Dr. Christoph Trautwein

Personal Data

Status/Function:	Group Leader Metabolomics and Systems Medicine
Scientific focus:	Metabolomics, Lipidomics, Precision Medicine, Biomarkers, Neurology, Oncology
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Education and qualifications

2008 – 2012	PhD, University Medical Centre Freiburg, Dr. rer. nat.
2007 – 2014	Study Molecular Medicine, Alberts Ludwigs University of Freiburg, Dip. mol. med.
2000 – 2006	Study Environmental Engineering, University of Stuttgart, Dipl.-Ing.

Work Experience

Since 2019	Group leader Metabolomics & Systems Medicine, WSIC, University of Tübingen
2017 - 2019	Post-doctoral researcher, WSIC, University of Tübingen
2015 - 2016	Post-doctoral researcher, IMT, Karlsruhe Institute of Technology
2013 - 2015	Graduate Research Assistant, ZBSA, University of Freiburg
2011 - 2012	Graduate Research Assistant, INSC, Leuphana University Lüneburg
2007 - 2011	Graduate Research Assistant, DEHS, University Medical Centre Freiburg

Teaching Experience

2020 - present	Lecture clinical Metabolomics for Master Students Molecular Medicine
2019 - present	Lecture pre/clinical Metabolomics for Master Students Medical Technologies
2018 - present	Lecture pre/clinical Metabolomics for Bachelor Students Biomedical Technologies
2018 - present	Regular co/supervision of internships, Bachelor, Master, PhD and MD theses

Additional Qualifications and Skills

- Nuclear Magnetic Resonance (NMR) spectroscopy, chromatography (GC, LC) and mass spectrometry (MS)
- Tissue metabolomics and lipidomics with human and murine samples (e.g. liver, brain, colon, pancreas, skin)
- Deciphering tissue heterogeneity with spatial omics workflows and MALDI imaging
- Quantitative IVDr human biofluids metabolomics (serum/plasma, urine, liquor)
- Cell culture and feces/stool microbiome metabolomics and lipidomics including multi-omics studies
- Biomarker discovery and systems biology in neurodegeneration, metabolic disorders and cancer
- Quantitative metabolomics and personalized precision medicine for singular and longitudinal investigations

Publications (selection)

1. Laugwitz, L.; Zizmare, L.; Santhanakumaran, V.; Cannet, C.; Böhringer, J.; Okun, J. G.; Spraul, M.; Krägeloh-Mann, I.; Groeschel, S.; **Trautwein, C.**, Identification of neurodegeneration indicators and disease progression in metachromatic leukodystrophy using quantitative NMR-based urinary metabolomics. ***JIMD Reports* 2022,** *63* (2), 168-180.

2. Zizmare, L.; Boyle, C. N.; Buss, S.; Louis, S.; Kuebler, L.; Mulay, K.; Krüger, R.; Steinhauer, L.; Mack, I.; Rodriguez Gomez, M.; Herfert, K.; Ritze, Y.; **Trautwein, C.**, Roux-En-Y Gastric Bypass (RYGB) Surgery during High Liquid Sucrose Diet Leads to Gut Microbiota-Related Systematic Alterations. ***Int. J. Mol. Sci.* 2022,** *23* (3), 1126.

3. Lonati, C.; Dondossola, D.; Zizmare, L.; Battistin, M.; Wüst, L.; Vivona, L.; Carbonaro, M.; Zanella, A.; Gatti, S.; Schlegel, A.; **Trautwein, C.**, Quantitative Metabolomics of Tissue, Perfusate, and Bile from Rat Livers Subjected to Normothermic Machine Perfusion. ***Biomedicines* 2022,** *10* (3), 538.

4. **Trautwein, C.**; Zizmare, L.; Mäurer, I.; Bender, B.; Bayer, B.; Ernemann, U.; Tatagiba, M.; Grau, S. J.; Pichler, B. J.; Skardelly, M.; Tabatabai, G., Tissue metabolites in diffuse glioma and their modulations by IDH1 mutation, histology, and treatment. ***JCI Insight* 2022,** *7* (3).

5. Mehling, R.; Schwenck, J.; Lemberg, C.; **Trautwein, C.**; Zizmare, L.; Kramer, D.; Müller, A.; Fehrenbacher, B.; Gonzalez-Menendez, I.; Quintanilla-Martinez, L.; Schröder, K.; Brandes, R. P.; Schaller, M.; Ruf, W.; Eichner, M.; Ghoreschi, K.; Röcken, M.; Pichler, B. J.; Kneilling, M., Immunomodulatory role of reactive oxygen species and nitrogen species during T cell-driven neutrophil-enriched acute and chronic cutaneous delayed-type hypersensitivity reactions. ***Theranostics* 2021,** *11* (2), 470-490.

