

GeneMind™ Water eDNA Solution

What is eDNA?

Environmental DNA (eDNA) is the term for the DNA that can be extracted from various environmental samples (such as soil, water, snow, air, etc.) without isolating individual organisms. Water eDNA is obtained from different kinds of water samples (such as streams, rivers, lakes, reservoirs, ponds, ditches, estuaries, groundwater, sewage) to reveal the taxonomic and functional information of the species whose DNA is present in these samples. This can help identify which species live in the corresponding environment and enable further related research.

The importance of studying water environmental DNA

-  **Monitoring endangered or invasive species**
-  **Evaluating biological conditions and indicators**
-  **Surveying biodiversity**
-  **Detecting algal blooms and red tides**
-  **Assessing ecological restoration**
-  **Establishing a database of species polymorphism**



GeneMind solution

GeneMind offers a comprehensive DNA solution for water environments, which includes water filtration pretreatment, nucleic acid extraction, automated library construction, sequencing and detection report.

Semi-automatic Workflow

Water Filter



10 mins/10 L

DNA Extraction



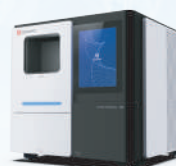
24 samples/4 H

Library preparation



24 samples/3 H

Sequencing



PE150/24 H

Analysis



24 samples/1.5 H

Manual workflow

Water Filter



10 mins/10 L

DNA Extraction



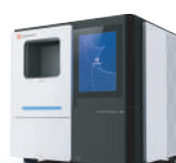
24 samples/4 H

Library preparation



24 samples/4 H

Sequencing



PE150/24 H

Analysis



24 samples/1.5 H

Product advantage

Comprehensive self-developed database

- Self-owned database 1: Nucleic acid information of **70,310** aquatic organisms.
- Self-owned database 2: FWAlgaeDB - genomic and functional annotation information of **204** freshwater algae species.

Reliable sequencing platform

- More than **500** authorized patents.
- More than **100** published papers.
- More than **1000** installations all over the world.

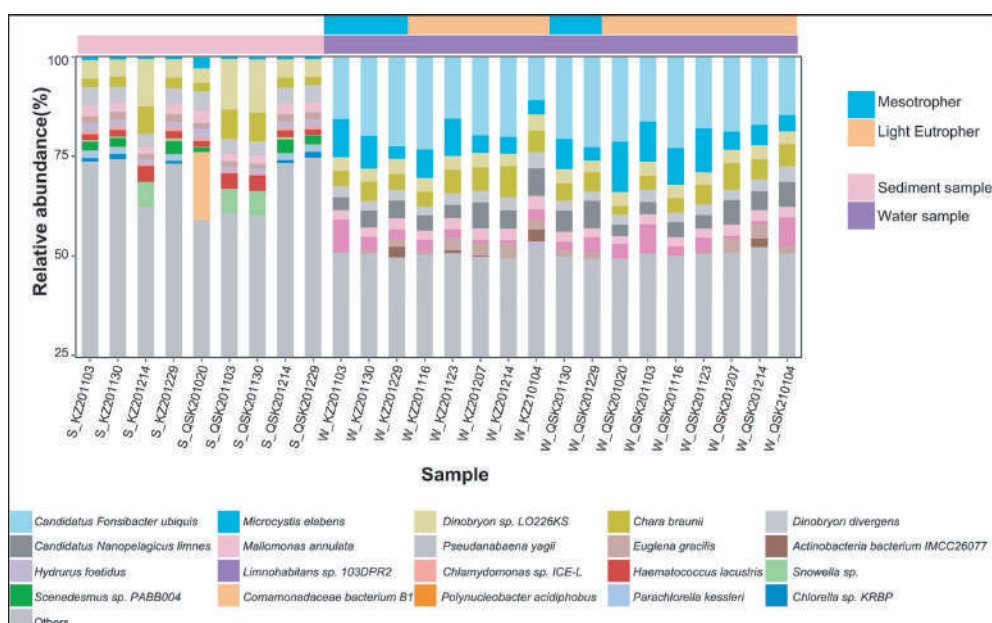
Advanced filtering equipment

- Fast filtration: 0.22 µm filter membrane, filter 10 L of water in 10 minutes
- Flexible: two levels of filtration
- No cross contamination: automatic pipe cleaning
- Multiple scenarios: laboratory or outdoor

