**CSC-Tübingen PhD Scholarship Program**

2024 application round: prospective PhD positions at the University of Tübingen

---

**Faculty:** Faculty of Medicine

**Institute / Section / Subject:** Internal Med IV/ Institute of Diabetes Research and Metabolic Diseases

**Supervising Professor(s):** Prof. Dr. med. Andreas Birkenfeld, Dr Gencer Sancar

**About the Supervisor(s):** Prof. Dr. med. Andreas Birkenfeld is the director of Clinic for Diabetology, Endocrinology and Nephrology at University Clinic Tübingen and Dr. Gencer Sancar is the Junior Group Leader focusing on the role of adipose tissue in insulin resistance and type-2 diabetes. Our research group is interested in molecular and physiological pathways involved in insulin resistance and type-2 diabetes. We study different plasma membrane transporters as targets for therapeutic interventions in type-2 diabetes, obesity, and associated metabolic comorbidities. We are particularly curious how liver and adipose tissue communicate in the context of metabolic disease processes. Further information on the lab can be found at: https://www.helmholtz-munich.de/en/idm;

https://www.medizin.uni-tuebingen.de/de/das-klinikum/mitarbeiter/1979

**Specification:** Role of selective free fatty acid transport in insulin resistance and development of type-2 diabetes.

**Topic Description:** Exposure to increased saturated free fatty acid (FFA) levels *in vivo* or *in vitro* is associated with endoplasmic reticulum stress, inflammation and oxidative stress which lead to insulin resistance. Unsaturated FFAs have beneficial effects and even prevent the insulin resistance induced by saturated FFAs. In this study, we will investigate the molecular players that enhance unsaturated FFA uptake. Moreover, we aim to differentiate FFA processing in insulin sensitive and insulin resistant human adipocytes using stable isotope labelling, followed by lipidomics analysis. Complementary transcriptomics experiments will be performed to assess gene expression changes upon FFA treatment. These experiments will establish novel pathways that selectively uptake/utilize unsaturated FFAs and identify lipidomic/transcriptomic signature that is responsible for insulin resistance in adipocytes.

**Degree:** PhD

**Required Degrees:** MSc in Biology or related discipline (e.g. Biochemistry, Molecular Biology, Biomedical Engineering)

**Language Requirements:** Proof of proficiency in English on at least C1 level and fluency in speaking.

**Notes:** Looking for highly motivated candidates interested in metabolism and type-2 diabetes. The candidate could expect a highly supportive environment for his/her scientific development.