Curriculum Vitae

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List of publications: Link to publications on google scholar

Research interest

My background in agricultural sciences, molecular biology, and plant developmental genetics forced my interested in uncovering genetic pathways that control agricultural traits, such as those conferring developmental plasticity to plants' environment. In my current research I am interested in understanding how metabolic signals, such as photoassimilates availability, are perceived at the root tip at a cell type resolution and how cell-to-cell communication can translate molecular signals to reprogram development of the whole root system and adapt to drought stress. To unravel these mechanisms, I employ genetic tools (i.e. cell type specific conditional genome editing, conditional overexpression), molecular tools (i.e. transcription factor-DNA interactions and cell type specific transcriptomics), and confocal imaging.

Education

2012-2017	PhD TUM Graduate School TUM School of Life Sciences/Department of Molecular Life Sciences, Technische Universität München, Germany PhD Supervisor: Prof. Brigitte Poppenberger
2010-2012	Master of Science in International Horticultural Science TUM School of Life Sciences, Technische Universität München, Germany
2007-2010	Bachelor of Science in Agricultural Technology and Agricultural Economics Faculty of Science and Technology, Libera Università di Bolzano, Italy

Positions

2024 - now	RTD/b Agricultural Genetics at the Competence Centre for Plant Health and the Faculty of Agricultural, Environmental and Food Sciences of the Libera Università di Bolzano, Italy
2019 – 2022	Postdoctoral researcher Faculty of Science and Technology, Libera Università di Bolzano, Italy
2017 – 2019	Postdoctoral researcher Department of Biology and Biotechnology "Charles Darwin" (BBCD), Università La Sapienza, Italy- Laboratory of Prof. Sabrina Sabatini

Grants and funded projects

2025 – 2028	Co-PI of ZIMPS: Cell-Imaging lab to analyse Plant Stress Factors. EFFRE Project funded by the Autonomous Province of Bolzano: Budget 1,178.214.30€
2021 – 2022	UMOR-d: Unraveling molecular mechanisms linking root development to nutrients. Seal-of-Excellence MSCA-IF research project Funded by the Autonomous Province of Bolzano: Budget 141,473.28€
2019 – 2020	Sense2grow: Plant's developmental plasticity towards nutritional stresses. Funded by the Autonomous Province of Bolzano: Budget 99,515.28€

Fellowships and awards

2017 – 2018	DAAD Postdoctoral fellowship (short-term), funded by the DAAD (German Academic Exchange Service), Germany
2014	Dr.-Berthold-Pohl Award, awarded by the Chamber of Agronomists of the Province of Bolzano, Italy

Memberships of scientific networks

2025 – now	The Node – Network for developmental and stem cell biologists

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2022 – now Member of the research network "*Società Italiana di Genetica Agraria (SIGA)*"

Teaching activity

2025- Lecturer – Fundamentals of Plant Production (10 CP) – Course Module Plant Genetics (5 CP) - Bachelor in Agricultural, Food and Mountain Environmental Sciences (L-25), Libera Università di Bolzano, Italy

2019 – 2025 Lecturer - Plant genetics (6CP) – Every year, Bachelor in Agricultural, Food and Mountain Environmental Sciences (L-25), Libera Università di Bolzano, Italy

2013 – 2016 Teaching Assistant – Research project biotechnology of horticultural crops (10 SWS), every year, Master in Horticultural Sciences, every semester 40 hours laboratory, TUM School of Life Sciences, Technische Universität München, Germany

PhD supervision

2025 - PhD project "Identifying and editing genes for drought resistant apple trees" in the 41st cycle of the PhD Programme in Mountain Environment and Agriculture. Faculty of Agricultural, Environmental and Food Sciences, Libera Università di Bolzano, Italy. Co-funded by the Research Centre Laimburg.

Editorial assignment

2021 – now Review Editor in Plant Physiology of Frontiers in Plant Science

2020 – now Review Editor in Plant Development and EvoDevo of Frontiers in Plant Science

Reviewing activities

2018 – now Ad-hoc reviewer for international scientific journals: Plants, The Plant Journal, Frontiers in Plant Science, Physiologia plantarum, Phytochemistry, Nature Plants, Review Commons, Plos Genetics, e-Life;

2025 Project reviewer for the Czech Science Foundation (GACR)

Conferences

2025 Invited Speaker at: Crops and the changing climate: physiology and genetics to improve plants adaptation to reduce water availability. Fondazione E. Mach San Michele all' Adige (Italy): **Unterholzner, S.J.** Unveiling the link between energy availability and drought stress response in the arabidopsis root. Link to the workshop website: https://cri.fmach.it/Il-Centro/Comunicazione/Eventi/WORKSHOP-Crops-and-the-changing-climate

201 Oral presentation at Symposium 'DELLA dependent growth regulation', Freising (Germany): **Unterholzner, S.J**., Rozhon, W., Papacek M., Lange T., Kugler K. G., Mayer K. M., Sieberer T. & Poppenberger B. Brassinosteroids Regulate Gibberellin Biosynthesis in Arabidopsis.

2015 Poster Presentation at the 2nd International Brassinosteroid Conference, Wuhan (China): **Unterholzner, S.J.**, Rozhon, W., Papacek M., Lange T., Kugler K. G., Mayer K. M., Sieberer T. & Poppenberger B. Brassinosteroids Regulate Gibberellin Biosynthesis in Arabidopsis. Link to the conference website: https://lifesc.lzu.edu.cn/fh/201503/1493.html

10 key publications (ordered by importance)

1. Bertolotti, G.*, **Unterholzner, S.J.*,** Scintu, D., Salvi, E., Svolacchia, N., Di Mambro, R., Ruta, V., Linhares Scaglia, F., Vittorioso, P., Sabatini, S., Costantino, P., and Dello Ioio, R. (2021). A PHABULOSA-Controlled Genetic Pathway Regulates Ground Tissue Patterning in the Arabidopsis Root. **Current Biology** 31, 420-426.e426.
   DOI: 10.1016/j.cub.2020.10.038.

