



Plant Transporters as Biosensors for Smart Measuring Devices

**PhD project, funded by the Boysen Foundation
in co-operation with ILS (Uni Stuttgart) and
University of Bochum**

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The use of biosensoric molecules as so-called electronic nose devices ("e-noses") is an emerging field in biosensor technology with wide application possibilities for volatile organic compound detection.

We aim at developing a platform technology that enables use of receptor and transporter proteins as measuring probes for applications in research and industry. In various biological systems, a plethora of highly specific membrane receptor and transporter proteins is available that selectively bind certain ligands and, upon binding or transport, generate electrical signals that can be utilized as either simple "Yes-No"-detectors or, after calibration, for precise concentration measurements with extraordinary accuracy and resolution. Because biomolecules function at the nanometer scale, the probes allow unprecedented miniaturization, which opens new possibilities for inline measurements without interfering with the process under control.

In the framework of a funded project (Boysen Foundation) we set up a trans-disciplinary approach, combining animal and plant biologists with engineers in a consortium working at the development of miniaturized devices that enable long-term use of highly sensitive and specific biosensors in measuring probes.

We offer a PhD position for a biologist working on the molecular biology of a nitrate transporter from *Arabidopsis thaliana* that shall be integrated into artificial membranes as part of nitrate sensor. The project includes generation of tailored transporters (protein design), working with artificial membrane systems, electrophysiological measurements and related techniques. Funding is available for a three year project at the Institute of Biomaterials and Biomolecular Systems, Department of Plant Biotechnology. An intensive collaboration with the Institute of Space Systems (University of Stuttgart) and the University of Bochum, Physiology of Senses, is expected.

Requirements / Application

We are looking for a recently graduated, talented candidate with affinity for molecular biology and membrane biology. A strong interest in Biotechnology as well as the willingness to work interdisciplinary is required. Start of the project is as soon as possible.

We invite you to submit an application that includes a cover letter expressing your motivation, Curriculum vitae and a brief description of your MSc thesis via e-mail to:
arnd.heyer@bio.uni-stuttgart.de

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