

Nikolai Köhler

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EDUCATION

- Nov. 2020 – present **Ph.D.** in Bioinformatics TUM SCHOOL OF LIFE SCIENCES (CHAIR OF EXPERIMENTAL BIOINFORMATICS)
Working Title: “Graph-Based Methods for the Analysis and Integration of Lipidome and Metabolome Data into the Omics-Landscape”
- Network-based pathway enrichment integrating microbiome and multi-omics host data
 - Multi-partite (edge-centric) graph analysis
 - Edge-centric graph machine learning methods for metabolomic networks
- Oct. 2018 – Oct. 2020 **M.Sc.** in Molecular Biotechnology (with high distinction) TECHNICAL UNIVERSITY OF MUNICH (TUM)
Thesis: “Analysis of Organ-specific Lipidome Compositions and their Network Interactions in Mice”
- Graph-theoretical approaches to multi-organ lipid data integration
 - *de-novo* pathway enrichment
- Oct. 2014 – Oct. 2018 **B.Sc.** in Agricultural Science (with distinction) TECHNICAL UNIVERSITY OF MUNICH (TUM)
Thesis: “Regulation of Pyrrolizidine Alkaloid Biosynthesis in *Crassocephalum crepidioides*”
- Integration of transcript abundances and metabolite levels

PUBLICATIONS

Preprints

1. Rose TD[†], **Köhler N**[†], Falk L, Klischat L, Lazareva OE and Pauling JK.
Lipid network and moiety analyses reveal enzymatic dysregulation and altered mechanisms from lipidomics
bioRxiv, 2022; doi: <https://doi.org/10.1101/2022.02.04.479101>

Journal Publications

1. Rose TD, Bechtler T, Ciora O, Lilian Le KA, Molnar F, **Köhler N**, Baumbach J, Roettger J, Pauling JK.
MoSBi: Automated signature mining for molecular stratification and subtyping.
Proc Natl Acad Sci U.S.A. 2022 (accepted), 2022; doi: <https://doi.org/10.1101/2021.09.30.462567>
2. **Köhler N**[†], Rose TD[†], Falk L and Pauling JK.
Investigating Global Lipidome Alterations with the Lipid Network Explorer.
Metabolites, 2021; 11(8), 488.
3. **Köhler N**[†], Höring M[†], Czepukojc B[†], Rose TD[†], Buechler C, Kröhler T, Haybaeck J, Liebisch G, Pauling JK, Kessler SM, Kierner AK.
Kupffer cells are protective in alcoholic steatosis.
Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease, 2022;
4. Dieckmann S, Strohmeier A, Willershäuser M, Maurer S, Wurst W, Marschall S, Hrabe de Angelis M, Kühn R, Worthmann A, Fuh MM, Heeren J, **Köhler N**, Pauling JK, Klingenspor M.
Susceptibility to diet induced obesity at thermoneutral conditions is independent of UCP1.
American Journal of Physiology-Endocrinology and Metabolism, 2021; doi: <https://doi.org/10.1152/ajpendo.00278.2021>
5. Haberl EM, Weiss TS, Peschel G, Weigand K, **Köhler N**, Pauling JK, Wenzel JJ, Höring M, Krautbauer S, Liebisch G, Buechler C.
Liver Lipids of Patients with Hepatitis B and C and Associated Hepatocellular Carcinoma.
International Journal of Molecular Sciences. 2021; 22(10):5297
6. Schramm S, **Nikolai Köhler**, Rozhon W.
Pyrrolizidine Alkaloids: Biosynthesis, Biological Activities and Occurrence in Crop Plants.
Molecules, 2019, 24, 498.

[†] These authors contributed equally to this work.

TALKS AND WORKSHOPS

Presentations

- **Keynote:** "Lipid metabolic network analysis for inferring mechanistic changes in enzyme activity" 10th Workshop in Lipidomics
- "Network-based Lipidomics Analysis using the Lipid Network Explorer." Virtual Podium Asia Pacific, 2021
- "Investigating Global Lipidome Alterations with the Lipid Network Explorer." 1st International Lipidomics Society Conference/7th Lipidomics Forum, 2021

Workshops

- LipiTUM Workshop on Patient Stratification and Lipid Metabolic Network Analysis. 1st International Lipidomics Society Conference/7th Lipidomics Forum, 2021

INTERNSHIPS

Oct. 2017 – Mar. 2018	Roessner Lab (Chair for Plant Biochemistry) at the University of Melbourne/Metabolomics Australia
Aug. 2015 – Sep. 2015	Julius Kühn Institute, Federal Research Centre for Cultivated Plants, Institute for Grapevine Breeding

WORK EXPERIENCE

June. 2019 – Oct. 2020	Student Research Assistant	LIPiTUM/CHAIR OF EXPERIMENTAL BIOINFORMATICS (TUM)
Apr. 2018 – Mar. 2019	Student Research Assistant	CHAIR FOR BIOTECHNOLOGY OF HORTICULTURAL CROPS (TUM)
Apr. 2017 – Aug. 2017	Student Research Assistant	CHAIR OF PLANT BREEDING (TUM)

SCHOLARSHIPS

Awards

- Best Presentation Award - Virtual Podium Asia Pacific 2021

Scholarships

- PROMOS Travel Scholarship - German Academic Exchange Service (Oct. 17 - Mar. 18)

SUPERVISION

Bioinformatics

- "Development of a Deep Learning Model for the Detection and Prediction of Characteristic Fragmentation Patterns in Lipid Mass Spectra"
- "Network Integration of Metabolome and Microbiome Data using Local Search Optimisation"

Molecular Biotechnology

- "A Network-based Meta-Analysis to Link Nutritional Metabolites to Lipid Metabolism and Related Diseases"