



# Human microbiota

Long-ignored ecosystems that today are revolutionizing medicine, science and nutrition

Genetic and environmental factors

They shape our microbiota



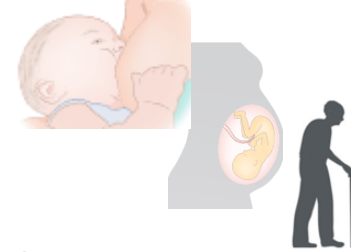
Food



Treatments



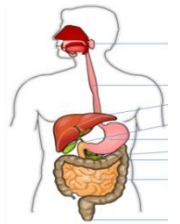
Environment



Life events and other factors ...



Genetics



Digestive physiology (pH, membrane integrity, mucus layer, ... etc)



## Dysbiosis

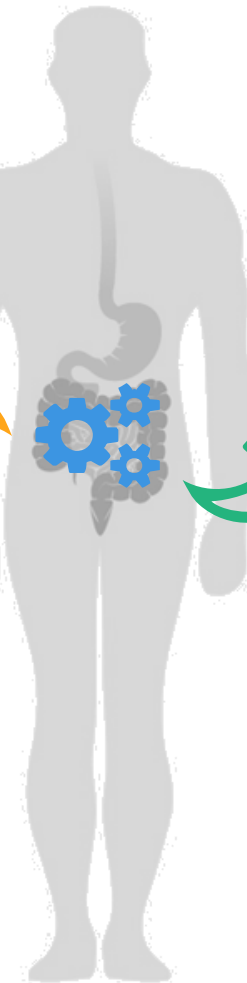
Unbalanced relationship between man and his microbiota

## Symbiosis

Balanced relationship between man and his microbiota

Increased risk of occurrence of symptoms and/or pathologies

Good health with a resistant and resilient ecosystem against disruptive factors



# The microbiota: a veritable scientific revolution

## A key player in our health

- ✓ A **metabolic role** (CCFAs, vitamins, ...)
- ✓ An **immune role** (maturation, education)
- ✓ A **protective role** (pathogen competition)
- ✓ A **maintenance role** (maturation and maintenance of the digestive mucosa)



## Infinite potential

- ✓ **Diagnostic** and **prognostic** tool
- ✓ Indicator of **progression of the pathology**
- ✓ Prediction of **response to certain treatments**
- ✓ A modular ecosystem (**source of adjuvant therapies**)

# A service at the cutting edge of technology

- ✓ A **standardized and optimized metagenomics** protocol with new generation sequencing
- ✓ **Analysis software specifically developed** for the study of data
- ✓ A **proprietary database** (asymptomatic & symptomatic subjects)
- ✓ A **personalized and proprietary microbiota footprint**



# The iBiote experts

A team dedicated to microbiotes

- ✓ A **multidisciplinary group** of doctors, pharmacists, dieticians, researchers, bioinformaticians and biostatisticians.
- ✓ An **R&D department** that participates in numerous projects and contributes to research
- ✓ A report suitable for **research and clinical use**
- ✓ A team that participates in many **national and international congresses**



# A service accessible to all



1



**Order** your microbiota analysis online with access to a personalized account and an interactive platform.



2



**Receive your kit** directly at home with the possibility to return it by mail in its original box.



3



**A detailed report** is sent to you and the referring doctor of your choice.



# iBiote : A sampling kit



An information sheet with instructions and recommendations to be followed to ensure that the analysis runs smoothly.



## Stool Collection: Protocol

It is **IMPORTANT** to follow the recommendations in this document to ensure optimal sample quality and results.

### Recommendations and contraindications

- Avoid sampling if current or recent antibiotic treatment (within the last two months)
- Avoid contact of stool with water, urine, blood and surfaces other than the supplied toilet bowl liner
- Do not take the sample on a menstrual day

### Before taking the sample

- Wash hands with soap
- Urinate if necessary, before putting toilet bowl liner
- Indicate your name and time of collection on the label on the collection tube

