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Prof. Dr. Mojgan Masoodi,
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Dear Prof. Dr. Masoodi,

In this cover letter, I want to express my strong interest in the Postdoctoral Position in Lipidomics advertised on the Job-Portal of Inselgruppe. I am a Ph.D. graduate from the Laboratory of Food Biotechnology at ETH Zurich and I am excited by the opportunity to apply my expertise in microbial metabolism and analytical detection techniques to the field of lipid metabolism and metabolic disorders.

My doctoral research, titled "The Effect of Exogenous and Endogenous Vitamin B9 and B12 on Microbial Growth and Metabolism in the Human Gut," has provided me with a strong foundation in metabolic interactions and analytical method development directly applicable to your research focus. I believe I would be an excellent candidate for this position for the following reasons:

1) **Extensive experience with advanced analytical techniques and method development:** During my doctoral research, I developed and optimized analytical methods for vitamin quantification in diverse complex biological samples, including adult human feces, fecal fermentation samples, and various microbial strains (both probiotic and human gut-resident bacteria). This work involved novel analytes, demonstrating my ability to conduct cutting-edge research. I have hands-on experience with HPLC-RI, UHPLC-DAD, and UHPLC-UV/FL for analyzing these complex biological samples. My expertise is evidenced in my publications, which showed that adult human gut microbiota produces vitamin B12 and demonstrated how B12 analogues produced by several gut microbial strains affect carbohydrate metabolism in the human gut. For instance, my work on "Vitamin B12 analogues from gut microbes and diet differentially impact commensal propionate producers of the human gut" (Frontiers in Nutrition, 2024) showcases my expertise in studying how micronutrients influence microbial metabolism, which could be analogous to studying how oxidative stress affects lipid metabolism. This extensive experience in method development, analysis of complex biological samples, and impactful research communication will be invaluable for developing new LC-MS/MS methods to identify and quantify oxidized lipids, as required for this position.

2) **Metabolic analysis and adaptability:** My doctoral research has given me a deep understanding of microbial metabolism, with a focus on B-vitamins, carbohydrate, and protein metabolism. While my direct experience with lipid metabolism in the context of

metabolic disorders is limited, my strong foundation in metabolic pathways and cellular processes provides a solid basis for quickly adapting to new areas of metabolic research. My experience in studying complex metabolic interactions in microbial communities has developed my ability to understand intricate biochemical processes, a skill that I am confident will transfer well to the study of lipid metabolism. I am enthusiastic about expanding my expertise into this critical area of research and am committed to rapidly acquiring the specific knowledge needed to contribute effectively to your team's work on metabolic disorders.

3) **Data analysis and interpretation:** Throughout my research, I have gained proficiency in analyzing complex datasets from various analytical techniques and metagenomic sequencing. This skill set will be crucial for interpreting lipidomics data.
4) **Interdisciplinary research:** My work bridged microbiology, biochemistry, and nutrition, demonstrating my ability to work across disciplines - a key attribute for your multi-disciplinary research project.

The opportunity to apply my skills to the field of lipidomics, especially in the context of metabolic disorders and working with real-world patient data, is truly exciting. I am confident that my background in analytical techniques and metabolic research, coupled with my enthusiasm for learning and collaborative nature, makes me a strong candidate for this position. My experience in handling complex biological samples and developing novel analytical methods will allow me to contribute effectively to your research goals while expanding my expertise in this critical area of study.

Thank you for your consideration. I am excited about the prospect of contributing to your research and am available at your convenience for further discussion.

Sincerely,

Palni Kundra