



ACARYON

## PROBIOTIC R&D SERVICES

**Microbiome Services**  
Innovation for strong product  
differentiation & positioning



# Content

You want to screen, analyse or optimize your strains.  
Our microbiome expertise makes the difference:

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We are committed to guarantee the integrity, reliability and traceability of all data.  
Our Quality Management System is based on ISO 9001:2015.

# Taxonomy and Strain Characterization

Our microbiome expertise makes the difference

You want to characterize new strains or to control strains you are using in your products. We can help you with the following analysis.

## 01 TAXONOMY ANALYSIS

Basic taxonomy includes biochemical, matrix assisted laser desorption ionization analysis (MALDI-TOF) and eventually genome sequencing.

## 02 CHARACTERIZATION

For each of your strain, we can determine its antibiotics resistance profile, the presence of virulence factors, the presence of plasmids etc.

We can also confirm the uniqueness of your strain using RAPD-profiling. The RAPD Profile may be further use as QC in your production process.

and more ....



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# Basic Probiotic Properties

Our microbiome expertise makes the difference

You want to assess the basic probiotic properties of your strains. We can help you determining the resistance of your strains to gastrointestinal conditions as well as to determine their adhesion properties on extracellular matrix, gut cells or vaginal cells.

## 01 RESISTANCE TO GASTRIC AND GUT JUICES

We analyze the resistance of your strains to gastrointestinal conditions based on established and accepted methods using simulated gastric and gut conditions (gastric juice, bile salt, ileum juice and gut juices).

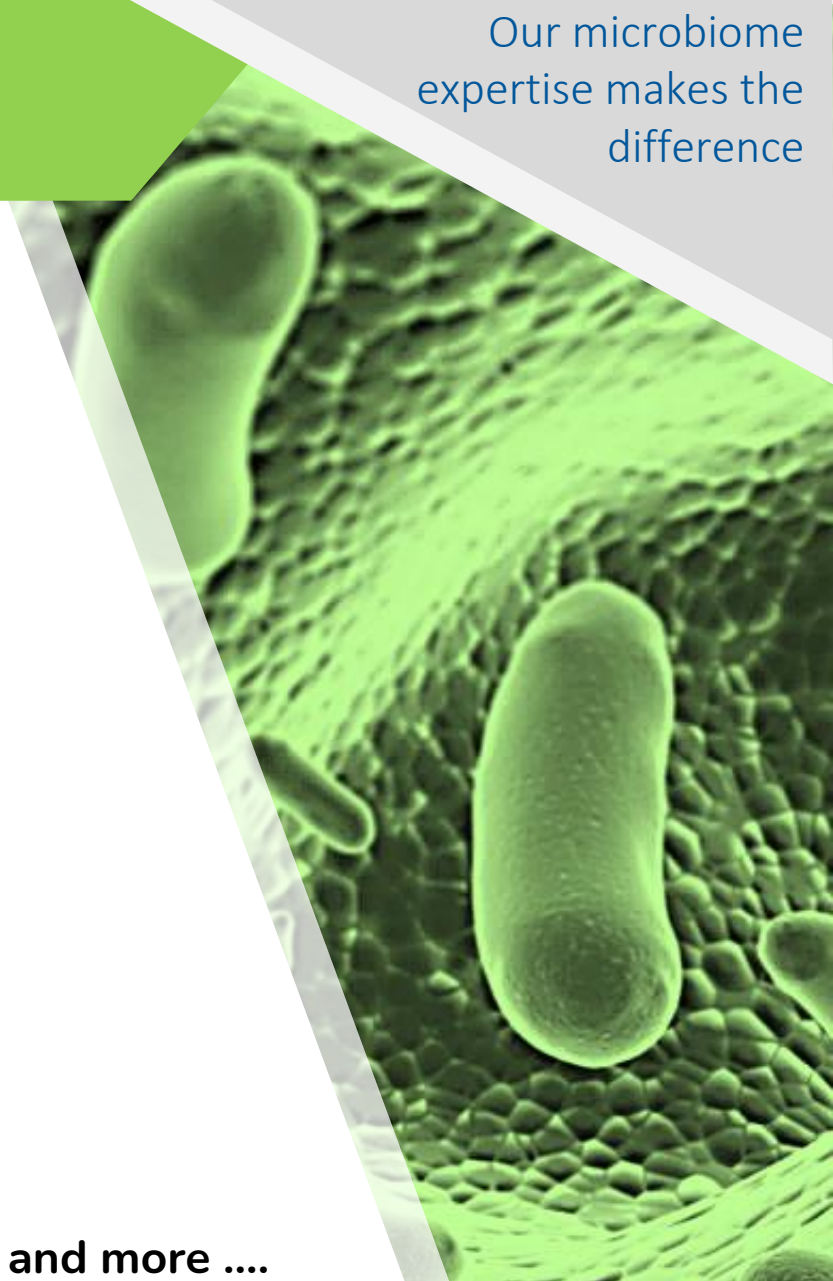
## 02 BINDING TO INTESTINAL OR VAGINAL CELLS