### Sampling conditions

- Put on the gloves provided and rub your hands with the alcohol wipe provided to take the sample.
- Install the toilet bowl liner on your toilet; place absorbent paper in the centre of the bowl liner so that it can absorb any fluids from your stool. Then fold down the toilet seat.
- Fill the sample tube with your stool immediately after the stool is passed. To do this, use the spoon (attached to the cap) present in the tube provided. Take a **level spoon from your stool** and place it in the tube (spoon filled to the brim).  
**NB : Failure to comply with this instruction may cancel the analysis.**
- The sample tube is sterile. To ensure the integrity of the sample, open the tube only during collection and close it again immediately after collection (and do not reopen it).  
NB: Do not use other containers even if you have cleaned them carefully.
- The supplied tube contains a stabilizing solution. This means that the sample does not need to be taken in the laboratory. Once the sample is placed in the tube, it is stable at room temperature for up to 7 days. However, it is important to bring your sample back to the laboratory quickly so that it can be analysed as soon as possible.  
Avoid direct contact with the solution (in case of contact rinse with plenty of water).

### After sampling

- Remove the toilet bowl liner, close it and throw it in the trash.
- Washing your hands
- Once the sample has been taken, the sample must be stored at room temperature.



## Toilet bowl liner



## Alcoholic wipe



Sampling tube



Gloves

A kit made up of all the elements necessary to carry out its sampling from home and limit the risks of contamination.

# Ibiote : Une analyse personnalisée



**Patient information sheet**  
*Microbiota analysis*

The purpose of this questionnaire is to evaluate your lifestyle and food consumption habits as part of the study of the intestinal microbiota. It will allow us to make a personalized interpretation of your results.

Read the questions and answer options carefully, then answer by checking only one box for each item, unless otherwise stated.

Questionnaire completed in the presence of a dietician:  Yes  No

**Patient identity**

Name		Place of birth	
First name		City	
Date of Birth		Postal Code	
Gender		Country	
Weight (kg)		Place of residence	
Size (cm)		City	
E-mail		Postal code	
		Country	

**Sample characterization**

Date of sampling:

Analysis code:

Q1: What was the consistency of your stool on the day of collection? (see table below)

Stool characterisation according to the Bristol scale (7 types)

<input type="checkbox"/> Type 1	Separate hard lumps, like nuts (hard to pass).		<input type="checkbox"/> Type 5	Soft blobs with clear-cut edges (passed easily).	
<input type="checkbox"/> Type 2	Sausage-shaped but lumpy.		<input type="checkbox"/> Type 6	Fluffy pieces with ragged edges, a mushy stool.	
<input type="checkbox"/> Type 3	Like a sausage, but with cracks on the surface.		<input type="checkbox"/> Type 7	Watery, no solid pieces (entirely liquid)	
<input type="checkbox"/> Type 4	Like a sausage or snake, smooth and soft.				

Q2: What is the usual appearance of your stool? Type .....

Q3: Is it painful to expel your stool?  Yes  No



A questionnaire that tells us about your consumption habits:

- Feeding regime
- Treatments

Probiotics are living microorganisms that, when administered in adequate amounts, have a beneficial effect on health.

PROBIOTICS					
Consumption during the last 2 months					
N°	Type of product (Trade name)	Start date	End date	Quantity/day	Remarks
1	Name: .....				
2	Name: .....				
3	Name: .....				
4	Name: .....				
5	Name: .....				
6	Name: .....				

Prebiotics are non-digestible substances that selectively stimulate the growth of certain microorganisms in the intestine with a beneficial effect on health.

PROBIOTICS					
Consumption during the last 2 months					
N°	Type of product (Trade name)	Start date	End date	Quantity/day	Remarks
1	Name: .....				
2	Name: .....				
3	Name: .....				
4	Name: .....				
5	Name: .....				
6	Name: .....				



# The iBiote site



A range of specialized  
routine analysis

Discover our  
range of analysis



**The microbiota :  
A living ecosystem at  
the heart of your  
health**

The iBiote range is a series of analyses that consists in characterizing the different microbiota that colonize the human body and act on our health.

