



Press Release

## From Moss to Mouse

University of Freiburg to cooperate with a biopharmaceutical company on therapy for kidney diseases

The Chair of Plant Biotechnology from the University of Freiburg, Germany, and the biopharmaceutical company Greenovation Biotech GmbH in Heilbronn, Germany, have started a cooperation to explore in mice the effectivity of human proteins that have been biotechnologically produced in moss. The moss *Physcomitrella patens* can be cultivated in closed containers such as bioreactors with a volume of up to 500 litres. Complex proteins such as glycoproteins, which are needed as biopharmaceuticals for the treatment of human diseases can be produced in these Moss Bioreactors.

"Protein production in moss offers many advantages over conventional production systems that are based on animal cells", says Professor **Ralf Reski**, Head of the Department of Plant Biotechnology at the University of Freiburg. Moss cultures do not contain animal-derived components, or pathogens that can affect humans, nor antibiotics that may cause resistance in patients. Further, products from moss have a superior purity. Scientists from the Department of Plant Biotechnology were able to produce human complement factor H in moss, a protein from the immune system that may be used to treat specific kidney diseases. Greenovation Biotech has succeeded in the high-level production of several such therapeutically effective proteins.

The joint research project which is due to begin shortly will run for 2 years and aims to examine in mice the possible therapeutic use of human

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complement factor H produced in moss. For this, Reski and PD Dr. **Eva Decker** from the Faculty of Biology are working together with Dr. **Karsten Häffner** from the Pediatric Department of the University Hospital Freiburg. A Factor H hereditary deficiency is an orphan disease which has major implications. The researchers now hope to gain an insight from their experiments with mice, as to whether the human glycoprotein produced in moss is suitable for use in medication.

The biologists in Freiburg are specialists in moss research and helped to establish *Physcomitrella* as a model organism for basic biology, biotechnology, and synthetic biology on a worldwide scale. "I am excited about this collaboration between the University Hospital, the University and Greenovation", says Reski. "Such public-private co-operations are at the heart of the bioeconomy and will help in developing new medication and generating job opportunities."

Ralf Reski heads the Freiburg Chair of Plant Biotechnology. The biologist is a member of the Cluster of Excellence BIOSS – Centre for Biological Signalling Studies as well as Senior Fellow at FRIAS, the Freiburg Institute for Advanced Studies of the University of Freiburg and Senior Fellow at USIAS, the University of Strasbourg Institute for Advanced Study, France.

**Further information:**

[www.plant-biotech.net](http://www.plant-biotech.net)

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The University of Freiburg achieves top positions in all university rankings. Its research, teaching, and continuing education have received prestigious awards in nationwide competitions. Over 24,000 students from 100 nations are enrolled in 188 degree programs. Around 5,000 teachers and administrative employees put in their effort every day – and experience that family friendliness, equal opportunity, and environmental protection are more than just empty phrases here.