We analyze the binding of your strains (cultivated in our lab) to gut and vaginal epithelial cells. Based on your needs several human cell lines including Caco2, HT29, HT29-MTX or VK2E6/E7 cells are available. The binding properties may depend on the growth conditions. We envisage all aspects.

and more ....



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# Growth and Metabolite Production

Our microbiome expertise makes the difference

You want to assess the growth properties of your strain(s), develop an optimal growth medium and/or identify which metabolites your strain(s) produces under different conditions? We can rely on our expertise:

## 01 GROWTH PROPERTIES

We analyse the growth properties of your strain(s) in different media and under different conditions. Parameters may be optical density, cell numbers, viable rate and morphology.

We can also optimize the growth medium for production purposes.

## 02 METABOLITES

We analyse the production of metabolites like Short Chain Fatty Acid, Lactate etc. along the growth of your strain(s) in different media. The binding properties may depend on the growth conditions. We envisage all aspects.

The analyses are based on established ELISA-assay and LC-MS-Analysis.

and more ....



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# Antimicrobial Properties

We are certified for pathogens of risk group 2 and 3\*\*

Our microbiome expertise makes the difference

You want to assess the anti-microbial properties of your strain(s)? Rely on our expertise to screen, analyse and optimize the anti-microbial properties of your strain(s):

## 01 AGAR DIFFUSION TEST

To specifically identify anti-microbial properties related to released compounds (bacteriocins), the anti-microbial properties of culture supernatants is tested by means of hole or disk diffusion assays.

Your strain(s) may be cultivated in different conditions and media.

## 02 OVERLAY ASSAY

Beside the production of bacteriocins, anti-microbial effects may be related to antagonist effects (i.e. modification of the microenvironment). The general anti-microbial effect of probiotics can best be tested by means of the overlaid agar method.

and more ....



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# Anti-Adhesion Properties

We are certified for pathogens of risk group 2 and 3\*\*

Our microbiome expertise makes the difference

Probiotics may directly or indirectly avoid the binding of pathogens (bacteria or viruses) and/or toxins produced by pathogens to intestinal cells. Rely on our expertise to screen, analyse and optimize the anti-adhesion properties of your strain(s):

## 01 EXCLUSION ASSAY

Based on established assay, we analyse the anti-adhesion properties of your strains toward toxins, pathogen microorganisms and/or viruses (e.g. norovirus, coronavirus). Gastric, gut and vaginal cells lines are available. Among other things, the growth conditions may impact the anti-adhesion properties of the strain(s).

## 02 AGGREGATION ASSAY

Based on established assay, we analyse the ability of your strain(s) to aggregate with pathogen microorganisms. Among other things, the growth conditions may impact the aggregation properties of the strain(s). Rely on our expertise to consider all aspects.

and more ....



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# Gut Barrier Promoting Properties

Our microbiome expertise makes the difference

Destabilization of the gut barrier is involved in many disorders like diabetes, obesity, IBD, cancer, infection. You want to test the beneficial effect of your strain(s) on the gut barrier. Rely on our expertise and established methods to screen, analyse and optimize the properties of your strain(s):

## 01 PERMEABILITY OF INTESTINAL WALL

A leaking gut barrier facilitates translocation of harmful substances and the development of inflammation.

We analyse the effect of your strain(s) on the permeability of the gut in physiological conditions as well as in condition of inflammation or of bacterial or viral infection.

