

Curriculum vitae

Dr. Lennart Schada von Borzyskowski

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Date of birth: January 2, 1986; Nationality: German

EDUCATION

- 04/2012 - 10/2016 **Doctoral thesis** in the Department of Biology at **ETH Zürich, Switzerland**
- 10/2006 - 04/2012 **Studies of Applied Natural Sciences (Diploma)** at **TU Freiberg, Germany**
Major in Environmental Microbiology and Analytical Chemistry (supported by a **scholarship of the German National Merit Foundation**)
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WORK AND RESEARCH EXPERIENCE

- 03/2021 – present **Tenure-track Assistant Professor**, Institute of Biology Leiden, Leiden University, Leiden, The Netherlands
- 11/2016 – 02/2021 **Postdoctoral fellow**, Max Planck Institute for Terrestrial Microbiology, Marburg, Germany (Principal Investigator: Prof. Tobias Erb)
Project leader in the SFB 987 “Microbial diversity in environmental signal response”
- 04/2012 – 10/2016 **PhD student**, ETH Zürich, Zürich, Switzerland (Principal Investigator: Prof. Julia Vorholt)
Thesis project: „Exploring alternative solutions in the central carbon metabolism of *Methylobacterium extorquens* AM1 by metabolic engineering”
- 11/2010 - 10/2011 **Diploma student**, California Institute of Technology, Pasadena, USA (Principal Investigator: Prof. André Hoelz; supported by a **scholarship of the German National Merit Foundation**)
Thesis project: “Structural and functional characterization of the proton-coprotein Nup98 and its anchoring to the cytoplasmic face of the nuclear pore complex”
- 04/2010 – 10/2010 **Student researcher**, TU Freiberg, Freiberg, Germany (Principal Investigator: Prof. Michael Schlömann)
Project: “Evolution of (chloro-)catechol catabolic pathways – New insights from complete genome analysis”
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PUBLICATIONS (*corresponding author)

16. **Schada von Borzyskowski, L.***; Schulz-Mirbach, H.; Troncoso Castellanos, M.; Severi, F.; Gomez Coronado, P. A.; Glatter, T.; Bar-Even, A.; Lindner, S. N.*; Erb, T. J.* (2022). Implementation of the β -hydroxyaspartate cycle increases growth performance of *Pseudomonas putida* on the PET monomer ethylene glycol. **Preprint on bioRxiv** (<https://doi.org/10.1101/2022.08.08.503134>).
15. Schulz-Mirbach, H.; Müller, A.; Wu, T.; Pfister, P.; Aslan, S.; **Schada von Borzyskowski, L.**; Erb, T. J.; Bar-Even, A.; Lindner, S. N.* (2022). On the flexibility of the cellular amination network in *E. coli*. **eLife**.