GUT  
iBiote



BUCCAL  
iBiote



VAGINAL  
iBiote



LUNG  
iBiote



BLOOD  
iBiote



# The iBiote site



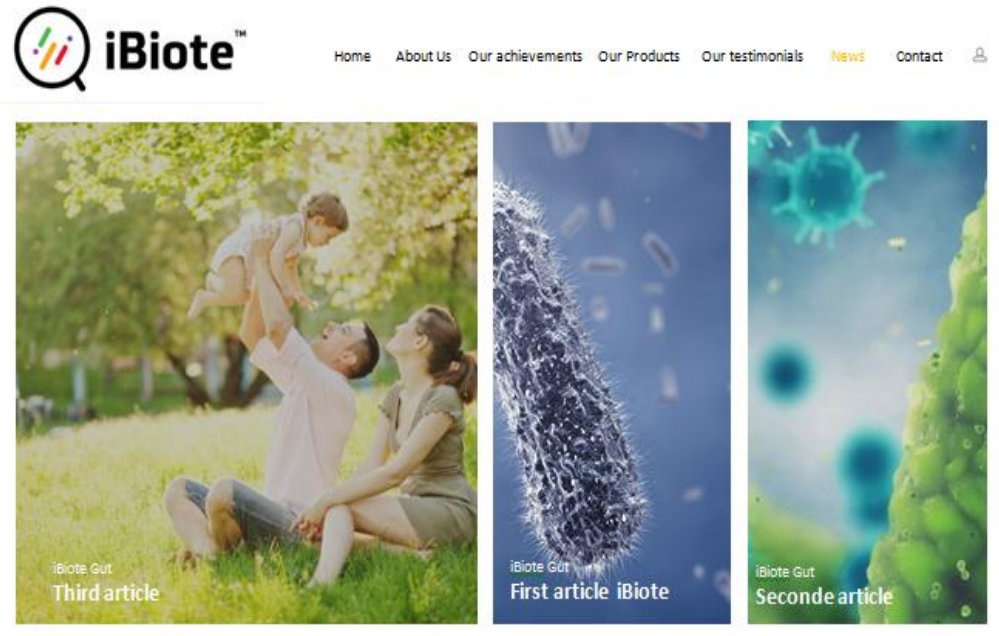
An informative platform



What are microbiotes?

## What is the microbiota?

The microbiota represents all the living microorganisms that evolve in a specific environment. Among all these species (bacteria, viruses, fungi and yeasts), bacteria make up a large population that live permanently with humans. Thus, from the moment we are born we live in symbiosis with billions of bacteria that colonize our organism until we die. There are several microbiotes associated with the human body among which we can mention the microbiota of the skin, the mouth, the bronchial tubes, the vagina, but also the intestinal microbiota which is the richest but also the most diversified (especially at the level of the colon).













# The iBiote site

A multidisciplinary team



Our team



Medical			Bioinformatic and Biostatistic	
 <p><b>Philippe Halfon</b> MD, PharmD, PhD, Docteur of Medicine, Doctor of Pharmacy, Doctor of Science, Medical Biologist.</p>	 <p><b>Lucie Molet</b> PharmD, PhD, Doctor of Pharmacy, Doctor of Science, Medical Biologist.</p>	 <p><b>Marion Bonnet</b> PharmD, PhD, Doctor of Pharmacy, Doctor of Science, Pharmaceutical innovation and research</p>	 <p><b>Benoit Goutorbe</b> Bioinformatic Engineer, PhD student</p>	 <p><b>Guillaume Penaranda</b> Biostatisticien</p>
Scientific		Technical team		Administration/Sales
 <p><b>Anne Plauzolles</b> PhD, Project Manager, Doctor of Science</p>	 <p><b>Eya Toumi</b> Microbiology Engineer, PhD student</p>	 <p><b>Sarah Amrani</b> Clinical Research Coordinator</p>	 <p><b>Héléna Vertedor-Audoys</b> Technician</p>	 <p><b>Aurélie Rocroi</b> contact@ibiote.com Medical Secretary</p>

# The iBiote site



A scientific approach



## Our advantages



### Science

Since 2017, the R&D department of the iBiote group has been actively involved in research on human microbiota. The setting up of this microbiota analysis service has been the subject of a great deal of work to standardize the analytical protocols for each key step that the sample must go through. The bacterial DNA contained in the samples is isolated, amplified and then obtained using a new generation sequencing device (Illumina® MiSeq). Bacteria are identified by their universal 16S gene, using state-of-the-art bioinformatics methods



### Simplicity

Our website is interactive with the possibility to collect information about microbiota and our range of analysis. Depending on the microbiota analyzed, the sample can be ordered directly online and carried out at your home. Thanks to a stabilization solution this stabilized sample can be sent back to our laboratories by mail. Once your sample has been received, you can follow the progress of your analysis on our interactive platform and retrieve your detailed and personalised report.