## 02 PROLIFERATION OF INTESTINAL CELLS

The intestinal epithelium is renewed every 3–5 days.

We analyse the effect of your strain(s) on the proliferation and differentiation of the gut epithelial cells.

and more ....



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# Immunomodulatory Properties

Our microbiome expertise makes the difference

The immune system has to be kept in balance to ensure defence against harmful external agents and to avoid aberrant immune responses. You want to test the immune modulatory properties of your strain(s). Rely on our expertise to screen, analyse and optimize the immune modulatory properties of your strain(s):

## 01 CYTOKINE PROFILE

Probiotics can modulate the immune system by promoting the production of local immune factors (cytokines).

We analyse the effect of your strain(s) on the cytokine production profile of the gut epithelium in physiological conditions as well as in condition of inflammation or of bacterial or viral infection.

## 02 MACROPHAGE POLARIZATION

Macrophages populations can be directed to distinct phenotypes. In the steady state, colonic macrophages mostly exhibit an anti-inflammatory M2-like phenotype.

We analyse the effect of your strain on the polarization of immature macrophages and their phagocytic capacity.

and more ....

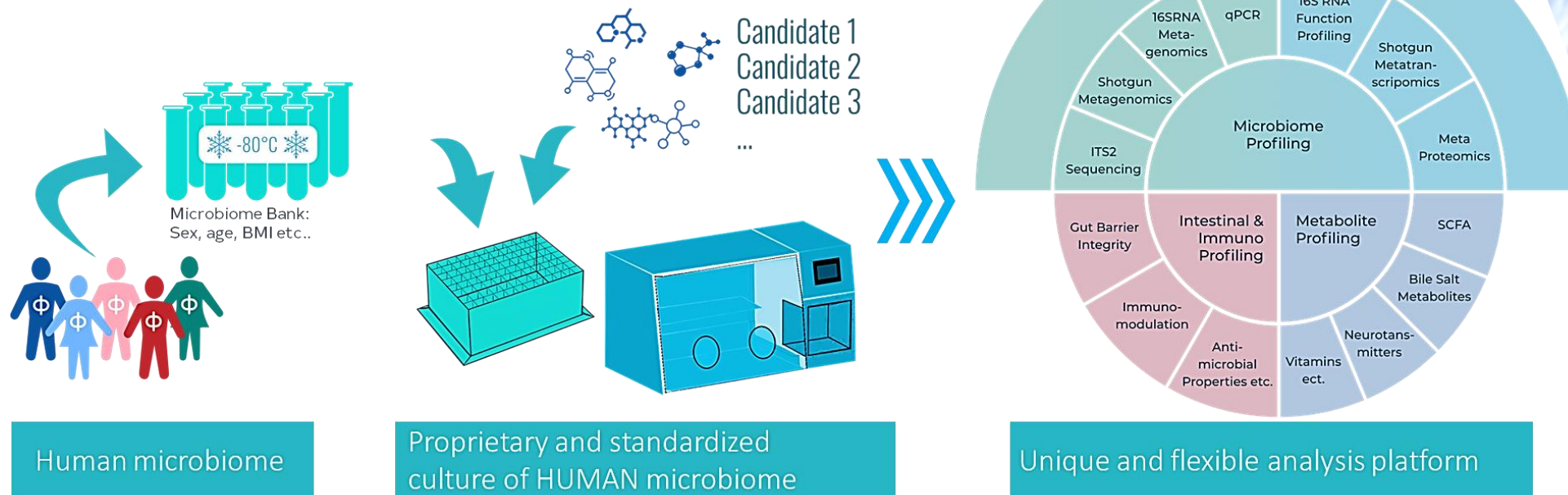


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# HUMIPLATE

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You want to know the effect of your strains on the composition and/or the functions of the human microbiome. You can rely on our HUMIPLATE platform



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**No need for animal studies without significance.  
Test it directly on the human microbiome!**

- Analysis on human microbiome
- High throughput
- Broadest analysis platform on the market
- Customized analysis
- Cultivation + metagenomic + bioinformatic within 7 weeks
- Affordable prices



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# Probiotic R&D Services

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expertise makes the  
difference

We would enjoy discussing with you  
about your needs

Please contact us for more information

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