

Microbiome study design workshop

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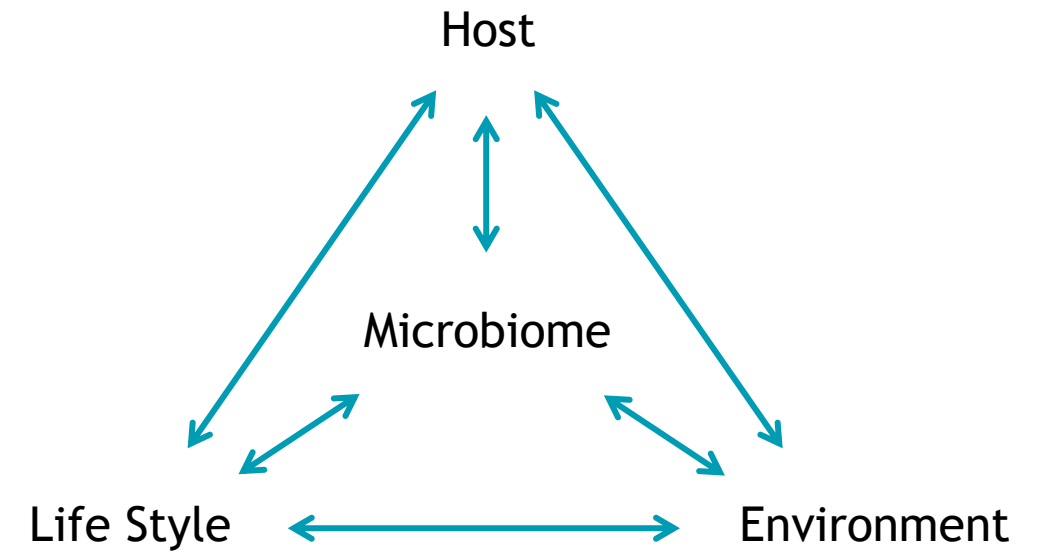
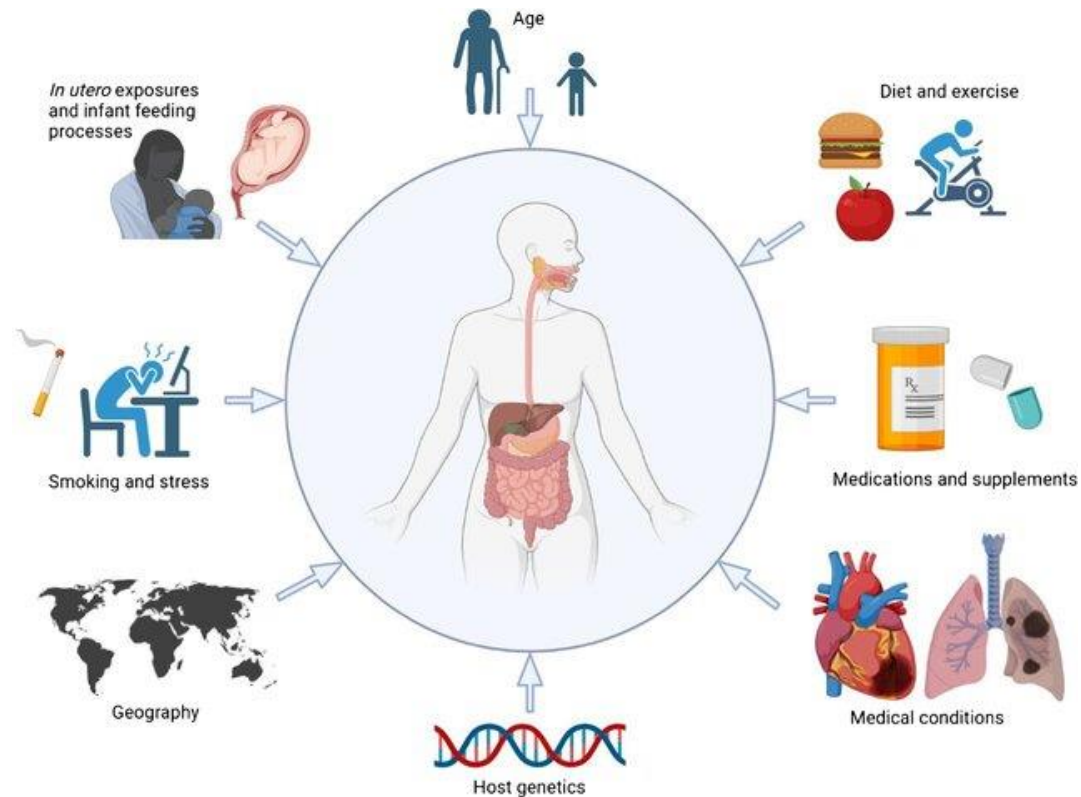
Pharmacist (PharmD.), Postdoctoral researcher

