RAPHAEL TRÖSCH

I first became interested in plant science when I attended the plant molecular biology block course in the 3rd year of my studies and I am now particularly interested in chloroplast protein import, biogenesis and metabolism.

First Degree	MSc Plant Science Swiss Federal Institute of Technology ETHZ Graduated April 2009
PhD	Sainsbury PhD Studentship The protein import machinery of chloroplasts: using genetics to identify novel components of the Toc/Tic system University of Leicester Supervisor - Professor Paul Jarvis Started October 2009

Summary of Research Project

Since chloroplasts are organelles in which many essential plant processes occur, chloroplast research is important to get a better understanding of plant metabolism and development. Most chloroplast proteins are encoded by the nuclear genome and imported post-translationally, explaining the importance of the translocons of the outer/inner envelope membrane of the chloroplast (Toc/Tic) for plastid biogenesis.

A screen for extragenic suppressors of the *ppi1 (atToc33)* and *atTic40* mutants of *Arabidopsis thaliana* (both affected in important components of the Toc/Tic complexes) has been performed. It identified the novel suppressor mutants *sp1* and *sp2* for *ppi1*, and *stic1* and *stic2* for *atTic40*. The corresponding genes may encode proteins that are potential yet undiscovered components of the Toc/Tic system, or regulatory factors that are functionally associated with components of the Toc/Tic complexes.

Map based cloning, complementation and overexpression of these genes (gene products), as well as detailed mutant phenotype studies, may assess the question of how the chloroplast protein import defects are suppressed. Protein interaction studies, bioinformatics searches, and proteomics approaches may shed light on potential functions of these novel genes and the mechanisms they are involved in.

Publication

Corina Belle R. Villar, Aleksandra Erilova, Grigory Makarevich, **Raphael Trösch** and Claudia Köhler (2009) Control of PHERES1 Imprinting in *Arabidopsis* by Direct Tandem Repeats. *Molecular Plant*; doi: 10.1093/mp/ssp014