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. 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.
   American Journal of Physiology-Endocrinology and Metabolism, 2021; doi: https://doi.org/10.1152/ajpendo.00278.2021
3. 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
4. Sebastian Schramm, **Nikolai Köhler**, Wilfried Rozhon.
   Pyrrolizidine Alkaloids: Biosynthesis, Biological Activities and Occurrence in Crop Plants.
   Molecules, 2019, 24, 498.

Preprints

1. Tim Daniel Rose†, **Nikolai Köhler**†, Lisa Falk, Lucie Klischat, Olga Lazareva and Josch Konstantin Pauling.
   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
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

- "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"

Molecular Biotechnology

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

Last updated on Wednesday 9th February, 2022