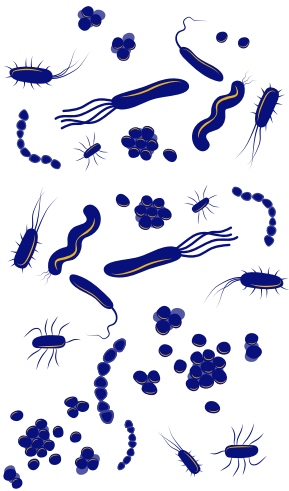


# Microbiology: The Role of the Microbiome

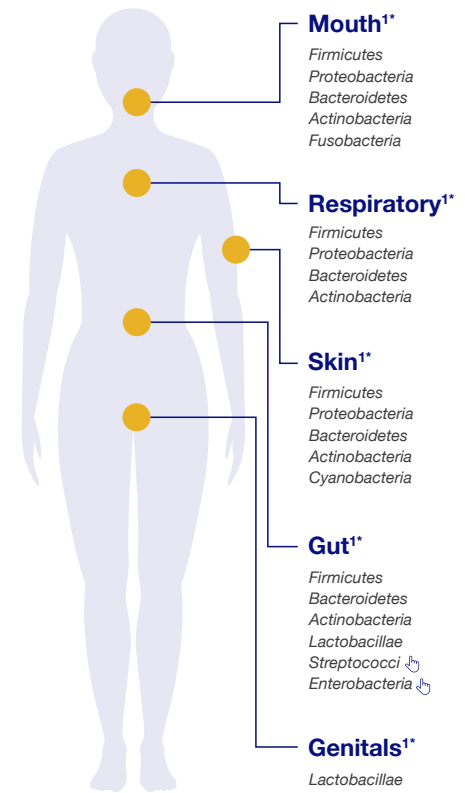
## What is the microbiome?

- The term microbiome describes a **community of different microbiota** (also called *microorganisms* or *microbes*) that live symbiotically on and within environments in our body<sup>1,2</sup>



- Microbiota describe the **living microorganisms found in the environment**, such as the common gut species *Bifidobacterium*.<sup>1</sup> **Microbiome refers to the collection of genomes** from all the microorganisms in the environment<sup>1</sup>
- Microbiomes are found in the gut, skin, respiratory tract, urinary tract, genital organs, oral and nasal cavity<sup>1</sup>

- There are around **100 trillion microbiota in the human gut** – these are mostly bacteria, but also viruses, fungi and protozoa<sup>1,2</sup>
- Microbiota include up to **1,000 bacterial species**, which possess around 3 million genes, offering much greater diversity and genetic versatility than the human genome<sup>3,4,5</sup>
- The **composition of microbiota varies greatly according to where they are found** on and within the body<sup>1</sup>

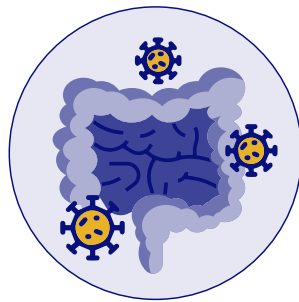


\*Examples of possible bacteria

## Why are microbiomes important for our health?



- When microbiomes are functioning effectively, they **improve our overall physical and mental health and wellbeing** and even help to fight against disease and infection<sup>2,5,6</sup>



- They aid digestion**, help to break down potentially toxic food compounds and synthesize certain vitamins and amino acids, including vitamins B and K<sup>2,5</sup>
- A **diverse abundant microbiome can act as a barrier to infection** via several mechanisms, including direct inhibition, colonization resistance or educating the immune system<sup>5</sup>



- External changes can cause an imbalance** of microbiota which can increase the risk of developing cardiovascular diseases, cancer, respiratory diseases, diabetes, inflammatory bowel diseases, brain disorders, chronic kidney diseases and liver diseases<sup>1</sup>



- In some rare cases invasive medical procedures, such as endoscopy, can interact with a patient's microbiome, e.g., **translocation of bacteria** resulting in endogenous infection<sup>7</sup>


## Improving infection prevention and control

At Olympus, improving the quality of patient care and safety is the number one motivation and we believe it is our responsibility to ensure all practitioners using Olympus endoscopy equipment are equipped to do so to high possible safety standards.

This includes →

- Deploying **timely** and **robust** reprocessing techniques and practices<sup>7,8</sup>
- Supporting competency through **continuous education, training and oversight**<sup>7,8</sup>
- Considering the **automation of reprocessing**<sup>7,8</sup>
- Using all **quality assurance measures**, e.g., visual inspections, leak tests, sampling & culturing methods etc.<sup>7,8</sup>
- Performing regular mandated **servicing**<sup>7,8</sup>
- Assessing risk through **outcome data collection and investigations**<sup>7,8</sup>
- Establish a **multidisciplinary team**, including biomedical engineers, infection control specialists and reprocessing practitioners for a continuous exchange and internal audit<sup>7,8</sup>

## Your trusted partner in infection prevention

- As a **trusted partner in infection prevention**, it is Olympus's responsibility to advance understanding and safety practices for all practitioners. To **help maintain infection prevention and patient safety, we are providing advanced training and tools customed to individual needs, onsite and online**
- **Detection of high concern organism**, such as gram-negative rods, *Staphylococcus aureus* , *Enterobacteriaceae*, *Enterococcus* species and yeasts, even if only a single colony forming unit (CFU), merits immediate action and duplication of the sampling and culturing to ensure patient safety



Further information can be found:

[www.infectionprevention.olympus.com/en-us/scientific-evidence/trainings](http://www.infectionprevention.olympus.com/en-us/scientific-evidence/trainings) 

## Additional resources

Olympus has produced a series of **educational, accessible materials** which include **in-depth guidance on proper processing protocols, designed to minimize the potential for infection** e.g.,



**Olympus white paper:**  
**Endoscope Sampling and Culturing** 



**Olympus infographic:**  
**Microbiology - The Basics** 

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