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

Journal Publications

1. **Nikolai Köhler**†, Tim Daniel Rose†, Lisa Falk and Josch Konstantin Pauling.
   Investigating Global Lipidome Alterations with the Lipid Network Explorer.
   Metabolites, 2021; 11(8), 488.
2. 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
3. Sebastian Schramm, **Nikolai Köhler**, Wilfried Rozhon.
   Pyrrolizidine Alkaloids: Biosynthesis, Biological Activities and Occurrence in Crop Plants.
   Molecules, 2019, 24, 498.

Preprints

1. Sebastian Dieckmann, Akim Strohmeyer, Monja Willershäuser, Stefanie Maurer, Wolfgang Wurst, Susan Marschall, Martin Hrabe de Angelis, Ralf Kühn, Anna Worthmann, Marceline M Fuh, Joerg Heeren, **Nikolai Köhler**, Josch K. Pauling, Martin Klingenspor.
   Susceptibility to diet induced obesity at thermoneutral conditions is independent of UCP1.
   bioRxiv, 2021; doi: https://doi.org/10.1101/2021.06.30.450595
2. Tim Daniel Rose, Thibault Bechtler, Octavia-Andreea Ciora, Kim Anh Lilian Le, Florian Molnar, **Nikolai Köhler**, Jan Baumbach, Richard Roettger, Josch Konstantin Pauling.
   MoSBi: Automated signature mining for molecular stratification and subtyping.
   bioRxiv, 2021; doi: https://doi.org/10.1101/2021.09.30.462567

† These authors contributed equally to this work.

TALKS AND WORKSHOPS

Presentations

- **Nikolai Köhler**†, Tim Daniel Rose†, Lisa Falk and Josch Konstantin Pauling. 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

Oct. 2017 – Mar. 2018 — PROMOS Travel Scholarship
German Academic Exchange Service

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"