



MASTER Microbiome Applications for Sustainable food systems through Technologies and EnterPrise

Micro-organisms are found in every ecological niche explored and their existence facilitates ours! We can discover the make-up and function of many microbial communities (microbiomes) using DNA sequencing technologies. Scientists within the MASTER project are using high throughput sequencing technologies to map microbiomes across a range of food and non-food environments. MASTER takes a global approach to the development of microbiome products, foods/feeds, services or processes with high commercial potential, to improve the quantity, quality and safety of food. Knowledge generated within MASTER will improve plant, soil, animal and human health and reduce the demand for traditional insecticides, fertilizers and antibiotics.



MASTERing Microbiomes

MASTER is an EU-funded Horizon 2020 Innovation Action project (grant number 818368) that got underway in 2019, bringing together 30 [partners](#) from 14 European countries. In this third year of the project, we face a much different world than when we started our journey on MASTER. However, despite the challenges and impacts of COVID-19, we have collected ~1800 samples from >110 food production industries across Europe. In addition, research on MASTER spans microbiomes in soil and crops, microbiomes in aquaculture and the marine environment, rumen microbiomes and human microbiomes. During the project, we will harness this microbiome knowledge to enhance the health, sustainability and resilience of fish, plants, soil, animals and humans, improve professional skills and competencies, and support the creation of jobs in the food sector and bio-economy.

The specific objectives of the MASTER project are to:

- Develop microbiome-based solutions to improve fodder crop production and to increase the use of sustainable feeds in the fishing industry.
- Use microbiome-based diagnostics in real time in these industries for pathogen detection and to improve production.
- Alter the rumen microbiome resulting in increased feed efficiency and reduced methane emissions.
- Develop technologies to monitor rumen microbiome markers and to predict ruminant characteristics.
- Optimize fermented food microbes and processes to add to the value and health-promoting properties of selected substrates, in particular those from waste streams.
- Support the design of novel functional foods by studying the relationship between foods and the human gut microbiome.
- Assess means of testing the impact of food ingredients on the gut microbiome, with a view to improving human health.
- Map the microbiomes of food-producing facilities and to validate technologies and software tools for microbiome analysis and pathogen detection in foods.
- Develop databases, tools and resources for the food-chain industry to be use beyond the end of the project.
- Promote understanding and interest in microbiome-related applications for the food industry, through communication towards and engagement of end-users.
- Bring to market new and cost-effective applications to assist at different stages and processes throughout the food chain.

Please follow our research on MASTER by browsing through our [PUBLICATIONS](#) on the www.master-h2020.eu website and on [Twitter @MASTER_IA_H2020](#).