GDCh

Das Graduiertenkolleg 1947 lädt gemeinsam
mit dem Ortsverband der **Gesellschaft Deutscher Chemiker**
zu einem Seminarvortrag ein.

Seminarreihe

BiOx

DFG Graduiertenkolleg/ Research Training Group 1947

Biochemical, Biophysical, and Biomedical Effects of Reactive Oxygen and Nitrogen Species on Biological Membranes

Montag, den 26.06.2017, 16:00 Uhr c.t.
Hörsaal I, Institut für Biochemie

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"Aquaporins: a never-ending story of new isoforms and surprising regulations and functions! …examples from the field to the cell …"

The large family of 'aquaporins' (AQPs) comprises transmembrane-spanning channel proteins, found in almost all life forms. These channel proteins transport, amongst other small non-charged solutes, water, hydrogen peroxide (H_2O_2) and metalloids such as boron (B), and fulfil key roles in water homeostasis, nutrition and signalling processes.

B is an essential micronutrient for plants. We screened 599 Brassica napus cultivars for B deficiency tolerance. Three highly B deficiency tolerant cultivars have been identified. Elemental analysis revealed significant differences in B contents and B compartmentalization of B deficiency tolerant and sensitive plants when grown under B-deficient conditions but not under standard conditions. These results indicate that the B deficiency tolerant cultivars can grow with a very limited amount of B.

AQPs [in particular Nodulin26-like Intrinsic Proteins (NIPs)] are essential for plant B uptake and distribution. We systematically characterized BnaNIPs in the B response network and in transport processes to and within the highly B-demanding reproductive organs. In a high throughput phenotyping experiment B deficiency tolerant Arabidopsis accessions have been identified and are currently analysed for the expression of B transport protein-encoding genes and root system architecture traits.

Certain AQPs determine the bidirectional transport of H_2O_2 across biological membranes. We elucidate whether and how the transport of H_2O_2 through channel proteins such as human AQP8 and plant AQPs is regulated, particularly during cell stress and which cellular signal transduction pathways depend on the functional interplay of H_2O_2-producing enzymes and H_2O_2-transporting AQPs. Additionally, we are testing whether other small reactive species such as H_2S can be transported by AQPs or modify AQP function.

All interested are cordially invited!

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