Curriculum Vitæ

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) Technichal 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) Technichal 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; doi: https://doi.org/10.1073/pnas.2118210119
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, Kiemer AK.
   Kupffer cells are protective in alcoholic steatosis.
   Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease, 2022;
4. Dieckmann S, Strohmeyer 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" 10^{th} 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." 1^{st} International Lipidomics Society Conference/7^{th} Lipidomics Forum, 2021

Workshops

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

INTERNSHIPS

Oct. 2017 – Mar. 2018 Roessner Lab (Chair for Plant Biochemistry) at the Unversity of Melbourne/Metabolomics Australia

Aug. 2015 – Sep. 2015 Julius Kühn Insitute, 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"
- "Imputing Common Lipids to Improve the Connectivity of Lipid Metabolic Networks"

Molecular Biotechnology

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

Last updated on Wednesday 13th April, 2022