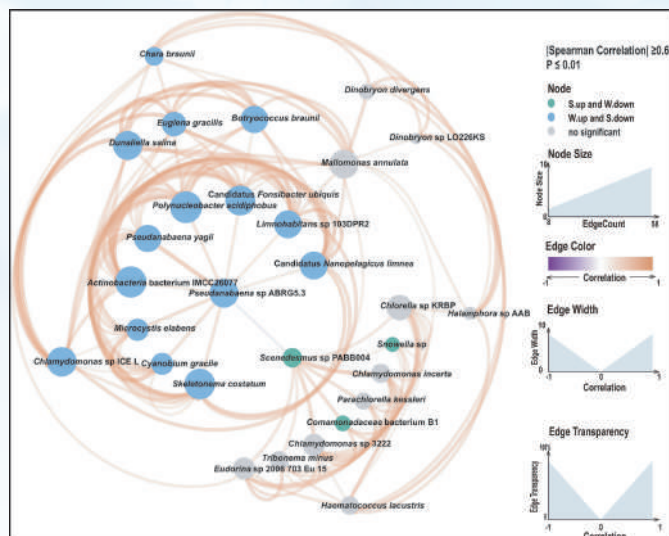
Customer cases

GeneMind offers a comprehensive DNA solution for water environments, which includes water filtration pretreatment, nucleic acid extraction, automated library construction, computer sequencing and detection report.

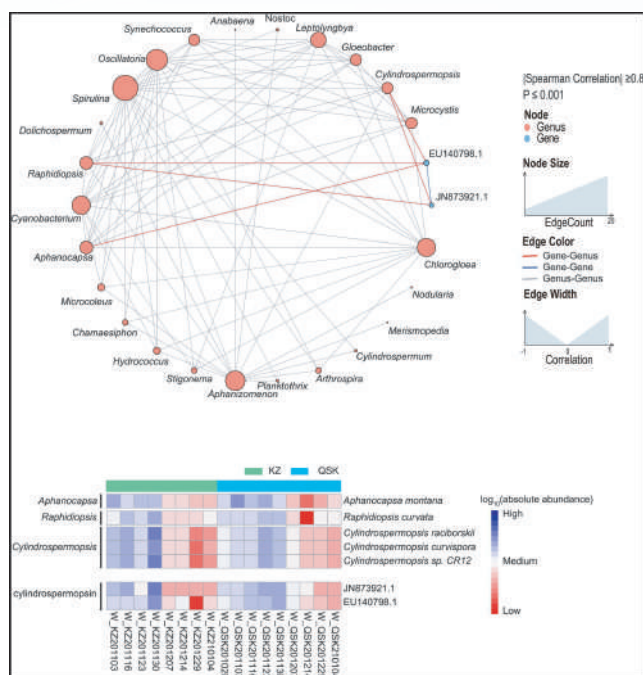
- **Samples:** ZymoBIOMICS Microbial Community DNA Standard (Zymo Research)
- **Library:** Hieff NGS OnePot II DNA Library Prep Kit (Yeasten)
- **Sequencing Platform:** GenoLab™ M (GL), NS platform
- **Sequencing Strategy:** PE150
- **Conclusion:** This study revealed a new potential source of cyanotoxins through the colonial cyanophyte *Aphanocapsa montana* by metagenomics method.



The relative abundances of microbes were calculated at the species level. Overall, the composition of microbial communities in sediment and water samples differed significantly.



In the network analysis of dominant species, we found that *Pseudanabaena* sp. ABRG5.3 occupies a key position in the entire network.



The results indicated that the network relationship in sediment samples was far more complex than in water.

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