Leonard Blaschek

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leonardblaschek.github.io

Thorvaldsensvej 40
1871 Frederiksberg C, Denmark

Employment

EMBO fellow | postdoctoral researcher 2022–present

Københavns Universitet, 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
Thesis: Cellular Control and Physiological Importance of Vascular 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
Thesis: 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

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

Publications

2025

Zheng S†, **Blaschek L**†, Pottier D†, Hoegen Dijkhof LR, Özmen B, Lim PK, Tan QW, Mutwil M, Hauser AS, Persson S*. Pupylation-based proximity labeling unravels a comprehensive protein and phosphoprotein interactome of the Arabidopsis TOR complex. *Adv. Sci.* 10.1002/advs.202414496

Low PM†, Kong Q†, **Blaschek L**†, Ma Z, Lim PK, Yang Y, Quek T, Lim CJR, Singh SK, Crocoll C, Engquist E, Thorsen JS, Pattanaik S, Tee WT, Mutwil M, Miao Y, Yuan L, Xu D, Persson S*, Ma W*. ZINC FINGER PROTEIN2 suppresses funiculus lignification to assure seed loading efficiency. *Dev. Cell* 60, 1–60. 10.1016/j.devcel.2025.01.021 (PDF)

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 (PDF)

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 *Xylem: Methods and Protocols.* Springer US, New York, NY, 201–226. 10.1007/978-1-0716-3477-6_14 (PDF)

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

Blaschek L*. Setting the record straight: Loss of Wall-Associated Kinases does not affect plant perception of pectin fragments. *Plant Cell* 37. 10.1093/plcell/koae318

Blaschek L*. A dominant suppressor mutation sheds light on TGN sorting for exocytosis. *Plant Cell* 37. 10.1093/plcell/koae285

Blaschek L*. Well prepared: How trichome polymorphism creates an early-warning system against herbivory. *Plant Cell* 36, 4815–4816. 10.1093/plcell/koae253

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 (2025), invited talk. Random? How laccases control lignification to support plant growth. *Groupe Polyphénols Webinar in Polyphenols Research,* online. — link to recording

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 & network 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

Project in Experimental Molecular Biology. BSc level (2025). Project design and supervision. *Copenhagen University.*

Independent workshops in R for biologists (2023–present). *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, etc.*	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