

GATERSLEBEN LECTURE



Speaker: Prof. Dr. Uta Paszkowski
University of Cambridge,
Head of Cereal Symbiosis Group,
Crop Science Centre, Cambridge, UK



Title: The Art and Design of Harmony in Arbuscular
Mycorrhizal Symbiosis of Cereals

Time: Tuesday, May 24, 2022, 2 pm

Place: VCS Zoom: Meeting-ID: 852 5010 7394 Kenncode: 242274
<https://ipk-gatersleben-de.zoom.us/j/85250107394?pwd=MnpTZFNxeWUrTWNSR0FLSzRSYVhpdz09>

Skype for Business: <https://ipk-gatersleben-de.zoom.us/skype/85250107394>

Abstract:

The arbuscular mycorrhizal (AM) symbiosis is a fascinating mutualistic interaction between roots of most land plants and fungi of the phylum of the Glomeromycota. The development of this life-long alliance starts with reciprocal recognition in the rhizosphere, reprogramming both symbionts for the anticipated association. The interaction proceeds towards extensive root colonization which culminates in the formation of fungal feeding structures, the arbuscules, inside root cortex cells. As the arbuscule develops, the plant cell dramatically increases membrane biogenesis to envelope the growing hyphal structure. Thereby a hugely enlarged intracellular surface area is created between the two organisms, appearing ideally adapted for the exchange of signals and nutrients.

The nature and complexity of the establishment of AM symbioses must be the result of a well-orchestrated exchange of molecular signals between the plant and the fungus. The nature of some of the signals has been discovered in recent years, providing a first insight into the type of chemical language spoken between the two symbiotic partners. My group has taken molecular genetics and lately advanced imaging approaches to elucidate the molecular mechanisms underpinning this apparently harmonious symbiosis. I will introduce some of our recent observations which have led us to propose fundamentally new communication mechanisms operating during this intimate plant-fungal partnership.

Short CV:

Previous positions

2019 - present Professor, University of Cambridge
2017 - 2019 Reader, University of Cambridge
2012 - 2017 Lecturer, University of Cambridge
2006 - 2012 Assistant Professor, University of Lausanne
2003 - 2006 Junior Group Leader, University of Geneva
2000 - 2003 Staff Scientist, Syngenta

Qualifications

1993 PhD, ETH Zürich, Switzerland
1989 Diplom, University Cologne, Germany

Key publications

*The negative regulator SMAX1 controls mycorrhizal symbiosis and strigolactone biosynthesis in rice (2020) Nature Communications
*Arbuscular cell invasion coincides with extracellular vesicles and membrane tubules (2019) Nature Plants
*A rice Serine/Threonine receptor-like kinase regulates arbuscular mycorrhizal symbiosis at the peri-arbuscular membrane (2018) Nature Communications

Prof. Dr. Nils Stein (Organizer and Host)