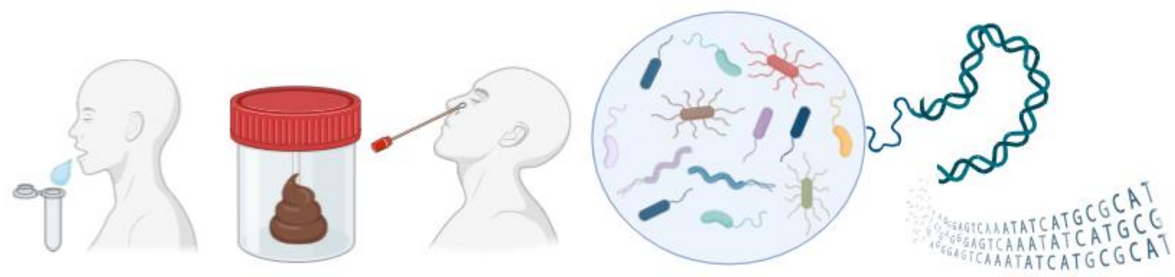
The biodiversity inside us: the human microbiome as a One Health indicator of health and environmental exposure

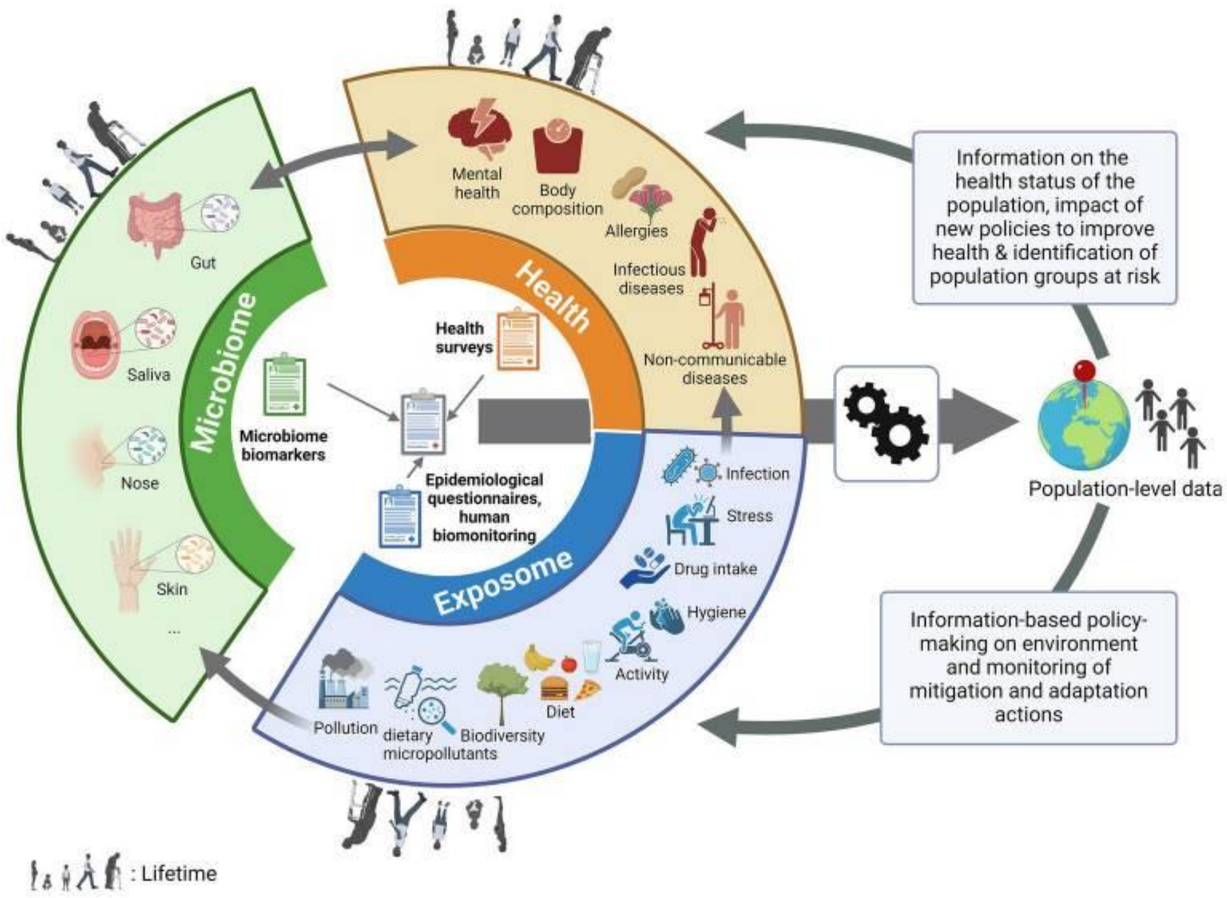
F.E. Buytaers[1] • N. Berger[2] • J. Van der Heyden[2] • N.H.C. Roosens[1] • S.C.J. De Keersmaecker[1]

1. Transversal activities in applied genomics, Sciensano, Brussels, Belgium • 2. Health Information, Sciensano, Brussels, belgium

- Human beings are **holobionts** living in the presence of thousands of **microbes** on different parts of the body
- This microbiota is specific to each person and constitutes our **second genome**
- Micro-organisms have a symbiotic interaction with our bodies, playing an important role in our **health**
- Our **microbial diversity** varies according to health, including **infections**, **behavior**, but also our environment, including **exposure to pollution and environmental contaminants**, the **biodiversity** in the surrounding landscape

- Microbiome composition can be obtained from **non-invasive** samples such as saliva, feces or nasal swabs
- They are analyzed at **large scale** through advanced genomic techniques, including metabarcoding and shotgun sequencing





The microbiome data can then become a One Health indicator connecting health and environmental data

microbiota data + population-based health studies data

-> assess the impact of (environmental) changes on population health
-> monitor the effects of mitigation actions

Additionally, such studies could identify **population groups at risk** or track the emergence of diseases

- We have highlighted the microbiome's utility as a **biomarker** in population-based health studies
- We have shown the potential of the microbiome to link **environmental health** and **human health** for proactive public health policies

REFERENCE

- Buytaers et al, The potential of including the microbiome as biomarker in population-based health studies: methods and benefits, *Frontiers in Public Health*, 2024

This research was funded by Sciensano

Sciensano • Florence Buytaers • Florence.buytaers@sciensano.be • **www.sciensano.be**