

Johannes Liesche

Personal information

born on July 6, 1984, in Nordhorn, Germany, Nationality: German

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Education

Ph. D. in Cell biology. *University of Copenhagen*, February 2009 – March 2012

- The project “Phloem transport in gymnosperms” was supervised by Prof. Alexander Schulz.

German diploma (Masters equivalent) in Biology. *Humboldt University Berlin*, April 2006 – December 2008 and *Johannes Gutenberg University Mainz*, April 2004 – March 2006

- Final mark 1.2¹.
- Major: Plant Physiology, Minors: Genetics, Philosophy.
- The final thesis “Endocytosis of *Solanum tuberosum* Sucrose Transporter StSUT1” was supervised by Dr. Christina Kühn.

Scholarships, grants and prizes

- Department of Plant and Environmental Sciences Researcher of the year (June 2014).
- Short-term visiting fellowships awarded by the Technical University Munich, Germany, (January 2014) and University of Newcastle, Australia (September 2012).
- Contributions to research grant “Long-distance sugar transport in trees”, headed by Prof. Tomas Bohr, funded by the Danish National Science Foundation (0.6M €; October 2012).
- Department of Plant Biology prize (2k €) for research accomplishments (June 2011).
- PhD scholarship (3 years) awarded by the Danish Ministry for Education (October 2009).
- Long-term visiting fellowship awarded by the German academic exchange service (DAAD) for conducting research at the University of Edinburgh (May 2007).
- Conference travel grants for “Plant Vascular Biology” (May 2010), “Botanical Microscopy” (October 2012) and “9th International Workshop on Sap Flow” (March 2013).

Research experience

Post-doctoral research at *University of Copenhagen*, July 2013 – present

- Academic advisor: Prof. Thomas Günther-Pomorski.
- Main achievement: Light microscopic visualization of cellulose fibrils at sub-diffraction resolution.
- Methods: single-molecule imaging, fluorescence life-time microscopy, fluorescence correlation spectroscopy, image processing, lipid vesicle synthesis, yeast transformation

¹ Marks are on a linear scale from 1 to 6 with 1 the highest and 6 the lowest.

Post-doctoral research at *University of Copenhagen*, April 2012 – June 2013

- Academic advisor: Prof. Alexander Schulz.
- Main achievement: Modeling of transport through single cell wall channels at molecular resolution.
- Methods: confocal microscopy, super-resolution microscopy, image processing, theoretical modeling, *In vivo* tracing of radioactive carbon in plants

Doctoral studies at *University of Copenhagen*, February 2009 – March 2012

- Academic advisor: Prof. Alexander Schulz.
- Main achievement: Development of the first method to provide absolute quantitative information on cell coupling in complex tissue *in vivo*.
- Methods: Confocal microscopy, Photoactivation microscopy, image processing, fluorescence spectroscopy, protein-protein interaction (FRET), immunolocalization, Laser capture microdissection, HPLC, Generation of cDNA-libraries, Screening of plasmid libraries in yeast, rapid amplification of cDNA ends (RACE), inverse PCR, theoretical modeling
- Research visit (4 months) to Prof. Bob Turgeon, Cornell University

Undergraduate studies at *Humboldt University Berlin*, April 2006 – December 2008

- Academic advisor: Dr. Christina Kühn.
- Main achievement: Demonstration of post-translational regulation of sucrose transporter proteins in potato enables formulation of new paradigm of carbon export regulation from leaves.
- Methods: Real-time PCR, transient and stable plant transformation, phenotyping, confocal microscopy, electron microscopy, *in situ* hybridization, immunolocalization, phloem sap sampling.
- Research visit (4 months) to Prof. Karl Oparka, University of Edinburgh

Teaching experience

- About 20% of my time as PhD-student and as Postdoc were/are dedicated to teaching.
- Experience with teaching courses at undergraduate and graduate level and all teaching formats: lectures, practical and theoretical exercises, supervision of thesis students, student examinations
- Experience in development of new courses and course material.
- Extensive pedagogic training with courses “University Pedagogy” (2.5 ECTS²) and “Teaching and Learning in Higher Education Programme” (7.5 ECTS²).

