New EU Project to Explore Unknown Potential of Marine Microorganisms

Press Release

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Take a glass of seawater. Pour a drop onto your hand. Take a closer look. You are looking at a genetically diverse environment potentially containing over one million different microorganisms. A small-scale gigantic world in the palm of your hand.

The total biomass and genetic diversity of microorganisms on earth is many times higher than that of all other organisms, including man, put together. The number of species is unknown but must number in the many tens of millions. A new EC-funded project has started to explore these unknown microorganisms in the marine environment. **MaCuMBA** (Marine Microorganisms: Cultivation Methods for Improving their Biotechnological Applications) is a four-year project with a budget of over €12 million, of which €9 million is funded by the EC Seventh Framework Programme. The project held its kick-off meeting in Amsterdam in October.

MaCumBA has been established on the premise that unknown microorganisms may hold the key to unlocking knowledge that could contribute to the development of new medicines and energy solutions. The study of these unidentified microorganisms could also potentially help mitigate climate change, control disease and generate alternative energy sources. The project team aims to develop revolutionary new methods for isolating and screening microorganisms, which may subsequently be grown in a laboratory.

"*How many people realise that the oxygen in our atmosphere originates from microorganisms and that half of the oxygen we breathe today is produced by microorganisms? Microorganisms rule this planet; they did 3.8 million years ago and still do today. They are responsible for the functioning of all ecosystems on earth and form the basis of the food web. But our knowledge of these processes is very limited*," explains Prof. Lucas J. Stal, the **MaCuMBA** project's coordinator.

The genetic diversity of marine bacteria is estimated to be one million per milliliter of seawater. Currently, only about ten thousand different bacteria have been identified. This low rate of identification is due largely to scientists being unable to successfully isolate novel microorganisms and grow them in laboratory conditions. Microorganisms are mutually dependent and communicate with each other to grow and survive. The **MaCuMBA** project will develop methods to dupe microorganisms so that they communicate with each other, thereby enabling scientists to grow them in bioreactors.

The majority of marine microorganisms studied during the project are expected to have a wide range of applications in the fields of medicine, biofuel, polymers and other biologically active substances or processes.

More information:

Prof. Stal is available for interview.

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Note to Editors

MaCuMBA is led by the Royal Netherlands Institute for Sea Research (NIOZ) and is a joint venture of 23 partner institutions from 11 EU countries with the common aim to uncover the untold diversity of marine microbes using cultivation-dependent strategies. **MaCuMBA** aims to improve the isolation rate and growth efficiency of marine microorganisms from conventional and extreme habitats by applying innovative methods and using automated high-throughput procedures. AquaTT is the communication and dissemination partner for the project.

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Detailed partner profiles are available on request.