

Prebiotics intervention to enhance pollutant removal

Blossom Microbial Technologies (BLOM)

developed under the EU-funded NYMPHE project

PROBLEM



NATIVE SOIL AND WATER MICROBIOMES OFTEN LACK THE ACTIVITY OR STIMULATION NEEDED TO EFFICIENTLY DEGRADE DIVERSE POLLUTANTS SUCH AS PHARMACEUTICALS AND PESTICIDES. CONVENTIONAL REMEDIATION METHODS ARE POLLUTANT-SPECIFIC, COSTLY, OR UNSUSTAINABLE.

Target pollutants:

Pollutant-agnostic approach – applicable to pharmaceuticals, pesticides, and other compounds with described degradation pathways.

TECHNOLOGY



System setup:

- Microbiome DNA (metagenome) scanned to identify key pollutant-degrading species.



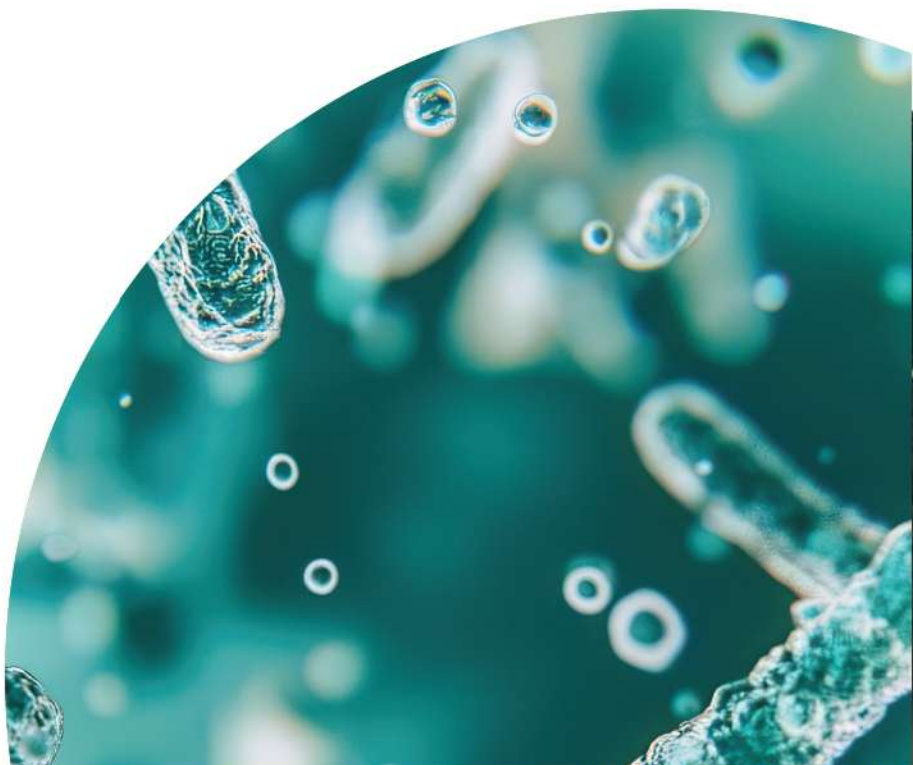
Operation:

- Prebiotics designed as tailored “food” for target microbes.
- Applied to wastewater or soil to selectively feed and activate these microbes.



Function:

- Boosts native microbiome capacity for pollutant degradation.
- Enables efficient, sustainable removal of pharmaceuticals, pesticides, and other contaminants.



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INNOVATION

This is the first method to selectively boost native microbiomes for pollutant removal. Unlike bioaugmentation with external strains, it fosters hundreds of local species simultaneously, ensuring scalability, robustness, and long-term stability.

 **TRL:**
4 (lab validation).

RESULTS

-  Laboratory validation shows selective stimulation of pollutant-degrading microorganisms.
-  Potential for broad application in wastewater and soil systems.
-  The approach demonstrates robustness across different microbial communities and pollutants.
-  Currently seeking implementation partners for pilot-scale validation and distribution.

