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ABSTRACT
BOOK

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ID213 | CIIMAR Blue Biobank: A Repository of Marine Biological Resources with Biotechnological Potential

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The Blue Hub Leixões (<https://hubazulleixoes.com/>), a node of the Portuguese Blue Hub network, is a consortium composed by R&D institutions (CIIMAR, INESC-TEC and INEGI), a local governmental entity (Matosinhos City Hall), a port authority (APDL) and a Blue Economy Cluster NGO (Fórum Oceano). This consortium is working to foster the regional development of the Blue Engineering and Biotechnology sectors in northern Portugal. In this context, CIIMAR is the strategic partner of the consortium responsible for the dynamization of the Blue Biotechnology vector and aims to achieve so through the establishment of the CIIMAR Blue Biobank (CBB).

CBB will be a centralized repository of marine biological resources that are part of CIIMAR's main culture collections: LEGE-CC (cyanobacteria and microalgae), CM2C (bacteria and fungi) and DEEP-Biobank (deep-sea marine invertebrates). This centralization effort will confer CBB a privileged positioning in the Blue Biotechnology ecosystem, as it will streamline the curation, biobanking, digitization and access to over 1500 microbial strains with a well-mapped biotechnological potential, as well as to hundreds of deep-sea corals and sponges which can also be made available for further biotechnological bioprospecting and valorization.

The core R&D strategy of CBB will rely on three key axes: (1) pilot scale cultivation of autotrophic and heterotrophic microorganisms; (2) development and optimization of bioprocesses for biodiscovery, biorefinery and bioremediation applications; (3) valorization of biomaterials sourced from deep-sea invertebrates for tissue engineering and biomimetic applications; and (4) a marine experimentation system, at the mesocosm scale, in close coordination with a scientific diving center. Thus, CBB will be outfitted with the necessary capabilities to provide R&D services that cover various technology readiness levels (TRL) across the Blue Biotechnology value chain, spanning from bioprospecting (TRL 1) to pilot scale cultivation and mesocosm experimentation (TRL 4). These capabilities will significantly narrow the academia-industry gap and enhance the functionalization of the large selection of marine biological resources that CIIMAR is currently curating.