### Database

The iBiote project is based on a proprietary database that centralizes knowledge on microbiota, making it possible to compare each new patient to a population of asymptomatic individuals or individuals with a particular pathology and thus highlight potential imbalances (dysbioses and/or characteristic signatures). This database is continuously enriched through ongoing recruitment and our participation in numerous research projects.

## Our assets



# The iBiote site

An active department in the field of medical research



Our research projects

The screenshot displays the iBiote website's 'Our research projects' page. The header includes the iBiote logo and navigation links: Home, About Us, Our achievements, Our Products, Our testimonials, News, and Contact. The main content area features a purple background with the following text:

## Our research projects

The iBiote team is actively involved in research on human microbiotes. Thanks to our collaboration with numerous clinicians and hospital structures, we are now involved in numerous research projects studying microbiotes in relation to human health. Faced with this booming theme which is revolutionizing the medical environment today, we have set up the MEDIBIOTE studies. The studies in which we participate are carried out with the collaboration of clinicians with various medical specialists on cohorts recruited through our hospital network.

### Standardization work

The lack of standardization in metagenomics is a recurring problem in the study of microbiota. Among the many steps in which biases can be introduced, the iBiote team has focused on sample collection, sample stabilization and extraction, and data analysis.

### MEDIBIOTE studies

MEDIBIOTE studies aim to characterize human microbiota and identify microbiotic signatures in many pathologies. These studies aim to advance our knowledge of microbiota in order to use them as a diagnostic and prognostic tool, but also in the prevention of diseases, thus contributing to the improvement of patient management by clinicians.

- MEDIBIOTE 1 study: Microbiotic imprint of a pathology: IBD and Parkinson's disease
- MEDIBIOTE 2 Study: Microbiotic imprint of a pathology: Systemic Scleroderma
- MEDIBIOTE 3 Study: Microbiotic imprint of a pathology: Ankylosing spondylitis
- MEDIBIOTE 4 Study: Microbiotic imprint of a pathology: NAFLD and NASH

# The iBiote site



## An interactive platform



- ✓ Creating an iBiote account
- ✓ Access to the questionnaire to fill in
- ✓ Viewing the status of the analysis
- ✓ Results available for download

**iBiote™** Home About Us Our achievements Our Products Our testimonials News Contact

**Dashboard**

- My orders
- My doctor
- Medical questionnaire
- My report
- My invoices
- Address
- My informations

**Track your last order**  
Here is the status of your last order. It is regularly updated

In progress Sending Receiving Extraction Amplification Sequencing Report available

**My orders** →

**Answer our questionnaire**  
Answer our questionnaire to help us personalize your report.

**My questionnaire** →

**Select a doctor**  
Select your doctor to share your results

**My doctor** →

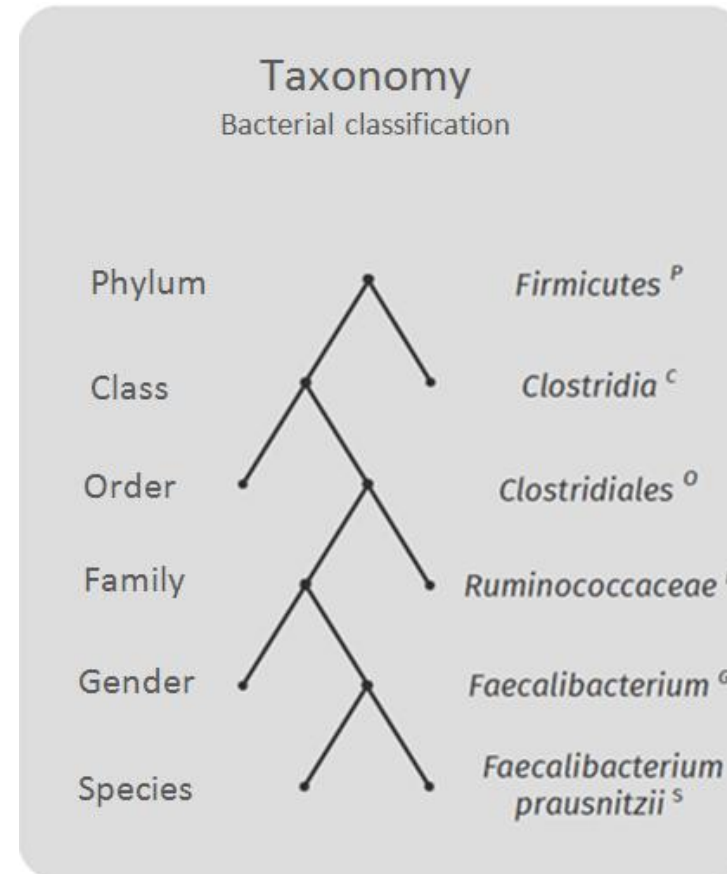
# A detailed report adapted to the clinic



