IMPACT SUCCESS STORIES

HNN 3.0
HEALTH-NCP-NET

Discovering chronic inflammation biomarkers that define key stages in the Healthy-to-NASH (non-alcoholic steatohepatitis) transition to inform early prevention and treatment strategies (Halt-RONIN)

Early prevention and treatment strategies for liver non-alcoholic steatohepatitis by detecting key stages of transition. Results are expected to assist in the diagnosis, in the development of disease-modifying intervention as well as in prevention guidelines.

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1. Describe your project through three key words / key phrases that identify it.

Disease prevention, health determinants, innate immunity and inflammation

2. In terms of impact, what are the most concrete results your project has or will achieve?

Non-alcoholic fatty liver disease (NAFLD) now termed metabolic-dysfunction associated liver disease (MASLD), is a multifactorial chronic inflammatory disease that is prevalent in 1 of 4 individuals with a significant personal, socioeconomic and healthcare burden, especially at the later, more severe inflammatory stage of disease - non alcoholic steatohepatitis (NASH) or MASH. Despite the severe negative impact of the disease on society, MASLD remains difficult to diagnose and treat. Additionally, the molecular mechanisms underlying the transition from health to fatty liver to MASH remain poorly understood due to the lack of models that faithfully reflect the complexity of human disease. Hence, Halt-RONIN aims to uncover the early triggers of disease initiation and complex mechanistic drivers of disease progression by implementing a systems biology approach with integrative disease modelling resulting in opportunities for the improvement of the existing detection methods, providing a blueprint to inform personalized intervention strategies and drug discovery for MASLD. To achieve this goal, Halt-RONIN will combine experimental data from advanced in vitro and in vivo models with multimodal data from extensive human MASLD cohorts and biobanks and use in silico machine learning approaches, to discover new biomarkers and molecular targets specific to each stage of the health-to-disease transition. By validating preclinical experimental findings with real-world data, Halt-RONIN will allow for the discovery of novel biomarkers and molecular targets that are specific to the individual patient's pathology. Consequently, healthcare professionals will gain the tools and knowledge required to diagnose and establish guidelines for the prevention and treatment of inflammation-driven health to disease. As such, in the long-term Halt-RONIN will decrease the number of MASLD patients who progress into MASH and provide disease-modifying strategies to improve patient outcomes.

3. Please describe your project overall impact at the European level

Halt-RONIN contributes to an improved phenotyping of the MASLD-to-MASH transition and deepened mechanistic insights - with potential for new diagnostic strategies and targets for drug development. Additionally, Halt-RONIN is testing the effects of various 'real world' diets (e.g., DUAL mouse model) and genetic predispositions as risk factors of MASLD-to-MASH transition. With this comprehensive methodology, Halt-RONIN generates new knowledge on the triggers of the transition to disease. The discovery and validation of novel inflammation associated biomarkers involved in the MASLD-to-MASH transition will complement the information provided by existing imaging techniques and available methods, thus enhancing the more accurate diagnosis of MASLD and its stage and allowing more precise and personalised approaches for treatment to the patients.

4. As an applicant, what advice would you have wanted in the Horizon project design process? What support did you receive from National Contact point (NCP) and your organisation, and what improvement of support would you benefit from?

Yes, we did contact our organisation who provided the administrative and financial support of our institution. Moreover, they put us in contact with key organisations in order to try to improve the content and visibility of our application.

I think it is important to have your application checked by experts on Horizon projects in order to get feedback.

HNN3.0 (The Cluster 1 Health consortium of NCPs for Horizon Europe) has received funding from the European Union's Horizon EUROPE research and innovation programme under Grant Agreement number 101057279

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