



HoloRuminant

Understanding microbiomes of the ruminant holobiont

- **Project coordinator:** Diego Morgavi (INRAE)
- **Partners from 17 countries:** Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Israel, Italy, Lithuania, New Zealand, Norway, Spain, The Netherlands, United Kingdom and the United States
- **Budget:** € 9.724.765
- **Duration:** 1 October 2021 - 30 September 2026

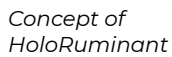
Concept

The ambition of the European Commission is to make Europe the world's first climate-neutral continent by 2050. The strategy is to protect, conserve, and enhance the environment and protect citizens' health and well-being from environment-related risks and impacts.

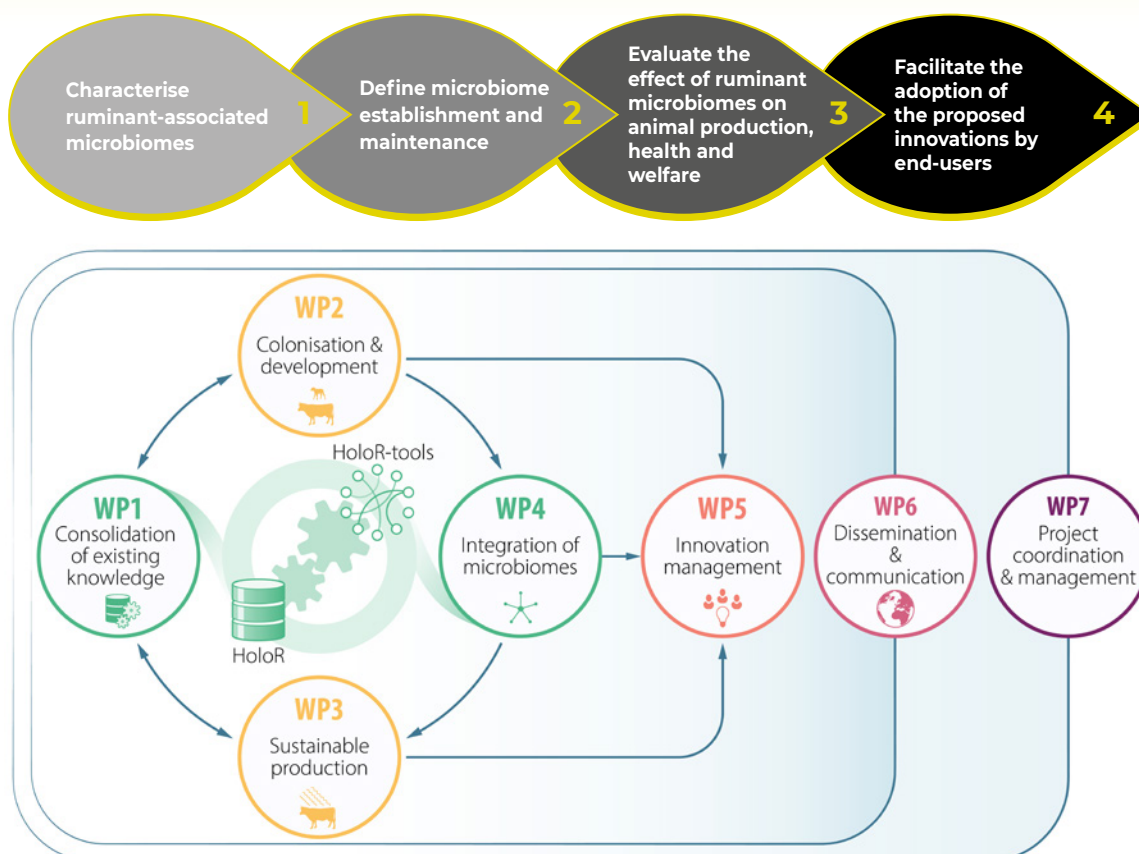
The HoloRuminant project will provide new knowledge on the microbiomes of the ruminant holobiont to address the microbiome-knowledge challenge for sustainability and resilience whilst fostering innovation.

The generated knowledge will contribute valuable information to the European Green Deal and the Farm to Fork strategy for improving the sustainability of food systems.

- ***The European project HoloRuminant is funded under the EU Horizon 2020 programme. It aims to clarify the role of ruminant microbiomes and their interaction with the host animal in early life and throughout fundamental life events known to affect ruminant production systems' health, welfare, and environmental efficiency.***



With a multi-omics holistic approach, the HoloRuminant project will determine the connectivity between microbiomes from different body sites, their heritability and their influence on emissions, carbon footprint and phenotypic resilience to changing environmental conditions. To reach this overall goal, the project will achieve the following objectives:



Expected results

The project will generate new knowledge and tools shared in an open-access database (HoloR) and repository (HoloR-tools). The expected results of the project are:

- To develop standard procedures for data sampling and handling
- To develop an industry baseline for the ideal microbiome
- To construct meta-omic datasets that depict the rumen microbiome
- To identify metabolic pathways within microbiome interactions that can be used as biomarkers for the development of lower-cost breeding tools
- To identify the key microbes that impact or help define phenotypes for improved health and welfare and reduced environmental impact
- To develop socially and economically acceptable approaches to control the ruminant microbiome
- To develop stakeholder dialogue and innovation activities to strengthen the ownership of results