# A detailed report adapted to the clinic



Bacteria are identified according to the official taxonomy of the *National Center for Biotechnology Information* (NCBI).





# A detailed report adapted to the clinic



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A reference cohort of 100 asymptomatic individuals.

## Asymptomatic patients

used as a reference for the assessment of imbalances



- 10 healthy patients
- Men and Women
- Non-smokers
- From 20 to 65 years old
- No chronic pathology diagnosed
- No digestive problems

# A detailed report adapted to the clinic



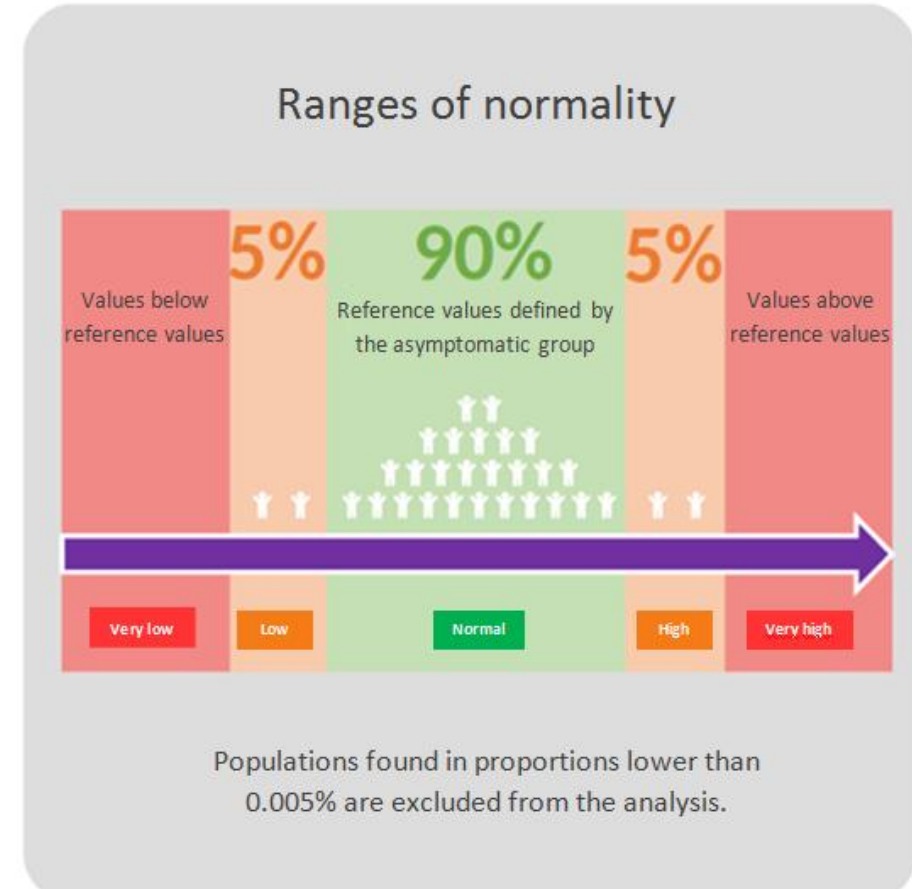
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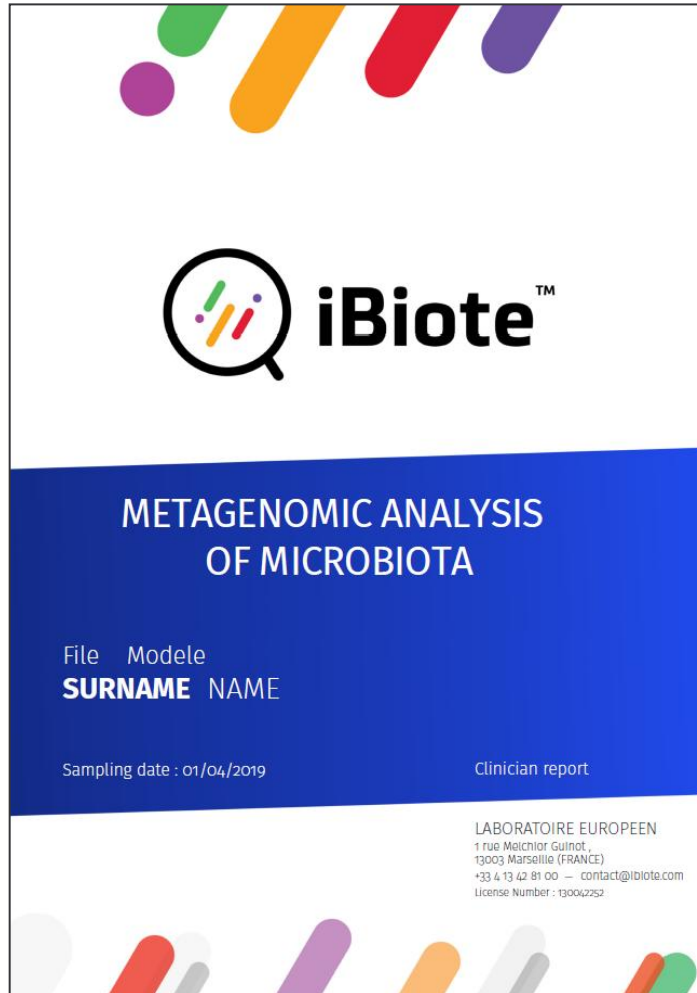
A reference cohort of 100 asymptomatic individuals.



