

My current research interests involve mechanisms that drive microbial community assembly in the phyllosphere. Combining culture-dependent and independent techniques, molecular biology and genetics, fluorescence microscopy, spatial statistics, and macro- and microecological frameworks, I am interested in understanding bacterial interactions and their impact on microbial community structure and ecosystem functioning on plants.

Education

2017–2021	Doctor of Philosophy, Microbiology University of Canterbury, New Zealand New Zealand International Doctoral Research Scholarship, Education New Zealand University of Canterbury Doctoral Scholarship
2013–2014	Professional Title (Master of Science equivalent), Biochemistry Pontificia Universidad Católica, Chile Degree conferred: 20/05/2014, two votes of distinction Rank 1 out of 30
2009–2013	Licenciante (Bachelor of Science equivalent), Biochemistry Pontificia Universidad Católica, Chile Degree conferred: 24/01/2013, two votes of distinction Academic Excellence Award (three times awardee)

Professional experience

10/2021–Present	Postdoctoral Researcher Freie Universität Berlin, Germany <ul style="list-style-type: none">• Research on functional diversity within bacterial communities.• Course coordination in the Master program of Biology• Planning and supervising undergraduate and Master students research projects
07/2021–09/2021	Guest Lecturer University of Canterbury, New Zealand <ul style="list-style-type: none">• Coordination and lecturing in the undergraduate course of <i>Advanced Microbiology</i>• Lecturing in the undergraduate course of <i>Microbiology</i>
05/2017–06/2021	Doctoral Researcher University of Canterbury, New Zealand <ul style="list-style-type: none">• Plan, conduct, present and discuss findings of research projects related to plant microbiology• Development and optimisation of microbiology and molecular biology protocols: stable genetic modification in <i>Proteobacteria</i>• Factors driving species interactions and spatial distribution patterns: Combination of <i>in vitro</i> and <i>in planta</i> experiments with fluorescence microscopy and spatial statistics to determine the influence of resource overlap on interactions between competing bacteria in the <i>Arabidopsis thaliana</i> phyllosphere
10/2015–10/2016	Scientific Assistant ETH Zurich, Switzerland <ul style="list-style-type: none">• Role of endocytosis in plant responses to <i>Fusarium oxysporum</i>: Data acquisition and interpretation in research project related to plant cell biology and phytopathology
04/2014–02/2015	Research Assistant Agrijohnson Ltd., Chile <ul style="list-style-type: none">• Development of a kit for the multiple detection of grapevine viruses, funded by the Chilean Foundation for Agrarian Innovation (FIA)• Project management and organisation

Academic Experience

Reviewer activity

Since 2019 Applied and Environmental Microbiology; Plant, Cell & Environment; The ISME Journal; New Phytologist; Phytobiomes; Basic and Applied Ecology; Biology; AMB Express

Funded projects and initiatives

2019-2021 Bioprotection Core New Initiative Fund, Associate Investigator
2017-2021 Marsden Fast-Start Grant, Royal Society of New Zealand, PhD student
2014-2015 *Fundación para la Innovación Agraria (FIA, Chile)*, Research Assistant
2013-2014 *Consortio Tecnológico de la Fruta (ASOEX and Pontificia Universidad Católica de Chile)*, Research student

Supervision

2023-Present Moritz Müller, MSc, Freie Universität Berlin (Main supervisor)
2023-Present Joanna Schmidt, MSc, Freie Universität Berlin (Main supervisor)
2023-Present Johannes Lübke, BSc, Freie Universität Berlin (Main supervisor)
2021-2023 Evan Kear, MSc, University of Canterbury (Associate supervisor)
2021-2022 Christian Stocks, MSc, University of Canterbury (Associate supervisor)

