Leonard Blaschek

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Thorvaldsensvej 40
1871 Frederiksberg C, Denmark

Employment

EMBO fellow|postdoctoral researcher — 2022–present

University of Copenhagen, Denmark
Project: Cell Wall Integrity Sensing and its Feedback on Cell Wall Composition in Plants
Advisors: Prof. Staffan Persson, Prof. Jürgen Kleine-Vehn

Education

PhD, Plant Physiology — 2017–2022

Stockholms Universitet, Sweden
Project: Functional and Genetic Analysis of Laccase Isoforms during Lignification
Supervisor: Dr. Edouard Pesquet
Co-Supervisors: Prof. Vincent Bulone, Prof. Jonas Gunnarsson
Examination committee: Dr. Richard Sibout (opponent), Prof. Martin Lawoko, Dr. Anna Kärkönen, Prof. Igor Cesarino, Prof. Geoffrey Daniel, Dr. Mika Sipponen

Licentiate, Plant Physiology — 2017–2020

Stockholms Universitet, Sweden
Project: Cellular Lignin Distribution Patterns and their Physiological Relevance
Supervisor: Dr. Edouard Pesquet
Co-Supervisors: Prof. Vincent Bulone, Prof. Jonas Gunnarsson
Examination Committee: Dr. András Gorzsás (opponent), Dr. Annelie Carlsbecker, Prof. Ulla Westermark

Master of Science, Genetic and Molecular Plant Biology — 2015–2017

Uppsala Universitet, Sweden
Thesis: Distinct Roles of Laccase Isoforms During Lignification in *A. thaliana*
Supervisor: Dr. Edouard Pesquet

Bachelor of Science, Biology — 2012–2015

Ernst-Moritz-Arndt-Universität Greifswald, Germany
Thesis: Plasma Membrane–Bound Proteases in the Roots of *H. vulgare*
Supervisor: Prof. Christine Stöhr

Publications

2024

Blaschek L*, Serk H, Pesquet E. Functional complexity on a cellular scale: why In situ analyses are indispensable for our understanding of lignified tissues. *J. Agric. Food. Chem.* 72, 13552–13560. 10.1021/acs.jafc.4c01999

Pesquet E, **Blaschek L**, Takahashi J, Yamamoto M, Champagne A, Nuoendagula, Subbotina E, Dimotakis C, Bacsik Z, Kajita S. Bulk and *In Situ* Quantification of Coniferaldehyde Residues in Lignin. In J Agusti, ed, Xylem: Methods and Protocols. Springer US, New York, NY, pp 201–226. 10.1007/978-1-0716-3477-6_14

2023

Blaschek L, Murozuka E, Serk H, Ménard D, Pesquet E. Different combinations of laccase paralogs non-redundantly control the lignin amount and composition of specific cell types and cell wall layers in *Arabidopsis*. *Plant Cell* 35, 889–909. 10.1093/plcell/koac344 — *previously on bioRxiv*

Blichfeldt Pedersen G†, **Blaschek L**†, Frandsen KEH, Noack LC, Persson S. Cellulose synthesis in land plants. *Mol. Plant.* 16, 206–231. 10.1016/j.molp.2022.12.015

2022

Ménard D†, **Blaschek L**†, Kriechbaum K, Lee CC, Serk H, Zhu C, Lyubartsev A, Nuoendagula, Bacsik Z, Bergström L, Mathew A, Kajita S, Pesquet E. Plant biomechanics and resilience to environmental changes are controlled by specific lignin chemistries in each vascular cell type and morphotype. *Plant Cell* 34, 4877–4896. 10.1093/plcell/koac284 — *previously on bioRxiv*

2021

Blaschek L, Pesquet E. Phenoloxidases in Plants—How Structural Diversity Enables Functional Specificity. *Front. Plant Sci.* 12, 2183. 10.3389/fpls.2021.754601

2020

Yamamoto M, **Blaschek L**, Subbotina E, Kajita S, Pesquet E. Importance of Lignin Coniferaldehyde Residues for Plant Properties and Sustainable Uses. *ChemSusChem* 13, 4400–4408. 10.1002/cssc.202001242

Blaschek L†, Nuoendagula†, Bacsik Z, Kajita S, Pesquet E. Determining the Genetic Regulation and Coordination of Lignification in Stem Tissues of *Arabidopsis* Using Semiquantitative Raman Microspectroscopy. *ACS Sustain. Chem. Eng.* 8, 4900–4909. 10.1021/acssuschemeng.0c00194

Blaschek L, Champagne A, Dimotakis C, Nuoendagula, Decou R, Hishiyama S, Kratzer S, Kajita S, Pesquet E. Cellular and Genetic Regulation of Coniferaldehyde Incorporation in Lignin of Herbaceous and Woody Plants Using Quantitative Wiesner Staining. *Front. Plant Sci.* 11, 109. 10.3389/fpls.2020.00109

