



Press Release

Model for Signaling in Plants

Freiburg Biologist Receives More than a Million US Dollars in Research Funding

A Freiburg biologist has received a prestigious distinction for his studies on the light sensitivity of plants: Prof. Dr. **Andreas Hiltbrunner**, Faculty of Biology, Department of Botany, has won an HFSP Research Grant worth more than a million US dollars. The Human Frontier Science Program (HFSP), coordinated by the international organization of the same name, awards the grant to promote research projects in the life sciences.

The research grant will enable the Freiburg biologist to carry on with his project "Evolution of light perception networks in plants" in the next three years along with his colleagues Dr. **Christian Fleck** from the Laboratory of Systems and Synthetic Biology of the University of Wageningen, Netherlands, and Dr. **Enamul Huq** from the Section of Molecular Cell and Developmental Biology at the University of Texas at Austin, USA. The scientists aim to determine how reactions to light have developed in various species of plants.

Light is essential for the growth and development of plants. The species-specific ways in which plants react to light determine how well they thrive in different types of environments. In order to perceive light, plants possess photoreceptors that register wavelength, intensity, direction, and duration. The plants use these signals to control the activity of various genes.

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Phytochromes are an important group of photoreceptors found in more and less highly developed plants like *Arabidopsis thaliana*, commonly known as thale cress, and *Physcomitrella patens*, a type of moss. Hiltbrunner's team has already succeeded in demonstrating that the properties of the phytochromes are dependent on other components of the plant's system of light signaling and that these components can change the range of effect of the phytochromes. Differences in the interplay between phytochromes and other components could have been a critical mechanism in the development of species-specific reactions to light. The scientists now aim to create a mathematical model of the system of signaling in plants with the help of methods from biochemistry, genetics, and systems biology. The goal is to identify the key factors governing the evolution of species-specific reactions to light in plants. Hiltbrunner, an associated member of the Cluster of Excellence BIOS Centre for Biological Signalling Studies of the University of Freiburg, is applying approaches from genetics to the species *P. patens* and *A. thaliana* for the project.

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