# 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

	ΑT	

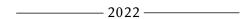
BLICATIONS
2025
Low PM $^{\dagger}$ , Kong Q $^{\dagger}$ , <b>Blaschek L<math>^{\dagger}</math></b> , Ma Z, Lim PK, Yang Y, Quek T, Lim CJR, Singh SK, Crocoll C, Engquist E, Thorsen JS, Pattanaik S, Tee WT, Mutwil M, Miao Y, Yuan L, Xu D, Persson S $^{*}$ , Ma W $^{*}$ . ZINC FINGER PROTEIN2 suppresses funiculus lignification to assure seed loading efficiency. <i>In press (Dev. Cell).</i>
2024
Blaschek L*, Serk H, Pesquet E. Functional complexity on a cellular scale: why <i>In situ</i> analyses are indispensable for our understanding of lignified tissues. <i>J. Agric. Food. Chem.</i> 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

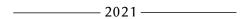
 2023 ————
2023

**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* 

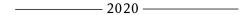
Blichfeldt Pedersen G<sup>†</sup>, **Blaschek L**<sup>†</sup>, Frandsen KEH, Noack LC, Persson S\*. Cellulose synthesis in land plants. *Mol. Plant.* 16, 206–231. 10.1016/j.molp.2022.12.015



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 — *previously on bioRxiv* 



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



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**<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

**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



**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

<sup>†</sup> contributed equally; \* corresponding author

### **PRESENTATIONS**

- **Blaschek L** (2025), invited talk. Random? How laccases adjust lignification to support plant growth. *Groupe Polyphénols Webinar in Polyphenols Research*, online.
- **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. 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 Ragaï 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**

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