



Press Release

Halftime for Mosses as Measuring Devices

An international research team takes stock on their way to monitoring air quality in Europe

Developing a new procedure to use moss as a sensor for the measurement of pollutants in the air: that is the aim of the "Mossclone" project which is being funded by the European Union (EU) as part of its Eco-Innovation Programme. After one and a half years the international research group run by Biologist Prof. Dr. **Ralf Reski** from the University of Freiburg/Germany has achieved the first milestone by preparing the lab-scale produced mosses to be cultivated in large bioreactors. A midterm review with all partners is being held at the Freiburg Institute for Advanced Studies (FRIAS) from 26th - 28th September 2013. The meeting will kick off with a talk by one of the Advisory Board members Dr. **Harald Zechmeister** on why moss is suitable for studying the effects of climate change. The Assistant Professor from the Department of Conservation Biology, Vegetation and Landscape Ecology at the University of Vienna/Austria will illustrate how rises in temperature as well as in carbon dioxide and nitrogen affect moss colonies in the wild.

Existing procedures to measure carbon dioxide and nitrogen levels in the air, as stipulated by the EU since 2008, are imprecise and expensive. Moreover measurements of the amount of heavy metals like cadmium, lead and nickel have so far not been satisfactory. The research team with members from Germany, Spain, France, Italy and Ireland was inspired by nature to make use of moss's natural abilities as a method of measurement. The small plants are more suitable than trees or shrubs since they have a larger surface area, collect pollutants from the air all year round and lack filtering roots.

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Halfway through the project the researchers in Freiburg have already achieved first results. "Our moss clones have left the Erlenmeyer flasks and are now being cultivated in 10-liter bioreactors", says Ralf Reski. The resulting standardized material will be used as sensors for detecting pollutants in picogram quantities. To begin with members of the research teams collected mosses from across Europe. The species were then identified, isolated, cleansed of bacteria and fungi and replicated in Freiburg. Project partners from the Spanish company Biovia will now cultivate the pure cultures at an industrial scale.

First moss clones have already been in action as pollution detectors. The partners from the Spanish University of Santiago de Compostela have developed an oversized teabag to deploy the mosses. The research team will now extract the pollutants that accumulated in the mosses and compare the levels with the amounts measured using conventional measuring techniques. The molecular biologists, material scientists, ecologists and bionic researchers have now come one step closer in their objective to use moss as a monitor for pollutants.

Further information:

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