



PhD Position in plant cell biology

Project title: Anionic lipids and mechano-transduction in plant morphogenesis

Research: Most biological processes involve changes in molecular and cell shapes, and such deformations, in essence, involve a mechanical component. Our group at the ZMBP Tübingen investigates the role of membrane lipids at the nexus between plant morphogenesis and mechanics. I discovered that phosphatidylinositol phosphates (PIPs), a class of lipids with important regulatory functions, adopt a stereotypical pattern in the shoot apical meristem, with a specific accumulation at organ boundaries where tensile stress is highly anisotropic (Stanislas *et al.*, 2018). These results question the role of PIPs at the meristem and open the field of biophysics and development to the role of lipids in mechanotransduction.

Using *Arabidopsis* as a model system, we will alter the PIPs pattern and explore the molecular mechanisms behind the role of PIPs in mechanotransduction. As PIPs are likely involved in many signalling pathways, this approach may shed a new light on meristem biology and morphogenesis in general. The work will include cell biology (with high resolution confocal microscopy), biochemistry, genetics as well as novel micromechanics approaches (microfluidics with protoplasts).

References:

A phosphoinositide map at the shoot apical meristem in *Arabidopsis thaliana*, Stanislas T, Platre M, Liu M, Rambaud L, Jaillais Y, Hamant H, BMC Biology, 16:20 (2018)

In-vivo analysis of morphogenesis in plants Stanislas T, Hamant O, Traas J, Methods in Cell Biology, 139:203-223 (2017)

A PtdIns(4)P-driven electrostatic field controls cell membrane identity and signalling in plants. Simon ML, Platre MP, Marques Bueno MM, Armengot L, Stanislas T, Bayle V, Caillaud MC, Jaillais Y, Nature Plant, 20, 2, 16089 (2016)

Requirements/Qualifications:

We are looking for a highly motivated Ph.D. student with proven expertise in cell and molecular biology, and *Arabidopsis*. Prior experiences with confocal microscopy are highly advantageous but not required. Excellent English communication skills as well as teamwork abilities are expected. A master's degree in molecular biology, biochemistry or corresponding is required.

The position is available from April 01, 2019. Please send your application as a composite pdf-file (letter of motivation stating your research interests, CV, name and addresses of at least two referees) to Thomas.stanislas@zmbp.uni-tuebingen.de

The ZMBP is a world-class center for Plant Biology research and is situated in a brand-new and well-equipped building in the University of Tübingen science campus. The University of Tübingen is an equal opportunity employer and particularly welcomes applications from qualified women and individuals with disabilities. Formal employment procedures will be carried out by the central administration of the University of Tübingen.