Miscellaneous

- Review editor for international journals in the field of plant and cell biology (BMC Plant Biology, Protoplasma, Frontiers in Plant Science, Journal of Plant Research).
- Member of the organizing committee of the conferences “Bioimaging Workshop Copenhagen” (2011 and 2013), “Phloem Physics and Physiology” (2011).

² ECTS: European credit transfer system; 1 point corresponds to about 30 hours of work.

- Civilian service with Aktionskreis Pater Beda e.V., a non-profit-organization supporting human rights and development projects in Brazil from July 2003 to March 2004.
- Language skills: German, English, Danish (fluent), French, Spanish (basic), Chinese (beginner)

Publications

Scholarly book chapters

1. **Liesche J**, Schulz A. (in press, accepted Oct 2013) *In vivo quantification of symplasmic cell coupling*. In Heinlein M (ed.) *Methods in Molecular Biology. Plasmodesmata: Methods and Protocols*. Humana Press, Springer, New York.
2. **Liesche J**, Schulz A. (2013) *Symplasmic transport in phloem loading and unloading*. In Sowiński P, Sokołowska K (eds.) *Symplastic transport in vascular plants*. Springer, New York.

Refereed journal articles (H-index: 8)

3. Dölger J, Rademaker H, **Liesche J**, Schulz A, Bohr T. (2014) *Diffusion and bulk flow in phloem loading-a theoretical analysis of the polymer trap mechanism*. arXiv preprint.1406.1640 **Impact factor N/A; Citations: 0**
4. **Liesche J**, Ziomkiewicz I, Schulz A. (2013) *Super-resolution imaging with Pontamine Fast Scarlet 4BS enables direct visualization of cellulose orientation and cell connection architecture in onion epidermis cells*. BMC Plant Biol. 13:226 **Impact factor: 3.9, Citations: 2**
5. **Liesche J**, Schulz A. (2013) *Modeling the parameters for plasmodesmal sugar filtering in active symplasmic phloem loaders*. Front. Plant Sci. 4:204 **Impact factor: 3.6; Citations: 3**
6. **Liesche J**, Jensen K, Minchin PE, Bohr T, Schulz A. (2013) *Theoretical and experimental determination of phloem translocation speeds in gymnosperm and angiosperm trees*. Acta Hort. 991:45-52 **Impact Factor: N/A; Citations: 1**
7. Chincinska I, Gier K, Krügel U, **Liesche J**, He H, Grimm B, Harren FJ, Cristescu S, Kühn C. (2013) *Photoperiodic regulation of the sucrose transporter StSUT4 affects the expression of circadian-regulated genes and ethylene production*. Front. Plant Sci. 4:26. **Impact Factor: 3.6; Citations: 5**
8. Linnik O, **Liesche J**, Tilsner J, Oparka K. (2013) *Unravelling the structure of viral replication complexes at super-resolution*. Front. Plant Sci. 4:6. **Impact Factor: 3.6; Citations: 8**
9. **Liesche J**, Schulz A. (2012) *In vivo quantification of cell coupling in plants with different phloem loading strategies*. Plant Physiol. 159(1):355-65. **Impact Factor: 7.4; Citations: 9**
10. **Liesche J**, Schulz A. (2012) *Quantification of plant cell coupling with three-dimensional photoactivation microscopy*. J Microsc. 247(1):2-9. **Impact Factor: 2.2; Citations: 4**
11. Jensen KH[#], **Liesche J**[#], Bohr T, Schulz A. (2012) *Universality of phloem transport in seed plants*. Plant Cell Environ, 35(6):1065-76 ([#] shared first author). **Impact Factor: 5.9; Citations: 20**
12. **Liesche J**, Krügel U, He H, Chincinska IA, Hackel A, Kühn C. (2011) *Sucrose transporter regulation at the transcriptional, post-transcriptional and post-translational level*. J Plant Physiol. 168(12):1426-33. **Impact Factor: 3.1; Citations: 12**