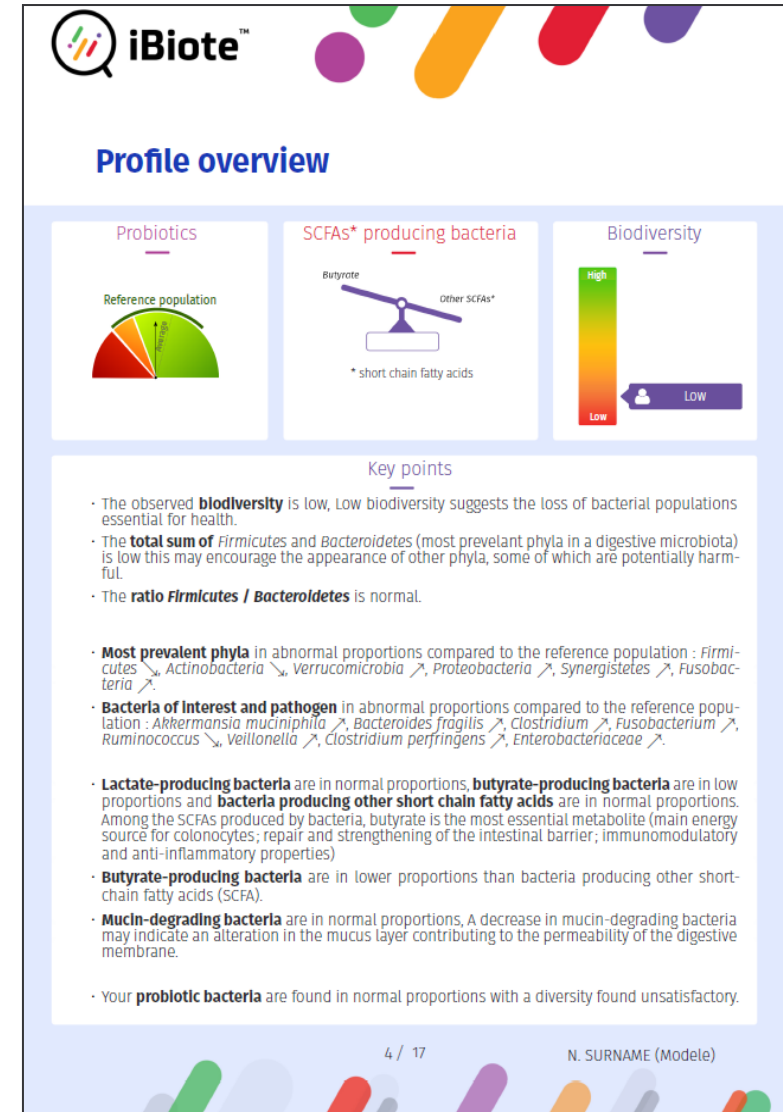
An interpretation of the data that targets bacteria of proven biomedical interest



