopreservation that could be used by aquaculture companies and related sectors right now, closing the gap between academia and private sector by providing an accurate portray of this new biotechnology.