13. **Liesche J**, Martens HJ, Schulz A. (2011) *Symplasmic transport and phloem loading in gymnosperm leaves*. Protoplasma 248(1):181-9130. **Impact Factor: 2.9; Citations: 19**
14. **Liesche J**, He H, Grimm B, Schulz A, Kühn C. (2010) *Recycling of Solanum sucrose transporters expressed in yeast, tobacco, and in mature phloem sieve elements*. Mol. Plant 3(6): 1064 1074. **Impact Factor: 6.1; Citations: 16**
15. **Liesche J**, Schulz A, Krügel U, Grimm B, Kühn C. (2008) *Dimerization and endocytosis of the sucrose transporter StSUT1 in mature sieve elements*. Plant Signal Behav 3(12):1136-7. **Impact Factor: 2; Citations: 9**
16. Krügel U, Veenhoff LM, Langbein J, Wiederhold E, **Liesche J**, Friedrich T, Grimm B, Martinoia E, Poolman B, Kühn C. (2008) *Transport and sorting of the Solanum tuberosum sucrose transporter SUT1 is affected by posttranslational modification*. Plant Cell 20, 1-17. **Impact Factor: 9.6; Citations: 47**
17. Chincinska IA, **Liesche J**, Krügel U, Michalska J, Geigenberger P, Grimm B, and Kühn C. (2008) *Sucrose Transporter StSUT4 from potato affects flowering, tuberization, and shade avoidance response*. Plant Physiol 146,515-528. **Impact Factor: 7.4; Citations: 69**

Conference submissions (as presenting author) and invited lectures

18. **Liesche J**. (2014) *Intercellular transport in plants*. Technical University Munich, Germany. Hosted by Prof. Kay Schneitz.
19. **Liesche J**. (2014) *Mechanism and regulation of carbohydrate transport in plants*. Washington State University, Pullman, USA. Hosted by Prof. Hanjo Hellmann.
20. **Liesche J**, Schulz A. (2013) *Modeling the parameters for plasmodesmal sugar filtering in active symplasmic phloem loaders*. Plant Vascular Biology 2013, Helsinki, Finland.
21. **Liesche J**, Linnik O, Schulz A, Oparka K, Tilsner J. (2013) *Unraveling the structure of viral replication complexes at super-resolution*. Scandem 2013 (Annual Meeting of the Nordic Microscopy Society), Copenhagen, Denmark.
22. **Liesche J**, Jensen K, Minchin PE, Bohr T, Schulz A. (2013) *Theoretical and experimental determination of phloem translocation speeds in gymnosperm and angiosperm trees*. International Sap Flow Workshop, Ghent, Belgium.
23. **Liesche J**. (2012) *Phloem loading and transport in plants with diverse anatomies*. University of Newcastle, Australia. Hosted by Prof. John Patrick.
24. **Liesche J**. (2012) *Functional analysis of phloem loading*. Phloem Physiology and Physics 2012, Pullman, USA.
25. **Liesche J**. (2012) *Phloem transport in gymnosperms*. Harvard University, Cambridge, USA. Hosted by Prof. Missy Holbrook.
26. **Liesche J**, Hansen M, Schulz A. (2012) *Quantification of plant cell coupling with 4D photoactivation microscopy*. Focus on Microscopy 2012, Singapore.
27. **Liesche J**, Schulz A. (2011) *Phloem loading in gymnosperms*. Phloem Physiology and Physics 2011, Copenhagen, Denmark.

28. **Liesche J**, Schulz A. (2011) *In vivo quantification of plant cell coupling with photoactivation*. Botanical Microscopy 2011, Wageningen, The Netherlands.
29. **Liesche J**. (2011) *High-speed 4D microscopy*. Plant Biotech Denmark, Copenhagen, Denmark. ***Invited plenary lecture***
30. **Liesche J**, Martens H, Schulz A. (2010) *Quantification of cell connectivity with photoactivation*. Life in 4D, Bioimaging in Space and Time, Helsingør, Denmark.
31. **Liesche J**, Martens H, Schulz A. (2010) *Phloem loading in gymnosperms and the functional analysis of plasmodesmata*. Plant Vascular Biology 2010, Columbus, USA.
32. **Liesche J**, Martens H, Schulz A. (2010) *Phloem transport in gymnosperms: Mapping the pre-phloem pathway*. Plasmodesmata 2010, Sydney, Australia.