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TNO Starts Research Initiative With Industrial Partners To Combat Obesity-Associated Liver Disease

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ProLiver: unraveling the mechanisms underlying the development of NAFLD

Non-alcoholic fatty liver disease (NAFLD) is a disease that is an increasingly common in Western countries (22% in the Netherlands, 30% worldwide). The term NAFLD describes a spectrum of liver disease which ranges from the relatively benign fatty liver to the more severe stage of NASH, which is marked by liver inflammation and can lead to liver cirrhosis and liver cancer. TNO has launched ProLiver, an international public private research program on NAFLD, with a focus on interorgan cross-talk during disease development. The program is specifically aimed at unravelling the mechanisms underlying the development of NAFLD, a complication in chronic diseases such as obesity, type 2 diabetes and cardiovascular disease.

As the name indicates, NAFLD is not the result of excessive alcohol consumption. It is often the result of an unhealthy lifestyle with low physical activity and a high-calorie diet. It is now the most common chronic liver disease in the Western World, but the mode of action and the underlying mechanisms are still largely unclear.

Interaction of multiple disciplines

TNO's ProLiver initiative stimulates the interaction of multiple disciplines to join forces and achieve a common goal: more mechanistic insight into the pathogenesis of NAFLD to accelerate R&D trajectories with meaningful and validated research tools, biomarkers and test models.

Robert Ostendorf, Sr Business Development Manager at TNO: "Because the disease processes that drive development of NAFLD are largely unknown, the number of accepted interventions for prevention and cure is very limited at the moment. It is thought that a smart combination of lifestyle and pharmacology can provide a solution for both prevention and cure. It is therefore of utmost importance that pharma and food companies combine resources and knowledge into joint development of further knowledge on mechanisms and development of interventions."

Reverse disease progression

The need for a better mechanistic understanding comes from recent studies showing that liver health is closely linked to homeostasis of other organs, in particular the gut (and its microbiota) and adipose tissue. ProLiver will develop and validate new tools to investigate the metabolic organ-organ cross-talk and to contribute to the development of innovative concepts that use this cross-talk to treat the disease. For instance, ProLiver will help the design of better and more focused interventions to maintain health, halt or even reverse disease progression.

Public Private Partnership

In this 4-year Public Private Partnership, the partners bring in both in-cash and in-kind contributions. The partners in this consortium are pharma companies Pfizer, Grünenthal GmbH and Biologische Heilmittel Heel GmbH, food companies Aker BioMarine and Pronova (a BASF company) and QuickZyme Biosciences, a Dutch SME on matrix protein related assays. In addition, various academic partners and patient associations are actively involved. New scientific insights about disease processes and the role of gut and adipose tissue in the development of NAFLD will be disseminated at conferences and in peer-reviewed scientific journals, as well as dissemination to relevant patient groups and healthcare professionals by patient associations.

Co-financing is provided by a TKI allowance from the TKI-LSH Topsector as well as from SMO Agrifood Topsector. The total budget of the multidisciplinary project is over 2 million Euros.