



# Navigating the Complexity of Healthy Microbiomes

## Why Define a Healthy Microbiome?

Human microbiomes play a vital role in current and future diagnostics, therapeutics, food/diet products, and in promoting well-being. However, the complexity of human microbiomes and their variability across individuals, countries, ages, and lifestyles pose significant challenges. Therefore, the Human Microbiome Action project addresses the need to identify features of healthy microbiomes.

### CHALLENGE:

## There Is No One, Universal Healthy, Microbiome Possible

- ⊖ Microbial composition and function can vary significantly among individuals, making it challenging to establish universal criteria for a healthy microbiome.
- ⊖ The dynamic nature of the microbiome and its susceptibility to external influences further complicates the definition process.
- ⊖ Current microbiome research often lacks consensus on key parameters, such as microbial diversity, community structure, and functional capacity, contributing to the ambiguity surrounding the concept of a healthy microbiome.
- ⊖ The absence of standardised methodologies and reference materials hinders efforts to define a universally accepted healthy microbiome.

### CONTACT:

[info@humanmicrobiomeaction.eu](mailto:info@humanmicrobiomeaction.eu)



## SOLUTION:

### Approaches to Defining a Healthy Microbiome

- ⊖ Conducting large population studies across different countries and age groups and emphasising inclusivity by including diverse populations in research studies through citizen science projects improves our understanding of inter-individual variety.
- ⊖ Integrating multi-omics data, including metagenomics, metabolomics, and transcriptomics, provides a comprehensive view of microbial communities and their functional potential.
- ⊖ Implementing longitudinal sampling across different age groups to capture changes over time offers insights into microbial stability and resilience in health and disease.

### OUTCOME & IMPACT:

Defining a healthy microbiome is a complex yet essential endeavour that holds immense promise for improving human health outcomes. By unravelling the intricacies of microbial communities and their interactions, we pave the way for targeted interventions and personalised approaches to promote microbiome health and overall well-being.

Eager to contribute to the journey of defining a healthy microbiome and its implications for public health?

Join our Stakeholder Advisory Board to provide strategic advice or engage with the ***European Microbiome Centres Consortium*** to foster interdisciplinary collaboration.

For further information, please visit our website [humanmicrobiomeaction.eu](https://humanmicrobiomeaction.eu). Follow the @SciFoodHealth [Twitter/X](#) and [LinkedIn](#) accounts or connect through the [Sustainable Food Systems Network Microbiome Subgroup](#).

Visit our [zenodo.org](https://zenodo.org) community for all published and upcoming scientific publications.

#### CONTACT:

[info@humanmicrobiomeaction.eu](mailto:info@humanmicrobiomeaction.eu)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 964590