Academic Distinctions

2019 Travel grant - New Zealand Microbiological Society (NZMS) Conference, Palmerston North, NZ
2018 Third place student poster presentation competition, NZMS-NZSBMB Conference, Dunedin, NZ
2017-2021 New Zealand International Doctoral Research Scholarship, Education New Zealand (ENZ), NZ
2017 UC College of Science PhD Scholarship, University of Canterbury, NZ
2011-2013 Honour Scholarship for academic performance, Pontificia Universidad Católica de Chile, Chile

Publications (*Equal contribution)

1. Peer-Reviewed

- 1.1 Kunzler, M., **Schlechter**, R. O., Schreiber, L., and Remus-Emsermann, M. N. P. (2024b). Hitching a ride in the phyllosphere: Surfactant production of *Pseudomonas* spp. causes co-swarmling of *Pantoea eucalypti* 299R. *Microb. Ecol.*, 87(1):62
- 1.2 **Schlechter**, R. O., Kear, E. J., Bernach, M., Remus, D. M., and Remus-Emsermann, M. N. P. (2023a). Metabolic resource overlap impacts competition among phyllosphere bacteria. *ISME J.*, 17(9):1445–1454
- 1.3 Huerta, A. I., Sancho-Andrés, G., Montesinos, J. C., Silva-Navas, J., Bassard, S., Pau-Roblot, C., Kesten, C., **Schlechter**, R. O., Dora, S., Ayupov, T., Pelloux, J., Santiago, J., and Sánchez-Rodríguez, C. (2023). The WAK-like protein RFO1 acts as a sensor of the pectin methylation status in *Arabidopsis* cell walls to modulate root growth and defense. *Mol. Plant*, 16(5):865–881
- 1.4 Stocks, C., **Schlechter**, R. O., and Remus-Emsermann, M. N. P. (2022). Chromatic bacteria v.2-a himar1 Transposon-Based delivery vector to extend the host range of a toolbox to fluorescently tag bacteria. *Bacteria*, 1(1):56–65
- 1.5 **Schlechter**, R. O., Kear, E. J., Remus, D. M., and Remus-Emsermann, M. N. P. (2021). Fluorescent protein expression as a proxy for bacterial fitness in a High-Throughput assay. *Appl. Environ. Microbiol.*, 87(18):e0098221
- 1.6 Miebach, M., **Schlechter**, R. O., Clemens, J., Jameson, P. E., and Remus-Emsermann, M. N. P. (2020). Litterbox-A gnotobiotic Zeolite-Clay system to investigate Arabidopsis-Microbe interactions. *Microorganisms*, 8(4)
- 1.7 **Schlechter**, R. O., Miebach, M., and Remus-Emsermann, M. N. P. (2019). Driving factors of epiphytic bacterial communities: A review. *J. Advert. Res.*, 19:57–65
- 1.8 Jameson, P. E., Dhandapani, P., Song, J., Zatloukal, M., Strnad, M., Remus-Emsermann, M. N. P., **Schlechter**, R. O., and Novák, O. (2019). The cytokinin complex associated with *Rhodococcus fascians*: Which compounds are critical for virulence? *Front. Plant Sci.*, 10:674
- 1.9 **Schlechter**, R. O. and Remus-Emsermann, M. N. (2019). Delivering “chromatic bacteria” fluorescent protein tags to proteobacteria using conjugation. *Bio Protoc*, 9(7):e3199
- 1.10 Oso, S., Walters, M., **Schlechter**, R. O., and Remus-Emsermann, M. N. P. (2019). Utilisation of hydrocarbons and production of surfactants by bacteria isolated from plant leaf surfaces. *FEMS Microbiol. Lett.*, 366(6)
- 1.11 **Schlechter**, R. O., Jun, H., Bernach, M., Oso, S., Boyd, E., Muñoz-Lintz, D. A., Dobson, R. C. J., Remus, D. M., and Remus-Emsermann, M. N. P. (2018). Chromatic bacteria - a broad Host-Range plasmid and chromosomal insertion toolbox for fluorescent protein expression in bacteria. *Front. Microbiol.*, 9:3052
- 1.12 Remus-Emsermann, M. N. P. and **Schlechter**, R. O. (2018). Phyllosphere microbiology: at the interface between microbial individuals and the plant host. *New Phytol.*, 218(4):1327–1333

