

What is what in the probiotic world?

DEFINITIONS

Probiotic Glossary

A Anaerobes

Bacteria can be anaerobes or aerobes. The difference is that anaerobic bacteria cannot grow in the presence of oxygen, while aerobes can. Some bacteria (such as Lactobacilli) are facultatively anaerobes, which means that they can survive in a small amount of oxygen.

B Bacteria

Bacteria are small unicellular organisms, thought to have developed more than 4 billion years ago. There are thousands of different species of bacteria.

C CFU

Colony forming units, a measurement and a way to quantify the number of microbial cells.

Colonization

A bacterium that colonizes the gut means that it lives on the gut wall without invading the tissue. A true colonization would be indefinite, whereas probiotic colonization is usually transient, i.e., at time of consumption + a few more days.

Commensal

Another word for the “good” bacteria, i.e., bacteria that are not harmful.

Cytokine

Small proteins important for cell signaling, found in the blood. Crucial for cell development, and for a functioning immune system.



D Dysbiosis

A disruption of the microbial balance, causing an imbalance between the bacteria, their functions, and activities.

E Endothelial cells

Single cell layer lining the internal surface of blood vessels and lymphatic vessels.

Epithelial cell

Single or several cell layers lining a surface within (internal) or on (external) the body. The epithelial cells act as safety shields in the body.



G Genus

Genus is the “family name” of bacteria, ex *Lactiplantibacillus* or *Bifidobacterium*.

Gut Barrier

The layer of epithelial cells lining the gastrointestinal tract. An intact gut barrier protects the body from substances within the gut lumen.



I In vitro

Scientific investigations performed in a lab, outside of the normal biological context. In many cases performed in a test tube.

In vivo

Scientific investigations performed within a living body or within living tissue.

Inflammatory marker

Components of our blood used to identify or detect inflammation within the body that may be caused by diseases or syndromes. In a healthy state all markers are kept within normal levels.



M Microbiome

A broader definition than microbiota but meaning the same thing. The human microbiome are all microorganisms found in or on our body, composed of the oral microbiota, the GI microbiota and many more.

Microbiota

The collection of microorganisms that can be found in and on multicellular organisms (plants, animals, humans). The human microbiota contains bacteria, fungi, archaea, and viruses.

Mucus / Mucosa

Many barriers in our body, including the inside of the GI tract, are covered by one or several layer(s) of mucus, which makes up the mucosa. Mucus is the “slippery secretion”, whereas the mucosa is part of the intestinal wall.

P Parabiotics

Inactivated microbial cells of probiotics, both as intact cells and damaged cells.¹

Pathogen

An organism that may cause disease or health-related problems.

Persistence

For probiotic bacteria persistence means how long time the bacteria can be found within/on the body after consumption.

Postbiotics

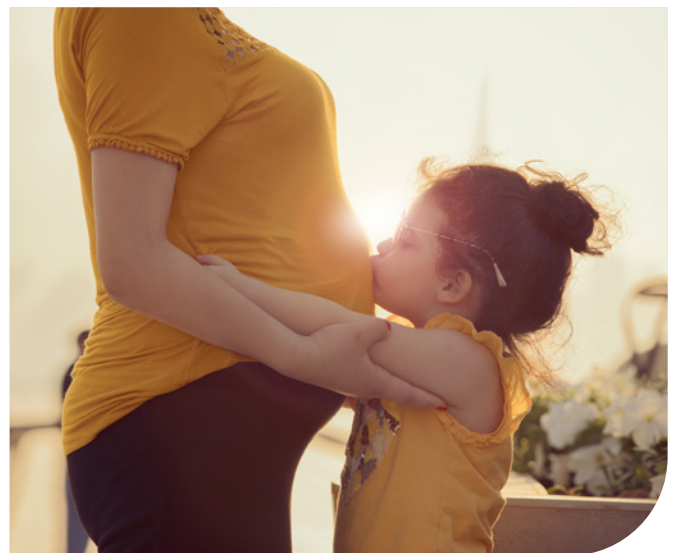
“A preparation of inanimate microorganisms and/or their components that confers a health benefit on the host”. This means a mixture of dead microbial components and/or products secreted by the microorganisms before being inactivated. The microorganisms do not need to be bacteria.²

Prebiotic

A group of nutrients (often fibers and polyphenols) that are indigestible for humans and are degraded by the gut microbiota. These acts like “fuel” for the microbiota. The degradation produces health-promoting short chain fatty acids.

Probiotics

“Live microorganisms which when administered in adequate amounts confer a health benefit on the host”. *Interpretation for human consumption:* Live bacteria shown in clinical studies to be health-promoting at a certain dosage.



S SCFA

Short chain fatty acids. Produced when bacteria degrade prebiotics. Several health promoting benefits result from their presence. The three main SCFA are Acetate, Propionate and Butyrate.

Species

Next step from the genus level in the bacterial taxonomy, ex *Lactiplantibacillus* (=genus) *plantarum* (=species)

Spores

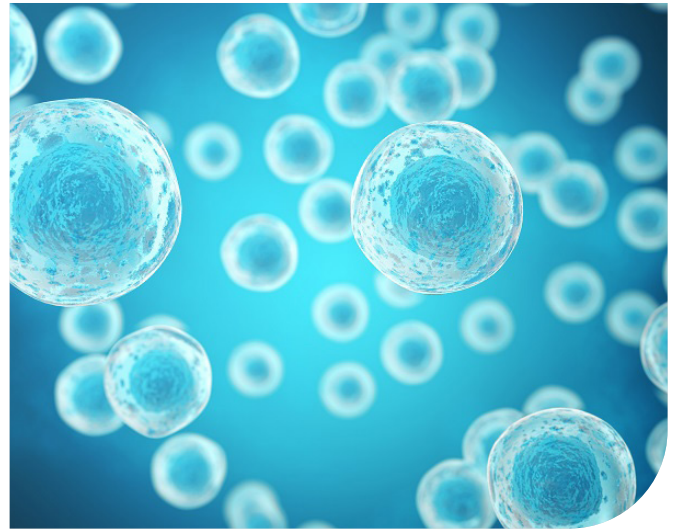
Resistant structures which survive under unfavorable conditions. Bacteria such as *Bacillus* produce spores, which are not sensitive to heat, moisture, or aerobic conditions.

Stability

For probiotics this means survivability under certain conditions, for example in different climate zones.

Strain

The last part of the bacterial family tree, defined as genetically identical cells with the same traits. For example, *Lactiplantibacillus* (=genus) *plantarum* (=species) 299v (=strain).



Symbiosis

Greek word for "living together". A close and long-term biological interaction between different bacteria.

Synbiotics

The combination of prebiotics and probiotics, which either complement each other or enhance each other's effect. The combination should have a beneficial effect on the host.

W Water activity

Related to the water content or moisture. Defined as the ratio between vapor pressure of the item and the vapor pressure of pure water. A high water activity is detrimental to probiotic bacteria (except *Bacillus*).

Y Yeast

Single-celled microorganisms, a type of fungus that are found everywhere (soil, plants, food, in our body etc). Used in the food industry since the late 18th century.

Z Zonulin

A protein that increases the permeability between cells in the digestive tract. Measurement of Zonulin is a way to determine if there is a leakage over the intestinal wall.

1. Not fully defined yet. This definition is based on Natarai et al, *Microb Cell Fact*, 2020.
Doi: 10.1186/s12934-020-01426-w

2. ISAPP definition in infographics, based on Salminen et al, *Nat Rev Gastroenterol Hepatol*, 2021.
Doi:10.1038/s41575-021-00440-6