

SUCCESS STORY

PLANT-MEMB-TRAFF/Plant Endomembrane Trafficking in Physiology and Development

Research area: FP7 – European Research Council / Molecular and Structural Biology and Biochemistry (LS1)
Beneficiary: Prof. Niko Geldner

Host institution: University of Lausanne (UNIL)
Start date – End date: 2008-04-01 to 2013-03-31
Duration: 60 months
Funding: € 1 199 889
Type of contract: ERC Starting Grant



NIKO GELDNER



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THE ARABIDOPSIS HOUSES THE MYSTERY OF PLANTS' PROTECTIVE SHIELDS

Impassioned by molecular biology, Niko Geldner seeks to understand how plant roots selectively filter and accumulate toxins and nutrients. His research, funded by a grant from the European Research Council (ERC), is entitled "Plant Endomembrane Trafficking in Physiology and Development".

How did you become interested in the genetic biology of plants?

I was first attracted to chemistry, then biology, when it became molecular, that is to say the moment when researchers put DNA on the table for analysis. There was life and chemistry at the same time. I found that thrilling. At the end of my academic studies, I joined the team of Professor Gerd Jürgens, a well-known specialist in plant genetics, in Tübingen. He provides a creative, stimulating atmosphere in which to work. That was the best decision of my life and I have not left this field of research ever since.

What is the focus of your research today? How would you summarize your work?

In 2007, when I arrived at the University of Lausanne to teach, I received a grant from the ERC for a project researching a small plant called *Arabidopsis*, which is the "guinea pig" of the plant world. It is not interesting in itself, but it makes it possible to understand plants in general. In this

project, my team and I are focusing our research on the endodermis in order to understand how this protective cell layer, which surrounds the central veins of all the plants, can protect it against excessive elements or toxins, while letting pass the nutrients necessary for its survival.

What are the advantages of an ERC grant for a researcher?

The ERC is the only European body that supports fundamental research. It has a free philosophy and does not try to direct our research to make it useful for industry. On the contrary, it trusts us, and that is an immense advantage. Under these conditions, being a researcher is a privilege.

"The researcher mutates genes, and nature provides a response. This way of entering into a dialogue with nature is fascinating."



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ABOUT THE PROJECT

Niko Geldner's project relates to the study of the endodermis as a common element in all vascular plants. The endodermal cells fulfil a crucial function as a barrier separating the extracellular space of the plant from the internal space of the vascular strands. They are impregnated by hydrophobic substances (Casparian Strip), which act like a barrier against superfluous and toxic elements. This Casparian Strip is made up of a ligno-suberic polymer forming an extensive and supra-

cellular network. The project, entitled "Plant Endomembrane Trafficking in Physiology and Development", seeks to identify the mechanisms behind the localised formation of the Casparian Strip.

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