STIFTUNG FÜR LEBERKRANKHEITEN

Universitätsklinik für Viszerale Chirurgie und Medizin
Hepatologie

Research Progress Report

Name of Grantee: Naomi Lange
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Summary / Brief outline of topic

My PhD research focuses on the non-invasive detection of metabolic liver disease, encompassing three distinct projects. The first project, named FIMADIA, examines the prevalence of metabolic liver disease among a cohort of diabetic patients in the Diabetology outpatient service. Preliminary results were presented at the 2023 EASL Congress [1]. The second, termed the LEMON Project, implements a novel metabolic imaging technique using deuterium-labeled glucose to study individuals with Roux-en-Y gastric bypass, type 1 diabetes, and healthy controls with Prof. Lia Bally's group. Preliminary results were presented at last year's American Diabetes Association Congress [2]. The third involves a metabolomics study in collaboration with the Prof. Mojgan Masoodi's metabolomics group.
In my post-doctiral phase, I will be focusing on translational science. This project is carried out with the group of Prof. Harmeet Malhi at the Mayo Clinic in Rochester, Minnesota. This project focuses on building an animal model of the newly defined condition MetALD, which describes the overlap of alcohol-related and metabolic liver diseases.

Activities

Over the past year, my activities have centered on preparing for my postdoctoral phase. This culminated in a two-month internship at Prof. Malhi's lab at Mayo Clinic with the specific goal to generate preliminary data, draft and submit an SNF postdoc mobility grant.
I have further been aiming to complete the clinical work required for my FMH title in General Internal Medicine, with an 80% position in Klinik Südhang, specializing in addiction medicine. I believe that this clinical field is particularly relevant as it intersects with liver disease through addictive behavioral patterns found both in metabolic conditions such as obesity and alcohol-related liver disease.
Regarding my PhD projects, I'm currently in the phase of drafting manuscripts and thus completing the PhD.

Results

I have drafted a manuscript for the LEMON study, which is under review in the journal Metabolism. The manuscripts for my other two projects are in the process of being written. Furthermore an abstract of the metabolomics project has been submitted as a Late Breaking abstract for the EASL Congress.

Administration: Lilian Smith
Murtenstrasse 35, 3008 Bern, Tel. +41 31 632 32 88
lilian.smith@insel.ch
www.swissliver.ch

Regarding my postdoctoral research, an abstract from my project at the Mayo Clinic was accepted as a poster presentation at the upcoming EASL Congress. I have also written and submitted an SNF Grant for a postdoctoral stipend to facilitate a two-year visit to the Mayo Clinic starting in 2025.

Discussion
The immediate focus is on preparing manuscripts and completing my PhD.
In parallel, I'm continuing my collaboration with the Mayo Clinic. Here we are currently conducting pathway analysis of our preliminary model.

Achievements (Grants / Prizes / Publications)
In the last year, I have secured two significant grants. The first is the UniBe Early Postdoc Mobility Grant (7'000 CHF), which supported my two-month research period at the Mayo Clinic. The second is the Promotionsförderungs Grant (4'200 CHF), awarded for my contributions to the FELS Network (Link), where I am a member of the board. This network focuses on gender equity in life sciences, specifically providing educational activities and courses for women pursuing an academic research career at the University of Bern.
Several manuscripts from previous collaborations have been published in the last period [3,4]. We furthermore published a paper on the more technical aspects of the LEMON project [5].

Outlook / Next steps
Moving forward, I plan on finishing my PhD. Furthermore I will continue to develop the postdoctoral research outlined previously, enhancing our model with an aim to furthering the understanding of the mechanisms underlying metabolic liver disease. This progression will provide a solid foundation for my postdoctoral efforts, facilitating a seamless shift to more translational research throughout my forthcoming stay at the Mayo Clinic.

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[3] Pennisi G, Enea M, Romero-Gomez M, Bugianesi E, Wai-Sun Wong V, Fracanzani AL, de Ledinghen V, George J, Berzigotti A, Viganò M, Sebastiani G, Cannella R, Delamarre A, Di Maria G, Lange NF, Tulone A, Di Marco V, Cammà C, Petta S. Risk of liver-related events in metabolic dysfunction-associated steatohepatitis (MASH) patients with fibrosis: A comparative analysis of various risk stratification criteria. Hepatol Baltim Md 2023. https://doi.org/10.1097/HEP.0000000000000616.
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[5] Poli S, Emara AF, Lange NF, Ballabani E, Buser A, Schiavon M, Herzig D, Man CD, Bally L, Kreis R. Interleaved trinuclear MRS for single-session investigation of carbohydrate and lipid metabolism in human liver at 7T. NMR Biomed 2024;n/a:e5123. https://doi.org/10.1002/nbm.5123.

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lilian.smith@insel.ch
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