14. Röhl, M.-S.; **Schada von Borzyskowski, L.**; Westhoff, P.; Plett, A.; Paczia, N.; Claus, P.; Schlüter, U.; Erb, T. J.; Weber, A. P. M.* (2021). A synthetic C4 shuttle via the β -hydroxyaspartate cycle in C3 plants. **PNAS** 118(21): e2022307118.
13. **Schada von Borzyskowski, L.**; Da Costa, M.; Moritz, C.; Pandi, A.* (2021). Microbial biosensors for discovery and engineering of enzymes and metabolism. **Book chapter** in: Microbial cell factories engineering for production of biomolecules, Elsevier/Academic Press, 421-36.
12. **Schada von Borzyskowski, L.**; Bernhardsgrütter, I.; Erb, T. J.* (2020). Biochemical unity revisited: microbial central carbon metabolism holds new discoveries, multi-tasking pathways, and redundancies with a reason. **Biol. Chem.** 401(12): 1429-41.
11. **Schada von Borzyskowski, L.***; Severi, F.; Krüger, K.; Hermann, L.; Gilardet, A.; Sippel, F.; Pommerenke, B.; Claus, P.; Socorro Cortina, N.; Glatter, T.; Zauner, S.; Zarzycki, J.; Fuchs, B. M.; Bremer, E.; Maier, U. G.; Amann, R. I.; Erb, T. J.* (2019). Marine Proteobacteria metabolize glycolate via the β -hydroxyaspartate cycle. **Nature** 575: 500-504.
10. Kremer, K.; van Teeseling, M. C. F.; **Schada von Borzyskowski, L.**; Bernhardsgrütter, I.; van Spanning, R. J. M.; Gates, A. J.; Remus-Emsermann, M. N. P.; Thanbichler, M.; Erb, T. J.* (2019). Dynamic metabolic rewiring enables efficient acetyl coenzyme A assimilation in *Paracoccus denitrificans*. **mBio** 10(4): e00805-19.
9. Seah, B. K. B*.; Antony, C.P.; Huettel, B.; Zarzycki, J.; **Schada von Borzyskowski, L.**; Erb, T.J.; Kouris, A.; Kleiner, M.; Liebeke, M.; Dubilier, N.; Gruber-Vodicka, H. R. (2019). Sulfur-oxidizing symbionts without canonical genes for autotrophic CO₂ fixation. **mBio** 10(3): e01112-19.
8. **Schada von Borzyskowski, L.**; Carrillo, M.; Leupold, S.; Glatter, T.; Kiefer, P.; Weishaupt, R.; Heinemann, M.; Erb, T. J.* (2018). An engineered Calvin-Benson-Bassham cycle for carbon dioxide fixation in *Methylobacterium extorquens* AM1. **Metab. Eng.** 47: 423-433.
7. **Schada von Borzyskowski, L.**; Sonntag, F.; Pöschel, L.; Vorholt, J. A.; Schrader, J.; Erb, T. J.*; Buchhaupt, M.* (2018). Replacing the Ethylmalonyl-CoA pathway with the glyoxylate shunt provides metabolic flexibility in the central carbon metabolism of *Methylobacterium extorquens* AM1. **ACS Synth. Biol.** 7(1): 86-97.
6. Schwander, T.; **Schada von Borzyskowski, L.**; Burgener, S.; Socorro Cortina, N.; Erb, T.J.* (2016). A synthetic pathway for the fixation of carbon dioxide *in vitro*. **Science** 354(6314): 900-904.
5. Peter, D. M.; **Schada von Borzyskowski, L.**; Kiefer, P.; Christen, P.; Vorholt, J. A.; Erb, T. J.* (2015). Screening and engineering the synthetic potential of carboxylating reductases from central metabolism and polyketide biosynthesis. **Angew. Chem. Int. Ed. Engl.** 54(45): 13457-61.
4. **Schada von Borzyskowski, L.**; Remus-Emsermann, M.; Weishaupt, R.; Vorholt, J. A.; Erb, T. J.* (2015). A set of versatile brick vectors and promoters for the assembly, expression and integration of synthetic operons in *Methylobacterium extorquens* AM1 and other Alphaproteobacteria. **ACS Synth. Biol.** 4(4): 430-43.
3. Könneke, M.; Schubert, D. M.; Brown, P. C.; Hügler, M.; Standfest, S.; Schwander, T.; **Schada von Borzyskowski, L.**; Erb, T. J.; Stahl, D. A.; Berg, I. A.* (2014). Ammonia-oxidizing archaea use the most energy-efficient aerobic pathway for CO₂ fixation. **Proc. Natl. Acad. Sci. USA.** 111(22): 8239-44.
2. **Schada von Borzyskowski, L.**; Rosenthal, R. G.; Erb, T. J.* (2013). Evolutionary history and biotechnological future of carboxylases. **J. Biotechnol.** 168(3): 243-51.
1. Stuwe, T.; **Schada von Borzyskowski, L.**; Davenport, A.M.; Hoelz, A.* (2012). Molecular basis for the anchoring of proto-oncoprotein Nup98 to the cytoplasmic face of the nuclear pore complex. **J. Mol. Biol.** 419(5): 330-46.