6. Singh, Y.; **Trautwein, C.**; Fendel, R.; Krickeberg, N.; Berezhnoy, G.; Bissinger, R.; Ossowski, S.; Salker, M. S.; Casadei, N.; Riess, O., SARS-CoV-2 infection paralyzes cytotoxic and metabolic functions of the immune cells. ***Heliyon* 2021,** *7* (6), e07147.

7. Singh, Y.; **Trautwein, C.**; Romani, J.; Salker, M. S.; Neckel, P. H.; Fraccaroli, I.; Abeditashi, M.; Woerner, N.; Admard, J.; Dhariwal, A.; Dueholm, M. S.; Schäfer, K.-H.; Lang, F.; Otzen, D.; Lashuel, H. A.; Riess, O.; Casadei, N., Overexpression of human alpha-Synuclein leads to dysregulated microbiome/metabolites with ageing in a rat model of Parkinson disease. ***bioRxiv* 2020**, 2020.12.23.424226.

8. Bus, C.; Zizmare, L.; Feldkaemper, M.; Geisler, S.; Zarani, M.; Schaedler, A.; Klose, F.; Admard, J.; Mageean, C. J.; Arena, G.; Fallier-Becker, P.; Ugun-Klusek, A.; Maruszczak, K. K.; Kapolou, K.; Schmid, B.; Rapaport, D.; Ueffing, M.; Casadei, N.; Krüger, R.; Gasser, T.; Vogt Weisenhorn, D. M.; Kahle, P. J.; **Trautwein, C.**; Gloeckner, C. J.; Fitzgerald, J. C., Human Dopaminergic Neurons Lacking PINK1 Exhibit Disrupted Dopamine Metabolism Related to Vitamin B6 Co-Factors. ***iScience* 2020,** *23* (12), 101797.

9. Singh, Y.; **Trautwein, C.**; Dhariwal, A.; Salker, M. S.; Alauddin, M.; Zizmare, L.; Pelzl, L.; Feger, M.; Admard, J.; Casadei, N.; Föller, M.; Pachauri, V.; Park, D. S.; Mak, T. W.; Frick, J.-S.; Wallwiener, D.; Brucker, S. Y.; Lang, F.; Riess, O., DJ-1 (Park7) affects the gut microbiome, metabolites and the development of innate lymphoid cells (ILCs). ***Sci Rep* 2020,** *10* (1), 16131.

10. Disselhorst, J. A.; Krueger, M. A.; Ud-Dean, S. M. M.; Bezrukov, I.; Jarboui, M. A.; **Trautwein, C.**; Traube, A.; Spindler, C.; Cotton, J. M.; Leibfritz, D.; Pichler, B. J., Linking imaging to omics utilizing image-guided tissue extraction. ***Proc. Natl. Acad. Sci. U. S. A.* 2018,** *115* (13), E2980-e2987.

11. **Trautwein, C.;** MacKinnon, N.; Korvink, J. G., Micro-NMR elucidates altered metabolites in the Parkinson's disease-related catp-6 genotype of Caenorhabditis elegans. ***Metabolomics* 2017,** *13* (4), 38.

12. **Trautwein, C.**; Berset, J. D.; Wolschke, H.; Kümmerer, K., Occurrence of the antidiabetic drug Metformin and its ultimate transformation product Guanylurea in several compartments of the aquatic cycle. ***Environ Int* 2014,** *70*,203-12.

13. Gartiser, S.; Hafner, C.; Kronenberger-Schafer, K.; Happel, O.; **Trautwein, C.**; Kummerer, K., Approach for detecting mutagenicity of biodegraded and ozonated pharmaceuticals, metabolites and transformation products from a drinking water perspective. ***Environ. Sci. Pollut. Res.* 2012,** *19* (8), 3597-3609.

14. **Trautwein, C.**; Kümmerer, K., Incomplete aerobic degradation of the antidiabetic drug Metformin and identification of the bacterial dead-end transformation product Guanylurea. ***Chemosphere* 2011,** *85* (5), 765-73.

15. **Trautwein, C.**; Kummerer, K.; Metzger, J. W., Aerobic biodegradability of the calcium channel antagonist verapamil and identification of a microbial dead-end transformation product studied by LC-MS/MS. *Chemosphere* **2008,** *72* (3), 442-450.