METAQUANT

Quantitative metagenomics

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MetaQuant is a quantitative metagenomic platform which **aims at analysing and modeling complex microbiome diversity and composition.**

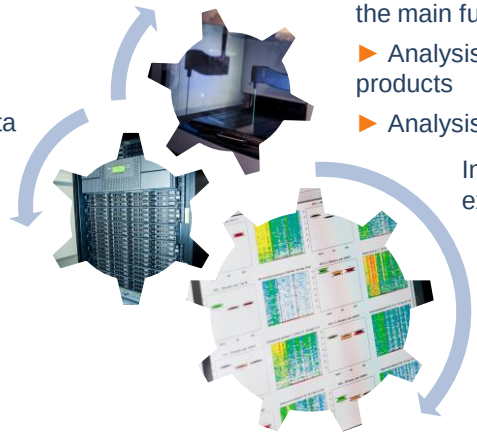
The high- throughput DNA sequencing of bacteria living in the digestive tract, **enables the stratification of individuals and the characterization of their microbiota.**

3 fields of expertise

► High-throughput DNA sequencing

► IT management and development of new tools for data processing

► Bioanalytic expertise for data interpretation



4 lines of research

► Analysis of the human microbiota in health and disease

► Exploration of the microbial population and the main functions of the microbiota

► Analysis of complex ecosystems of food products

► Analysis of animal microbiota

In close cooperation with the leading experts of the field.

Concrete applications for human health and well-being

In the medical field

► Identification of new diagnostic/prognostic biomarkers of disease risk

► Development of personalized treatments based on stratification of patients and differentiation of good and poor responders

► Patients microbiome modulation

► Rationalization of new interventions to modulate the intestinal microbiota

In the nutritional field

► Identification of biomarkers targeting links to diet and providing evidence for health effects of certain foods

► Extensive characterization of natural starter cultures

► Anticipate the impact of process and food technology on the microbiota of fermented products

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The strengths of the platform

Capacities and reliability

Cutting edge technology

► 4 Solid 5500 Wildfire-type NGS, Proton NGS, Covaris S2 and E220, Fragment analyser, Biomek 3000, FX 3000…

► A high processing capacity in constant evolution: From 2 500 samples sequenced in 2012 to 10 000 in 2017

► Automated quality control

Innovative IT projects

► Based on innovative and powerful tools enabling high processing capacities

► Optimized to achieve the highest speed of delivery

► Built to allow the highest level of security

Relies on a continuous technological intelligence with leaders in the field, both for anticipation of new advances in instrumentation equipment and IT developments.

Performance and efficiency

The work of the team gathering microbiologists, IT specialists, biostatisticians …led to:

► **5 patent applications**

► **8 significant publications, 5 within a year**

Qin N *et al*. *Nature* 2014 – Mouth bacteria invade the gut in liver cirrhosis

Nielsen *et al*. *Nature Biotech.* 2014 - A simplified and more powerful method to study the microbiome

Junhua Li *et al*. *Nature Biotech*. 2014 – 9.9M microbial genes catalogue

Le Chatelier E *et al*. *Nature* 2013 – Richness of human gut microbiome correlates with metabolic markers

Cotillard A *et al. Nature* 2013 – Dietary intervention impact on gut microbial gene richness

Qin J *et al. Nature* 2012 – Microbiome and diabetes

Arumugam M *et al. Nature* 2011 – Discovery of enterotypes

Qin J et al. *Nature 2010* – Microbial genes catalogue, our second genome

Collaborative experience

► **3 European projects**

2008-2012 : MetaHIT (UE)
2010-2014 : EvoTAR (UE)
2012-2017 : MetaCardis (UE)

► **3 ANR projects including** MicroObes

► **More than 10 industrial projects**

enterome bioscience · Pfizer · DANONE RESEARCH CENTRE DANIEL CARASSO

PARTNERSHIP

The METAQUANT platform addresses the scientific and medical communities needs, for both public and industrial partners

- Integrated into a global research project with quantitative metagenomics
- High-throughput DNA sequencing
- Analysis of multidimensional data

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