TECHNOLOGY OFFER

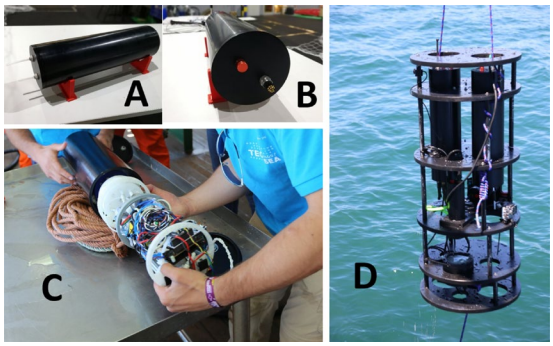
AUTONOMOUS DEVICE FOR CAPTURING AQUATIC eDNA

Background

Aquatic environmental DNA (eDNA) provides critical insights into the biodiversity and functioning of marine and freshwater ecosystems.
It reflects the presence of a wide range of organisms, from microbes to higher trophic levels, and helps reveal complex biological interactions. Studying the diversity and dynamics captured through eDNA is essential for understanding and protecting these ecosystems.

Technology

The present disclosure relates to the development of a low-cost in situ automatic bio-sampler (IS-ABS) device. The IS-ABS enables the collection and concentration of aquatic eDNA, particularly through filtration of plankton-rich water samples.
This system can be easily integrated with an AUV. Samples collected with the device are suitable for highly sensitive genomic analyses (genomics, metagenomics, and transcriptomics), allowing the study of entire plankton communities and broader biodiversity through eDNA, rather than being limited to specific species or microbial groups.



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

Advantages

- IS-ABS overcomes limitations of manual sampling and laboratory filtration – cross contaminations and sample deterioration;
- Reduces sample costs and effort required for monitoring;
- Enables in situ eDNA recovery for sensitive genomic analyses of biodiversity and function.

PATENT STATUS

International Patent Application via PCT WO2020110097
Priority date: 30.11.2018
Pending in Europe

DEVELOPMENT STAGE

TRL4 – Technology validated in lab
Further development for validation in large scale setups required.

APPLICATIONS

Collection and concentration of plankton microbiome in multiple aquatic ecosystems.

COOPERATION

Licensing Agreement;
Product development and marketability.

KEYWORDS

Autonomous biosampler
In situ observation
Plankton monitoring
Water microbiome
eDNA

DEVELOPED BY

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