

Molecular technologies applied to aquatic biodiversity assessment

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Molecular technologies, particularly high-throughput sequencing, have transformed the study of biodiversity over recent years using DNA traces or environmental DNA (eDNA). eDNA refers to genetic material obtained directly from environmental samples (such as soil, water, or air) without the need to physically capture or observe the organisms.

In this context, we analyzed environmental DNA (eDNA) to investigate the genetic and biological diversity of eukaryotic communities in Mediterranean lagoons. Using cytochrome oxidase I (COI) and ribosomal RNA 18S as marker genes, we explored the eukaryotic biodiversity present in these aquatic coastal environments. This high-throughput molecular surveying provides significant insights into the genetic diversity of eukaryotic species.

Our results demonstrate the efficacy of eDNA studies in elucidating the genetic and ecological structure of these communities, as well as identifying spatial variations in response to environmental variables within transitional aquatic ecosystems. This study highlights the importance of surveying genetic diversity as a foundational component for conservation strategies aimed at preserving natural ecosystems.