AWARDED GRANTS

NWO Open Competition Domain Science - XS (2021); grant of the Dutch Research Council to explore ground-breaking and high-risk research ideas; 50K Euro

CONFERENCE CONTRIBUTIONS

Annual Meeting of the Dutch Association for Microbiology (KNVM) (2022); Papendal, the Netherlands; Invited talk.

Netherlands Biotechnology Congress 21 (2021); virtual event; Talk.

The Carbon Recycling Network Conference 2 (2021); virtual event; Talk.

The 1st International *BioDesign Research* Conference (2020); virtual event; Talk.

Symposium “Marine Microbiota” (2019); Oldenburg, Germany; Talk.

GRS/GRC Applied and Environmental Microbiology (2019); South Hadley, USA; Poster & talk.

EMBL Conference “Biological solutions for the global CO₂ challenge” (2019); Heidelberg, Germany; Poster (winner of poster prize).

Symposium “How Microorganisms view their World” (2018); Marburg, Germany; Poster.

ISME17 (2018); Leipzig, Germany; Poster.

Annual Meeting of the German Association for General and Applied Microbiology (VAAM) (2018); Wolfsburg, Germany; Poster & talk.

GRC Synthetic Biology (2017); Stowe, USA; Poster.

Annual Meeting of the German Association for General and Applied Microbiology (VAAM) (2016); Jena, Germany; Poster & talk.

Annual Meeting of the German Association for General and Applied Microbiology (VAAM) (2015); Marburg, Germany; Poster & talk.

GRS/GRC Molecular Basis of Microbial One-Carbon Metabolism (2014); South Hadley, USA; Poster & talk.

Annual Swiss Society for Microbiology Meeting (2014); Fribourg, Switzerland; Poster.

INVITED SEMINARS

Speaker at the Systems Environmental Microbiology Seminar Series (2022); Novo Nordisk Foundation Center for Biosustainability at DTU, Kgs. Lyngby, Denmark.

Speaker at the EvoDivMet Seminar Series (2022); Cinvestav Langebio, Irapuato, Mexico.

Speaker at the MPI MarMic Seminar Series (2020); Max-Planck-Institute for Marine Microbiology, Bremen, Germany.

Speaker at the Department of Chemistry and Environmental Science Seminar Series (2019); New Jersey Institute of Technology, Newark, USA.

TEACHING AND SUPERVISION

09/2021 – present	Teaching of 3 rd year BSc students in the Minor Biotechnology, Leiden University
07/2021 – present	Supervision of two PhD students, one research technician and six MSc students, Leiden University
11/2016 – 02/2021	Supervision of one research technician, two MSc students, and three student interns, MPI Marburg
04/2020 – 06/2020	Teaching of lectures in Microbial Ecology, MPI Marburg
04/2019 – 06/2020	Planning and supervision of practical courses in Microbial Ecology, MPI Marburg
04/2013 – 06/2014	Supervision of practical courses in Microbiology, ETH Zürich
10/2012 – 02/2015	Supervision of three MSc students, ETH Zürich

REVIEWING AND EDITING

01/2022 – present	Member in the inaugural mBio Junior Editorial Board
01/2021 – present	Frequent <i>ad hoc</i> reviewer activity for scientific journals, e.g., mSystems, mBio, Nature Communications, Current Opinion in Biotechnology, PLOS ONE, Microbial Genomics

PATENTS

3. Röll, M.-S.; **Schada von Borzyskowski, L.**; Erb, T. J.; Weber, A. P. M. (2019). EP 19190404.4: Production of plants with altered photorespiration due to implementation of the β -hydroxyaspartate cycle.
2. **Schada von Borzyskowski, L.**; Zarzycki, J.; Erb, T. J. (2018). EP 18167406.0: Production of photoautotrophic organisms with altered photorespiration due to implementation of the β -hydroxyaspartate cycle.
1. **Schada von Borzyskowski, L.**; Erb, T. J. (2018). EP 18211454.6: Enantioselective preparation of primary amine compounds using the enzyme BhcD or its homologs.