



Johannes Daniel Scharwies

Basic Life Research Scientist

Biology

Bio

BIO

Johannes received his BSc from the Leibniz Universität Hannover (Germany) in Plant Biotechnology in the Fruit Science laboratory of Prof. Moritz Knoche. Inspired by research on water relations of fruit in the Knoche laboratory, Johannes joined the group of Prof. Stephen Tyerman at The University of Adelaide (Australia) with funding through the German Academic Exchange Service. Initially, his work focused on hydraulic properties of grape clusters for which he received his MSc in Agricultural Science. Afterwards, he joined the ARC Centre of Excellence in Plant Energy Biology through the Tyerman laboratory and specialised in molecular plant physiology by studying the role of aquaporins in plant responses to drought for a PhD. He investigated aquaporins, which are molecular channels in plant membranes that provide a gating mechanism for water fluxes and other small molecules, through a combination of gene expression analysis and utilization of transgenic overexpression and CRISPR-Cas9 knockout lines. His work was funded by the highly competitive Adelaide Scholarship International and a Supplementary Scholarship provided by the ARC Centre of Excellence in Plant Energy Biology. In April 2018, Johannes joined the laboratory of Prof. José Dinneny at Stanford University as a Postdoctoral Scholar.

Johannes' research focuses on plant hydraulics from a molecular scale up to whole plants. He is interested on how plants perceive and adapt to changes in the environment in particular related to water. This ranges from developmental decisions to molecular control of water movement, for example through aquaporins. In the group of Prof. José Dinneny, he is investigating how lateral root branching responds to moisture availability, a phenomenon termed hydropatterning. He uses his expertise to design novel phenotyping systems to characterise lateral root branching across a wide range of diverse corn inbred lines. These technologies enable the use of population genetics approaches to detect genotype-phenotype associations with the aim to understand causal genetic variants and study how phenotypic plasticity is shaped through breeding.

ACADEMIC APPOINTMENTS

- Basic Life Science Research Associate, Biology

HONORS AND AWARDS

- Adelaide Scholarship International, The University of Adelaide (2013)
- Supplementary Scholarship, ARC Centre of Excellence in Plant Energy Biology (2013)
- R.N. Robertson Travelling Fellowship, Australian Society of Plant Scientists (2013)
- ASVO conference scholarship, Australian Society of Viticulture and Oenology (2013)
- DAAD Scholarship, German Academic Exchange Service (2011)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Maize Genetics Cooperation (2019 - present)

- Member, Australian Society of Plant Scientists (2012 - present)

COMMUNITY AND INTERNATIONAL WORK

- Biology Postdoc Committee, Stanford

LINKS

- LinkedIn: www.linkedin.com/in/johannes-scharwies-85b27861
- Google Scholar: <https://scholar.google.com/citations?user=wJWeFXUAAAAJ&hl=en>

Publications

PUBLICATIONS

- **A Thermoacoustic Imaging System for Noninvasive and Nondestructive Root Phenotyping** *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II-EXPRESS BRIEFS*
Singhvi, A., Fitzpatrick, A., Scharwies, J., Dinneny, J. R., Arbabian, A.
2022; 69 (5): 2493-2497
- **Deconstructing the root system of grasses through an exploration of development, anatomy, and function.** *Plant, cell & environment*
Viana, W. G., Scharwies, J. D., Dinneny, J. R.
1800
- **Comparing Hydraulics Between Two Grapevine Cultivars Reveals Differences in Stomatal Regulation Under Water Stress and Exogenous ABA Applications** *FRONTIERS IN PLANT SCIENCE*
Dayer, S., Scharwies, J. D., Ramesh, S. A., Sullivan, W., Doerflinger, F. C., Pagay, V., Tyerman, S. D.
2020; 11: 705
- **Water transport, perception, and response in plants** *JOURNAL OF PLANT RESEARCH*
Scharwies, J., Dinneny, J. R.
2019; 132 (3): 311–24
- **Non-Contact Thermoacoustic Sensing and Characterization of Plant Root Traits**
Singhvi, A., Ma, B., Scharwies, J., Dinneny, J. R., Khuri-Yakub, B. T., Arbabian, A., IEEE
IEEE.2019: 1992–95
- **Association between water and carbon dioxide transport in leaf plasma membranes: assessing the role of aquaporins.** *Plant, cell & environment*
Zhao, M., Tan, H., Scharwies, J., Levin, K., Evans, J. R., Tyerman, S. D.
2017; 40 (6): 789-801
- **Comparison of isohydric and anisohydric *Vitis vinifera* L. cultivars reveals a fine balance between hydraulic resistances, driving forces and transpiration in ripening berries** *FUNCTIONAL PLANT BIOLOGY*
Scharwies, J. D., Tyerman, S. D.
2017; 44 (3): 324-338
- **Russeting and Relative Growth Rate Are Positively Related in 'Conference' and 'Condo' Pear** *HORTSCIENCE*
Scharwies, J. D., Grimm, E., Knoche, M.
2014; 49 (6): 746-749