EDITORIALS & PREPRINTS

Blaschek L. Playing the field: The molecular basis of fruit morphology-based bet-hedging. *Plant Cell* 36, 2451–2452. 10.1093/plcell/koae119

† *contributed equally;* * *corresponding author*

Presentations

Blaschek L (2024), invited talk. Different places – different lignins: How and why plants so precisely adjust their lignification. *30th Congress of the Scandinavian Plant Physiology Society,* Copenhagen (DK)

Blaschek L (2024), invited talk. Skipping Biotin: Exploiting Prokarytoic Pupylation for Protein Proximity Labelling. *Institute of Biology, Freiburg University,* Freiburg (DE).

Blaschek L (2021), selected talk. Laccase paralogs non-redundantly direct lignification. *ASPB Plant Biology 2021,* online.

Blaschek L (2021), selected talk. Specific and dynamic lignification at the cell-type level controls plant physiology and adaptability. *SEB 2021 Annual Conference,* online. — link to recording

Blaschek L (2021), selected talk. Laccase paralogs non-redundantly direct lignification. *SEB 2021 Annual Conference,* online.

Blaschek L (2021), selected talk. Laccase paralogs non-redundantly direct lignification. *7th International Conference on Plant Cell Wall Biology,* online. — link to recording

Blaschek L (2019), selected talk. The structural importance of lignin in xylem vessels. *3rd Stockholm Cell Wall Meeting,* Stockholm (SE).

Blaschek L (2019), selected talk. Spatial distribution of coniferaldehyde lignin. *28th Congress of the Scandinavian Plant Physiology Society,* Umeå (SE).

Blaschek L (2018), selected talk. Determining the spatial distribution of aldehyde units in lignin. *2nd Stockholm Cell Wall Meeting*, Stockholm (SE).

Funding

Blaschek L (2024). Freiburg Rising Stars Academy; two-month research visit In Prof. Kleine-Vehn's lab at the University of Freiburg.

Blaschek L (2022). EMBO Postdoc fellowship ALTF 37-2022. *Cell wall integrity sensing and its feedback on cell wall composition in plants.* Hosted by Staffan Persson in Copenhagen.

Blaschek L (2019). Travel grant of the Department of Ecology, Environment and Plant Sciences, Stockholm University.

Blaschek L, Pesquet E (2018). Kungliga Vetenskapsakademien Scholarship BS2018–0061.

Prizes & awards

Blaschek L (2024). Best PhD thesis at the *30th Congress of the Scandinavian Plant Physiology Society,* Copenhagen (DK).

Blaschek L (2023). Groupe Polyphénols Ragaï Ibrahim prize at the *31st International Conference on Polyphenols,* Nantes (FR).

Blaschek L (2021). Best early career presentation award at the *7th International Conference on Plant Cell Wall Biology,* online.

Expertise

Wet lab

- cloning (Gibson, GoldenGate, Gateway, TA)
- plant histology and histochemistry
- *in vitro* plant systems (cell suspension cultures, seedlings, saplings)
- plant phenotyping, transformation & crossing (*Arabidopsis, Populus, Zinnia*)
- protein expression & purification, Western blotting, enzyme activity assays
- RT-qPCR
- targeted mutagenesis and gene editing
- quantitative bright field, fluorescence and vibrational micro(spectro)scopy

Dry lab

- automated image analysis (Python, ImageJ)
- data analysis and visualisation (R, Python, bash)
- molecular phylogenetics
- proteomics data analysis
- protein homology modelling
- reproducible reporting (markdown, git)

Courses & Workshops

Laboratory Leadership (2024). *EMBO solutions, online.*

Piecewise Structural Equation Modelling (2019). *Stockholm University.*

Advanced Imaging of Cells *in vitro* and *in vivo* (2018). *Stockholm University.*

Optical Clearing and Expansion Microscopy (2018). *SciLifeLab, Stockholm.*

Advances in Enzyme Regulation (2018). *Swedish University of Agricultural Sciences, Uppsala.*

Teaching

Getting started with ggplot2 (2023). Independent workshop. *Copenhagen University.*

Molecular plant–microbe interactions. MSc level (2017–2020). Project design and supervision. *Stockholm University.*

Green biotechnology, MSc level (2018–2021). Project design and supervision. *Stockholm University.*

Service

Assistant Features Editor, *The Plant Cell, American Society of Plant Biologists*	2024–
Departmental data science task force, *PLEN, University of Copenhagen*	2023–
Reviewer for *The Plant Journal, Physiologia Plantarum, Planta, FiPS*	2022–
Departmental equality group, *DEEP, Stockholm University*	2019–2021
Course representative, *ECB, Uppsala University*	2015
Student representative on the board, *BOT, Greifswald University*	2014–2015