PhD-Position

in Plant Cell Biology

Long-distance calcium signals in plants

The department of Molecular Plant Physiology and Biophysics (University of Würzburg) is searching for two highly motivated PhD-students, in the DFG (German Science Foundation) funded project "Role of vacuole in amplification of long-distance Ca^{2+} Signals". The aim of the project is to uncover the molecular mechanism for long-distance calcium signals in plants, with a special attention to the role of the vacuole as a calcium-store. The work will be supervised Prof. Dr. Geiger und Prof. Dr. Roelfsema.

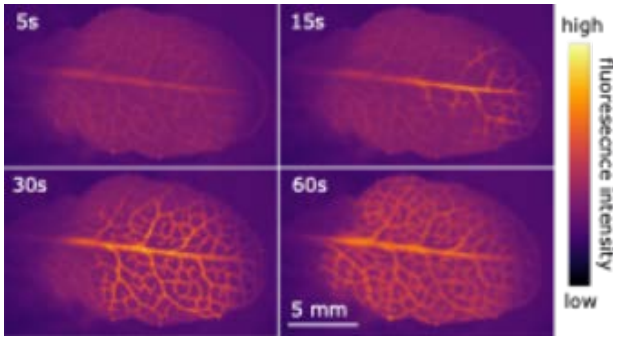

Figure. Propagation of a calcium signal in an *Arabidopsis* leaf, of which the tip was stimulated with a heat-shock. In each panel the time after stimulation is shown in the upper left corner. The cytosolic calcium concentration was determined with the calcium-sensitive fluorescent reporter protein R-GECO1 and is shown in false colours (refer to colour scale in the bar on the right).

Project description

Strong injuries, caused by herbivores, heat, or osmotic signals evoke electrical and calcium signals in leaves and roots. These calcium signals can propagate through the leaves (see figure) and provoke defence responses against upcoming threats. Published and preliminary results of our research group indicate that the vacuole, as a calcium store, plays an important role in the spread of these long-distance signals (https://doi.org/10.1111/nph.17272*). Two PhD-students will be engaged in this project and use a combination of molecular biology, optogenetic, microscopic and biophysical techniques, to uncover the molecular mechanism by which plants propagate long-distance calcium signals.

Your profile

We are searching for two highly motivated candidates with a master's in biology, or related subjects, and with a curiosity for sensory systems and signal transduction processes in plants. The University of Würzburg will offer a structured training in state-of-the-art methods for plant physiology, molecular biology (CRISPR/Cas9) and biophysics (electrophysiology and optogenetics).

Contract/ payment

The appointments can start in the next 6 months and will be on a three-year contract, with a pay scale according to "Tarifvertrag für den öffentlichen Dienst der Länder (TV-L)" at a 65% level (Collective Agreement for the Public Service of German Federal States, 65%). Severely handicapped applicants will be given preferential consideration when equally qualified.

Application

Please send your application, together with a curriculum vitae and transcripts of academic qualifications, by e-mail, with the subject line "Application PhD position Calcium Signals" to Prof. Dietmar Geiger, dietmar.geiger@uni-wuerzburg.de or Prof. Rob Roelfsema; rob.roelfsema@uni-wuerzburg.de.

* Dindas, J., Dreyer, I., Huang, S., Hedrich, R., & Roelfsema, M. R. G. (2021). A voltage-dependent Ca^{2+} homeostat operates in the plant vacuolar membrane. *The New phytologist*, *230*(4), 1449–1460. https://doi.org/10.1111/nph.17272