

# LEONARD BLASCHEK

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## 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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1093/plcell/koac344) — previously on [bioRxiv](#)

Blichfeldt Pedersen G<sup>†</sup>, **Blaschek L**<sup>†</sup>, Frandsen KEH, Noack LC, Persson S. Cellulose synthesis in land plants. *Mol. Plant.* 16, 206–231. [10.1016/j.molp.2022.12.015](https://doi.org/10.1016/j.molp.2022.12.015)

2022

Ménard D<sup>†</sup>, **Blaschek L**<sup>†</sup>, 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](https://doi.org/10.1093/plcell/koac284) — previously on [bioRxiv](#)

2021

**Blaschek L**, Pesquet E. Phenoloxidasen in Plants—How Structural Diversity Enables Functional Specificity. *Front. Plant Sci.* 12, 2183. [10.3389/fpls.2021.754601](https://doi.org/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](https://doi.org/10.1002/cssc.202001242)

**Blaschek L**<sup>†</sup>, Nuoendagula<sup>†</sup>, 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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1093/plcell/koae119)

<sup>†</sup> 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 Prokaryotic 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. *7<sup>th</sup> International Conference on Plant Cell Wall Biology*, online. — [link to recording](#)
- Blaschek L** (2019), selected talk. The structural importance of lignin in xylem vessels. *3<sup>rd</sup> Stockholm Cell Wall Meeting*, Stockholm (SE).
- Blaschek L** (2019), selected talk. Spatial distribution of coniferaldehyde lignin. *28<sup>th</sup> Congress of the Scandinavian Plant Physiology Society*, Umeå (SE).
- Blaschek L** (2018), selected talk. Determining the spatial distribution of aldehyde units in lignin. *2<sup>nd</sup> 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 Ragai Ibrahim prize at the *31<sup>st</sup> International Conference on Polyphenols*, Nantes (FR).
- Blaschek L** (2021). Best early career presentation award at the *7<sup>th</sup> 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

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