2. **Unterholzner, S.J.,** Rozhon, W., Papacek, M., Ciomas, J., Lange, T., Kugler, K.G., Mayer, K.F., Sieberer, T., and Poppenberger, B. (2015). Brassinosteroids Are Master Regulators of Gibberellin Biosynthesis in Arabidopsis. **Plant Cell** 27, 2261-2272.
DOI: 10.1105/tpc.15.00433.
3. Eremina, M., **Unterholzner, S.J.,** Rathnayake, A.I., Castellanos, M., Khan, M., Kugler, K.G., May, S.T., Mayer, K.F., Rozhon, W., and Poppenberger, B. (2016). Brassinosteroids participate in the control of basal and acquired freezing tolerance of plants. **PNAS U S A** 113, E5982-E5991.
DOI: 10.1073/pnas.1611477113.
4. D. Scintu, E. Scacchi, F. Cazzaniga, F. Vinciarelli, M. De Vivo, R. Shtin, N. Svolacchia, G. Bertolotti, **S.J. Unterholzner**, M. DelBianco, M. Timmermans, R. DiMambro, S. Sabatini, P. Costantino, R. Dello Ioio (2023). microRNA165 and 166 modulate the response of the Arabidopsis root meristem to salt stress. **Communications Biology** 6, 834(2023)
DOI: 10.1038/s42003-023-05201-6;
5. Khan, M., Rozhon, W., **Unterholzner, S.J.,** Chen, T., Eremina, M., Wurzinger, B., Bachmair, A., Teige, M., Sieberer, T., Isono, E., and Poppenberger, B. (2014). Interplay between phosphorylation and SUMOylation events determines CESTA protein fate in brassinosteroid signalling. **Nature Communications** 5, 4687.
DOI: 10.1038/ncomms5687.
6. Pierdonati, E.*, **Unterholzner, S.J.*,** Salvi, E.*, Svolacchia, N.*, Bertolotti, G.*, Dello Ioio, R., Sabatini, S., and Di Mambro, R. (2019). Cytokinin-Dependent Control of GH3 group II family genes in the arabidopsis root. Plants (Basel) 8. 10.3390/plants8040094.
7. **Unterholzner, S.J.,** Rozhon, W., and Poppenberger, B. (2016). Reply: Interaction between Brassinosteroids and Gibberellins: Synthesis or Signaling? In Arabidopsis, Both! **Plant Cell** 28, 836-839.
DOI: 10.1105/tpc.16.00120.
8. Shtin, M., Polverari, L., Svolacchia, N., Bertolotti, G., **Unterholzner, S.J.,** Mambro, R.D., Costantino, P., Ioio, R.D., and Sabatini, S. (2023). The mutual inhibition between PLETHORAs and ARABIDOPSIS RESPONSE REGULATORs controls root zonation. **Plant Cell Physiology**
DOI: 10.1093/pcp/pcad001.
9. Albertos, P., Wlk, T., Griffiths, J., Pimenta Lange, M.J., **Unterholzner, S.J.,** Rozhon, W., Lange, T., Jones, A.M., and Poppenberger, B. (2022). Brassinosteroid-regulated bHLH transcription factor CESTA induces the gibberellin 2-oxidase GA2ox7. **Plant Physiology** 188, 2012-2025.
DOI: 10.1093/plphys/kiac008.
10. Gan, S., Rozhon, W., Varga, E., **Unterholzner, S.J.,** Berthiller, F., and Poppenberger, B. (2020). The BAHD Acyltransferase BIA1 Uses Acetyl-CoA for Catabolic Inactivation of Brassinosteroids. **Plant Physiology** 184, 23-26.
DOI: 10.1104/pp.20.00338.

* Indicates equal contribution of the first authors

Selected Third Mission activites

2026 Interview with 'Südtiroler Landwirt' (Nr. 4 2026): 'Neue Gentechnik - Was die Forschung macht und wo sie aktuell steht: Noch fehlt uns Grundlagenwissen'

2026 Interview about New Breeding Technolgies (NBTs): 'Die neuen Super-Pflanzen aus dem Labor'. Salto.bz

2025 Radio Interview about New Breeding Technolgies (NBTs): Lockerungen für gentechnisch veränderte Lebensimttel in der EU. Rai Südtirol Radio, Die Antenne.

2025 Keynote talk and workshop at the Agricultural Symposium for young people organized by the HBLA Pitzelstätten (Kärnten – Austria): 'Wissensbasierte Züchtung mit Gen(r)evolution'.

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2024 Participation in regional radio program: RAI Südtirol: ‘Land & Leben: Land & Leben: Pflanzenzüchtung – von der klassischen Methode bis zur Genschere‘;

2023 Media coverage in ‘Südtiroler Landwirt’ (Nr. 20 2023): ‘Was für die Neue Gentechnik spricht’

2022 Participation in regional radio program: RAI Südtirol: ‘Land & Leben: Pflanzenzüchtung – von der klassischen Methode bis zur Genschere‘;

2022 Organization Comitee for the Event ‘Grüne Gentechnik: Reden wir darüber!‘. This event was co-organized by the competence centre for plant health at unibz and the Laimburg research centre;

Bolzano, 31.03.2026