

TECHNOLOGY OFFER

DEVICE FOR CAPTURING IN SITU AQUATIC MICROBIOMES

This invention relates to a portable device for collecting and/or concentrating in situ plankton microbiome, configured for submersion in water. The is a compact and low-cost autonomous biosampler, with the ability to yield DNA samples for later genomic analysis.

KEYWORDS

Autonomous Biosampler

In situ observation

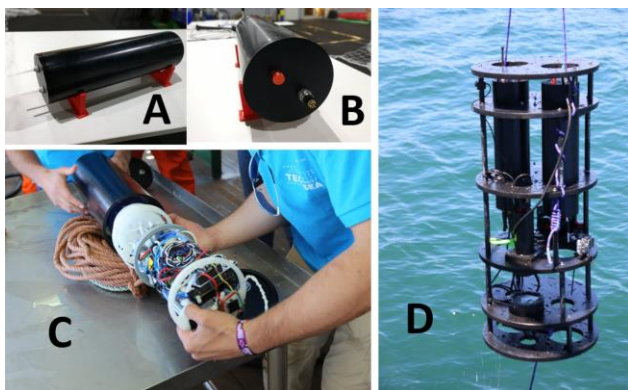
Plankton monitoring

Water microbiome

Environmental DNA

DESCRIPTION

Life in aquatic environments, including marine and freshwater ecosystems, is dominated by a vast diversity and abundance of microorganisms. These microorganisms are crucial to the survival of the higher organisms living in the oceans and other aquatic ecosystems that are highly dependent on the activities of complex marine microbial communities. Hence, there is a great interest and need to study planktonic microbial communities on relevant temporal and spatial scales, to characterize their diversity and functional dynamics using the currently available highly sensitive genomic approaches.



In situ autonomous biosampler (IS-ABS) prototype. Water inlet/outlet (A); external connector interface (B); opened in the field (C); integrated in a multi-sensor system.

The present disclosure relates to the development of a low cost in situ automatic bio-sampler device which allows collecting and concentrating, in particular by filtration, of water plankton samples to study the plankton microbiome, and could be easily connected to the AUV. Samples collected with the device are suitable for highly sensitive analytic genomic approaches (genomic, metagenomic, and transcriptomic) to study the plankton microbiome, rather than specific species or functional group.

ADVANTAGES & INNOVATIONS

The advantage of this invention is that it overcomes limitations associated with environmental water manual sampling and consequently laboratory filtration, such as cross contamination and sample deterioration. It's a compact system that can resolve high spatial and temporal water biological monitoring in multiple aquatic ecosystems, dramatically reducing sample costs and efforts, promoting high spatial and long term biological monitoring resolution.

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INTELLECTUAL PROPERTY RIGHTS

Patent status

International Patent Application via PCT [WO2020110097](https://doi.org/10.1007/WO2020110097)

Priority date: 30.11.2018

Pending in China, EU, US



STAGE OF DEVELOPMENT

TRL4 - Technology validated in lab

Further development for validation in diverse natural environments



COOPERATION OPPORTUNITY

Licensing agreement.

Product development and marketability.



RELEVANT PUBLICATIONS

Ribeiro H, Martins A, Gonçalves M, Guedes M, Tomasino MP, Dias N, et al. (2019) Development of an autonomous biosampler to capture in situ aquatic microbiomes. PLoS ONE 14(5): e0216882. <https://doi.org/10.1371/journal.pone.0216882>



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