Feed, Nutrition and Breeding sector

- Early identification of host animal's health and greenhouse gas (GHG) phenotypes
- Training opportunities and freely available resources and toolbox
- Microbiome-driven breeding programme
- New ideas for management to utilise long-term effects on microbiomes
- Moving towards creation of estimated breeding values for methane production
- Possibilities for selection for increased mastitis resistance
- Identifying appropriate feeding strategies and effectiveness of pre and probiotics for health
- Understanding of mechanisms involved in host animal effects on microbiomes and vice versa

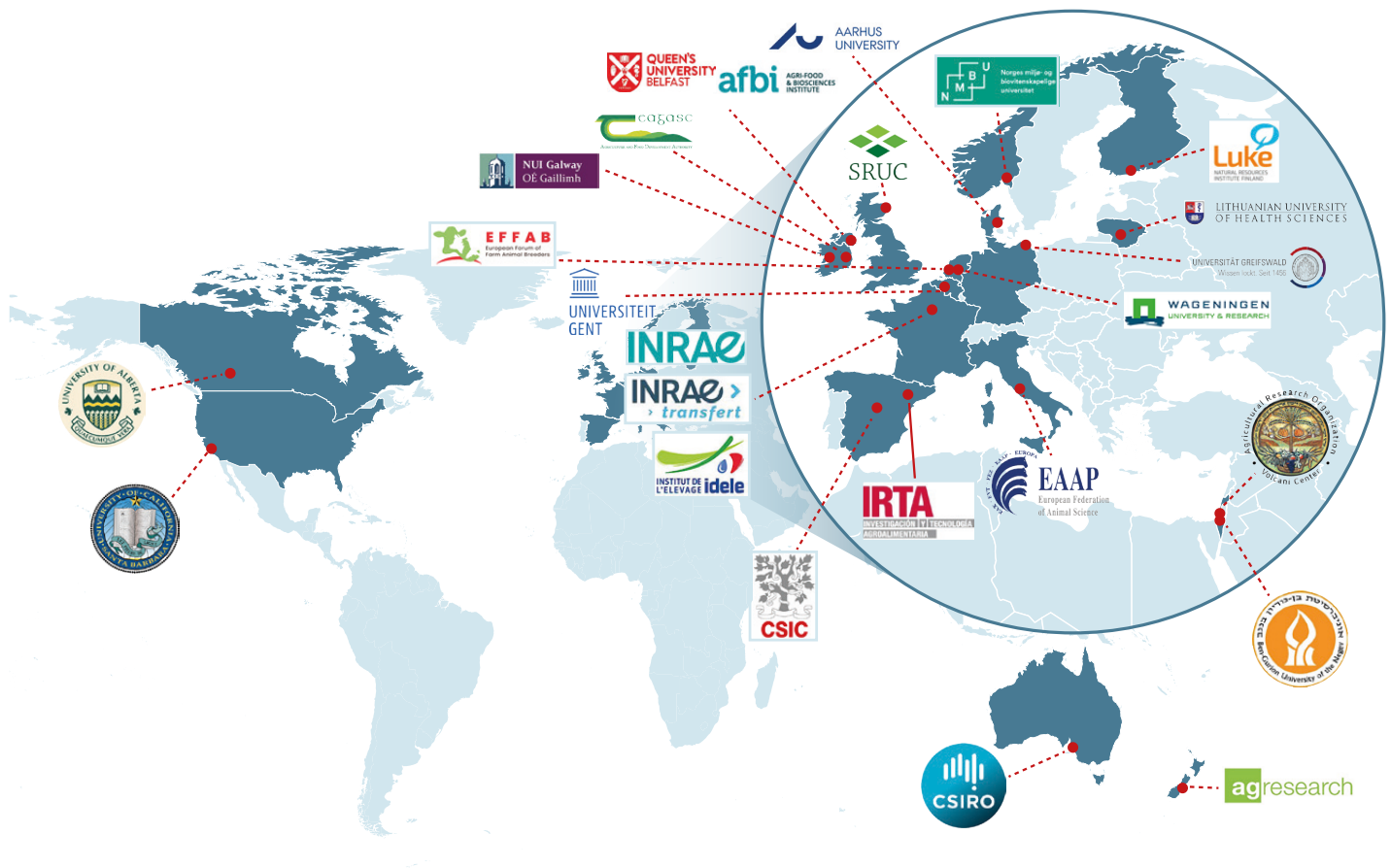
Farm managers and farmers

- Improved animal health, welfare and production sustainability using microbiome "solutions"
- Critical determination of microbiome role in various diseases, animal nutrition and a dietary transition across calving
- Higher resilience of livestock systems to seasonal instabilities and dietary changes
- Nutritional interventions across the lifetime of animals
- Development of diagnostic tools to evaluate animal susceptibility for health threats
- Recommendations for farmers on how to handle young animals
- Improved guidelines for transport and management
- Development of feed additives and alternative feeding strategies

Policymakers and the general public

- Reduced GHG emissions and carbon footprint
- Recommendations for reduced environmental impact
- Recommendations of improvement of animal health guidelines

Partners



Contact

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