# A detailed report adapted to the clinic



A detailed and personalized report



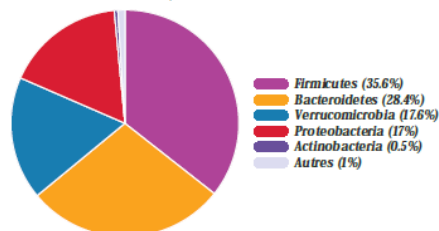
# A detailed report adapted to the clinic



## Analysis results

### Most prevalent phyla

The classification of known living species includes animal, plant, bacteria and fungi kingdoms. A phylum (or phyla in the plural) is the first level of classification for each kingdom. Phyla presented in this section correspond to the bacterial classification.



Bacteria	Patient's results (%)	Reference interval	Status
Firmicutes <sup>P</sup>	35.64	51.37 - 78.21	Very low
Bacteroidetes <sup>P</sup>	28.35	13.81 - 42.53	Normal
Verrucomicrobia <sup>P</sup>	17.56	0 - 7.17	Very High
Proteobacteria <sup>P</sup>	16.96	0.85 - 7.65	Very High
Actinobacteria <sup>P</sup>	0.51	0.65 - 8.51	low
Synergistetes <sup>P</sup>	0.50	0 - 0.34	high
Fusobacteria <sup>P</sup>	0.45	0 - 0.02	high
Lentisphaerae <sup>P</sup>	0.04	0 - 0.74	Normal

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N. SURNAME (Modele)



## Interpretation of the microbiota profile

### Markers and populations within the reference intervals

- The ratio *Firmicutes/Bacteroidetes* is normal.
- Lactate-producing bacteria are in normal proportions.
- Bacteria producing other short chain fatty acids are in normal proportions.
- Mucin-degrading bacteria are in normal proportions.
- Probiotic bacteria are in normal proportions.

### Markers and populations outside the reference intervals

#### Most prevalent phyla :

Phyla in abnormal proportions compared to the reference population :

- **Firmicutes** ↘ : *Firmicutes* are the predominant phylum of the human intestinal microbiota. They are involved in several functions such as fat digestion and the production of SCFA (Short Chain Fatty Acid) mainly Butyrate which is considered as an energy source for the host with anti-inflammatory properties. **The alteration of this phylum is found in certain inflammatory digestive pathologies.**
- **Verrucomicrobia** ↗ : *Verrucomicrobia* are a minority phylum in the human intestinal microbiota and do not contain any known pathogens. The most commonly found genus is *Akkermansia* which is considered a biomarker of good health and is beneficial to humans.
- **Proteobacteria** ↗ : *Proteobacteria* are among the most abundant phyla in the digestive microbiota. Although many *Proteobacteria* are found naturally in the human digestive tract, this phylum still **contains many pathogens and bacterial genera rich in LPS, a pro-inflammatory substance.**
- **Actinobacteria** ↘ : *Actinobacteria* are one of the phyla most often found in the human digestive microbiota. Some *Actinobacteria* are said to be commensal and beneficial for humans, including *Bifidobacterium*. *Actinobacteria* seem to be involved in the modulation of intestinal permeability, the immune system, metabolism (synthesis of short-chain fatty acids, particularly acetate) and the gut-brain axis.
- **Synergistetes** ↗ : *Synergistetes* can be found in healthy individuals, however this phylum also includes bacteria with potential pathogenicity for humans.
- **Fusobacteria** ↗ : *Fusobacteria* are a minority phylum that can be found in healthy individuals in the oral cavity and digestive tract. This phylum also includes bacteria that are potentially pathogenic to humans.

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N. SURNAME (Modele)





The analysis of your microbiota for a personalized  
medicine



 GUT **iBiote**











 VAGINAL **iBiote**