‘Gut microbiome’ and ‘gut microbiota’ describe either the collective genomes of the microorganisms that reside in the gut, or the microorganisms themselves.

**Big facts about tiny microbes in the gut**

- The gut contains more than 3 million microbial genes (150 times more than human genes)\(^1\)
- Human’s gastrointestinal tract is home to 100 trillion of microorganisms\(^1\)
- Gut microbiota weighs up to 2 kg\(^1\)
- Host-microbe interactions can occur on a surface area of about 30–40 m\(^2\) (20 times of the skin surface area)\(^4\)
- Skin surface area = 1.5–2.0 m\(^2\)

Just like our fingerprints, the composition of gut microbiota is unique to each individual (although we share some similar features). It is influenced by genetics, age, lifestyle, environmental microbial exposure, diet and health factors\(^1,2,3\).

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WHY IS GUT MICROBIOTA IMPORTANT?
A healthy gut microbiota contains a balanced composition of many classes of bacteria that have health-promoting functions.

- Helps the body to digest certain foods e.g. dietary fibre
- Produces some vitamins e.g. B12, folate and K
- Regulates energy metabolism
- Defends against harmful microorganisms
- Influences gut-brain communication for optimal gut and brain functions
- Provides signals for the development and function of the immune system
- Provides signals for the development and function of the immune system

Imbalances in gut microbiota have been linked to:

- Asthma and allergy
- Infections
- Obesity and metabolic disorders
- Infantile colic and functional gastrointestinal disorders
- Inflammatory bowel disorders
- Aberrant behaviour and autism spectrum disorders

THE FIRST 1000 DAYS offers a unique window of opportunity in which different factors may have an impact on the gut microbiota composition and its development\textsuperscript{1,2,3}

Factors that have **DESIRABLE IMPACT** on microbiome

- Healthy diet, good health status of mother
- Pre- and probiotic supplementation, balanced maternal microbiota
- Term birth
- Vaginal delivery
- Breastfeeding
- Healthy complementary foods
- Interaction with nature (biodiversity)
- High dietary fibre or pre- and probiotic supplementation

Factors that have **UNDESIRABLE IMPACT** on microbiome

- Unhealthy diet, poor health status of mother
- Maternal antibiotic
- Pre-term birth
- C-section delivery
- Formula feeding without pre- or probiotics
- Antibiotic use
- Excessive sanitation
- Unhealthy diet

Different factors such as **GOOD NUTRITION** during the first 1000 days can have benefits that last a lifetime


The composition and functionality of gut microbiota can be influenced by the consumption of diet that includes PREBIOTICS, PROBIOTICS, or both (SYNBIOTICS).

**PREBIOTICS**
Non-digestible dietary carbohydrates, that travel to the colon intact and are able to selectively stimulate the growth and activity of beneficial bacteria in the colon. Naturally present in:
- Human milk (known as human milk oligosaccharides)
- Garlic
- Onions
- Chicory root
- Leeks
- Artichokes
- Asparagus

Can be found in:
- Fermented yoghurts
- Fermented milk
- Fermented vegetables (e.g. Sauerkraut, Kimchi)

**PROBIOTICS**
Live microorganisms, which when administered in adequate amounts, confer a health benefit on the host. Naturally present in:
- Human milk (known as human milk oligosaccharides)

For Healthcare Professionals only

**SYNBIOTICS**
Combination of prebiotics and probiotics.

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Inspired by HUMAN MILK

Oligosaccharides are the third largest component (after lactose and lipids) of human milk. Human milk contains live bacteria such as Bifidobacterium breve, B. adolescentis, and B. bifidum.

NUTRITIONAL INNOVATIONS
FOR A HEALTHY GUT

Prebiotics mixture of:
- short-chain galacto-oligosaccharides (scGOS)
- long-chain fructo-oligosaccharides (lcFOS)

Synbiotics mixture of:
- scGOS/lcFOS
- Bifidobacterium breve M-16V

INNOVATIONS

Promotes the growth of beneficial bacteria for healthy gut.
Creates a favorable milieu for defense against pathogens.
Supports immunity through positive modulation of gut microbiota.
Reduces the incidence of atopic dermatitis and other allergic symptoms.
Reduces the risks of infections.

BENEFITS

At Nutricia, we have 120 years of experience in early life nutrition

Pioneering innovations in prebiotic oligosaccharides and unique process of fermentation

Breastfeeding is best for babies

Breastfeeding is best for babies and provides many benefits. It is important that, in preparation for and during breastfeeding, mother eats a healthy, balanced diet. Combined breast and bottle feeding in the first weeks of life may reduce the supply of mother’s own breast milk, and reversing the decision not to breastfeed is difficult. Always consult healthcare professional for advice about feeding your baby. If infant formula is used, manufacturer’s instructions for use should be followed carefully.

References