

WHAT IS THE INTESTINAL MICROBIOME?

The **intestinal microbiome** is defined as the sum of all microorganisms (bacteria, viruses, fungi, archaea, protozoa, and others) which live in the intestinal tract of animals.

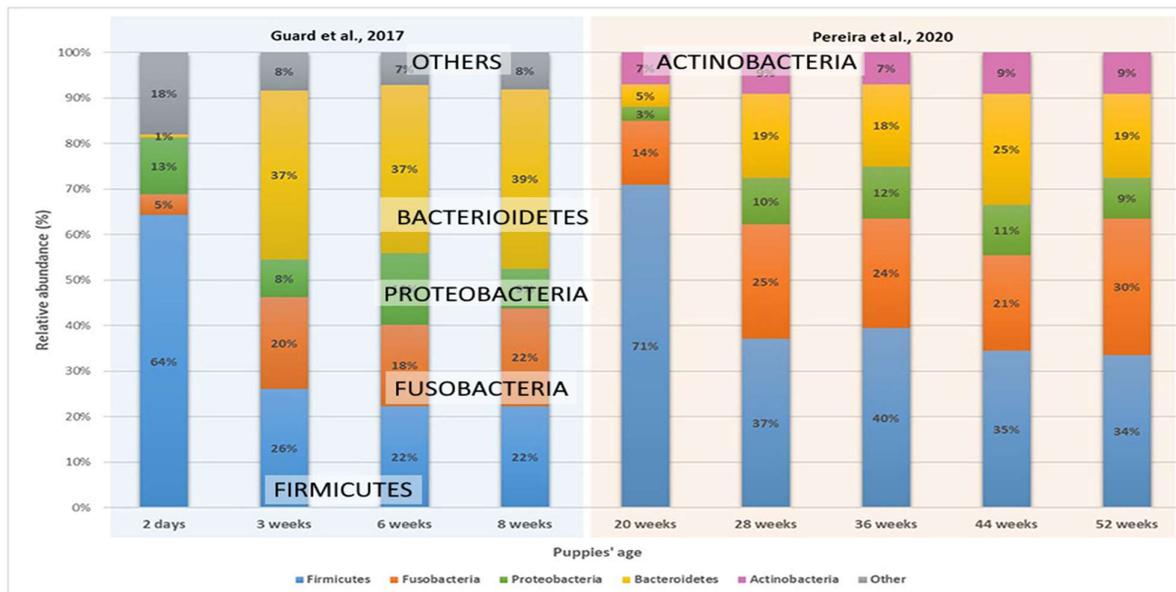
(There are also some microorganisms which live in the stomach, almost exclusively bacteria from the *Helicobacter* genus, but these cannot be easily influenced by nutritional means.)

The intestinal microbiome has various functions and can almost be considered as an organ unto itself. The intestinal microorganisms have functions such as: fermentation of some nutrients which are indigestible for the host to form digestible ones; synthesis of specific nutrients (e.g. vitamin B₁₂); synthesis of substances which contribute to the health and development of the intestinal tract (among which volatile fatty acids, and more specifically butyric acid); regularisation of the intestinal transit; support of many bodily functions; and many more besides.

COMPOSITION OF THE INTESTINAL MICROBIOME

The composition of the intestinal microbiome is highly variable and dependant on multiple factors, first of all the host animal's species and their age, besides environmental factors, diseases, and contact between the host animal and other animals of the same species or of different species (e.g. cohabitation between cats and/or dogs and humans, which has a strong influence on the microbiome).

For example, see the graph below, showing the evolution of the canine microbiome as the host animal ages:



(Garrigues *et al.*, 2022)

The composition of the microbiome can be investigated through metagenomic techniques, which allow to obtain data such as what was used to generate the graph above, establishing which microorganism genus are present in the intestinal tract of an animal and in which percentage.

INTESTINAL MICROBIOME DYSFUNCTIONS

Of course, according to what was just said, it's easy to understand how, if the microbiome becomes unbalanced, this can cause serious issues for the health of the host animal, starting from intestinal

problems (diarrhoea, bloating) to nutritional problems (due to the lowered nutrient absorption), up to even systemic problems which decrease the animal's wellbeing and can in extreme cases cause death.

The imbalance in the microbiome happens when there is an excess or lack of specific microorganisms compared to what is considered normal, and this can happen following sudden changes in the diet (or when pets eat something they shouldn't have they found lying around), any kind of stress (e.g. heat stress, cold stress, travel stress), veterinarian treatments (especially antibiotic treatments), contact with new animals, etc.

The only permanent solution to the problems caused by the microbiome imbalance is to restore the previous balance, or to find a new one. Given how diverse and complex the microbiome is, this is very difficult to do.

Eurofeed Technologies has developed two products for pet animal nutrition (cats and dogs) which can help in maintaining intestinal microbiome balance, and in rebalancing it when it's altered by internal or external factors: these products are **Synerbyo Pet** and **Equipet**.

Synerbyo Pet is a specific combination of dietary fibre, thermally activated and modulated to obtain an excellent substrate for the development of the positive components of the intestinal microflora.

Synerbyo Pet also contains yeast products, which help improve intestinal health and regularise transit, and easily-absorbable trace elements, to promote osmotic recovery in case of diarrhoea.

Synerbyo Pet helps in rebalancing the intestinal microbiome, facilitating recovery from stress and illness, both localised and systemic.

Synerbyo Pet can be used in all phases of life of pet animals.

Equipet is a combination of specific active ingredients, among which are butyric acid glycerides.

Equipet allows to obtain the correct concentration of this substance in the intestinal tract in case the ability of the microbiome to synthesise it is compromised (following imbalance of the microbiome itself).

Equipet helps in maintaining and restoring intestinal tract health and integrity, and in recovery in case of problems.

Equipet is useful in all the phases of life of pet animals, but is especially indicated in young animals to develop the microbiome, and for pregnant and nursing mothers, to favour the transfer of a diverse and functional maternal microbiome from the mothers themselves to their puppies and kittens, to help them in the first phases of life.