- 1.13 Agurto*, M., **Schlechter***, R. O., Armijo, G., Solano, E., Serrano, C., Contreras, R. A., Zúñiga, G. E., and Arce-Johnson, P. (2017). RUN1 and REN1 pyramiding in grapevine (*Vitis vinifera* cv. crimson seedless) displays an improved defense response leading to enhanced resistance to powdery mildew (*Erysiphe necator*). *Front. Plant Sci.*, 8:758
 - 1.14 Wong*, D. C. J., **Schlechter***, R., Vannozzi, A., Höll, J., Hmam, I., Bogs, J., Tornielli, G. B., Castellarin, S. D., and Matus, J. T. (2016). A systems-oriented analysis of the grapevine R2R3-MYB transcription factor family uncovers new insights into the regulation of stilbene accumulation. *DNA Res.*, 23(5):451–466
 - 1.15 Armijo*, G., **Schlechter***, R., Agurto, M., Muñoz, D., Nuñez, C., and Arce-Johnson, P. (2016). Grapevine pathogenic microorganisms: Understanding infection strategies and host response scenarios. *Front. Plant Sci.*, 7:382
 - 1.16 Cavallini, E., Matus, J. T., Finezzo, L., Zenoni, S., Loyola, R., Guzzo, F., **Schlechter**, R., Ageorges, A., Arce-Johnson, P., and Tornielli, G. B. (2015). The phenylpropanoid pathway is controlled at different branches by a set of R2R3-MYB C2 repressors in grapevine. *Plant Physiol.*, 167(4):1448–1470
2. Pre-print
 - 2.1 **Schlechter**, R. O. and Remus-Emsermann, M. N. P. (2023). Bacterial community complexity in the phyllosphere penalises specialists over generalists. *bioRxiv*, page 2023.11.08.566251
3. Data set
 - 3.1 Kunzler, M., **Schlechter**, R. O., and Remus-Emsermann, M. (2024a). Dataset: Surfactant production of *Pseudomonas* spp. causes co-swarmling of *Pantoea eucalypti* 299R. *Zenodo*
 - 3.2 **Schlechter**, R. O., Marti, E., Remus-Emsermann, M., Drissner, D., and Gekenidis, M.-T. (2024). Data set biofilm formation of antibiotic-resistant *E. coli* on lamb's lettuce leaves. *Zenodo*
 - 3.3 **Schlechter**, R. O., Kear, E. J., and Remus-Emsermann, M. (2023b). Microscopy images and datasets of *Sphingomonas* and *Methylobacterium* on *Arabidopsis* leaves. *Zenodo*

Technical Skills

Softwares	MS Office, RStudio, Visual Studio Code, Adobe Illustrator
Programming Languages	R, Python, Version Control (git), bash
Data analysis	Analysis and interpretation of complex biological data, large datasets, with strong background in statistical analysis. Experience in data mining and visualisation
Microbiology	Bacterial isolation from environmental samples, aseptic work, growth and competition assays, optimisation of bacterial transformation protocols
Next Generation Sequencing	Analysis and interpretation of DNA and RNA sequencing data, including genome assembly and annotation, differential gene expression analysis, metabolic modeling and amplicon sequencing

Key Competencies

Communication skills	Presentation of research work at several national and international conferences. Proven track record as first and contributing author in 16 scientific articles and 2 book chapters.
Leadership and Management	Planification and management of research projects for several students in Bachelor and Master of Science programs. Course coordination from the MSc program at Freie Universität Berlin.
Languages	Spanish , Native speaker English , Professional proficiency German , Intermediate level (B1)

Contact

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