

Assegno di Ricerca

New bioinformatic tools and sequence reference databases for analysis and interpretation of marine biodiversity omics data.

This project (Task 5.4, SPOKE 2 Linea 5 (A5) “Develop innovative Multi-Omics based technologies to address emergent biodiversity threats”) will implement new technologies for the collection of marine omics data, their analysis and interpretation to implement Scalable, Fast and Cost-effective (SFC) response actions to emergent biodiversity threats. To achieve this goal the project will develop and apply (i) a fully automated transoceanic Nucleic Acid (NA) sampler as well as an implemented pump and filtering device for SFC high quality NA collection in coastal waters to increase Technology Readiness Level (TRL) of NA sampling operations in a marine setting; (ii) a Multi-Omics SFC oriented facility (augmented laboratory) to coordinate sample collection from local to global scale, to test and validate sampling technologies, to develop new SOPs and omics tools, to analyse and interpret omics biodiversity data; (iii) a number of applied research actions to feed data-informed responses and assess impact on marine biodiversity by emergent human, climate and natural driven threats including unusual and catastrophic events requiring rapid assessment tools at a Mediterranean and Global scale such as marine heatwaves, accidental pollution events, dystrophic crisis, natural disasters (e.g. hurricanes, tsunamis, submarine eruptions, earthquake, landslides), regime shifts, mass mortality events, marine disease outbreaks etc. New SFC genomic tools for early warning of marine invasive species including the analysis of harbour and ballast waters, microbial pathogen surveillance in aquaculture and human marine settings and analysis of archived marine samples will also be established.

The activity of the Postdoc will be focused on the development of new bioinformatic pipelines for seamless DNA/RNA/Protein data interpretation and visualisation of marine biodiversity data including the improvement of local reference databases.