Vascular Medicine | Experimental Vascular Medicine Departments

Amsterdam University Medical Centers (Amsterdam UMC), AMC Hospital



Risk factors





Site variations

Common regional taxa

Stomach

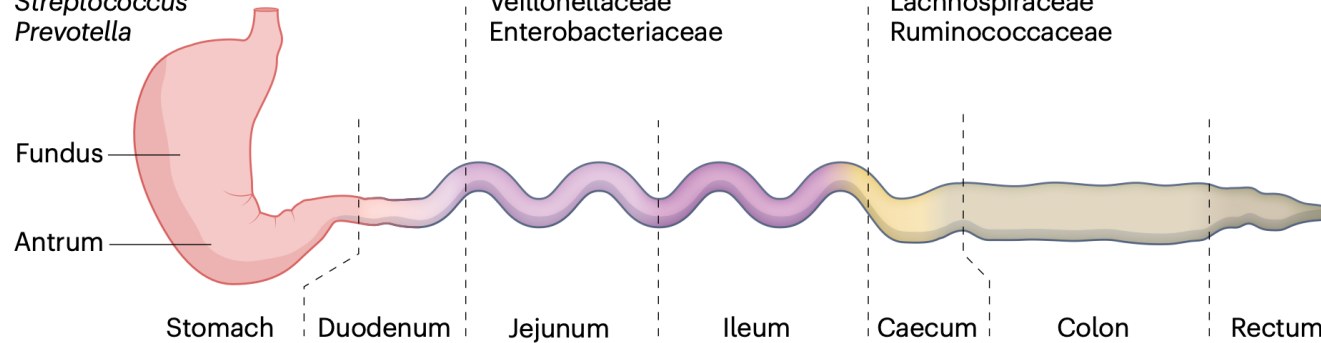
Helicobacter
Streptococcus
Prevotella

Small intestine

Streptococcaceae
Veillonellaceae
Enterobacteriaceae

Large intestine

Bacteroidaceae
Lachnospiraceae
Ruminococcaceae

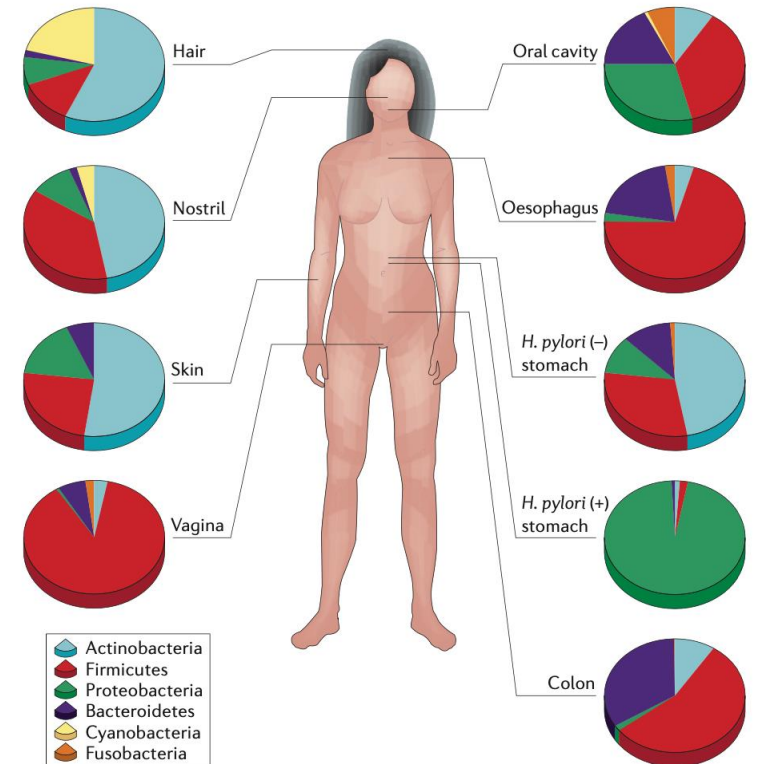


Bacterial load

pO_2

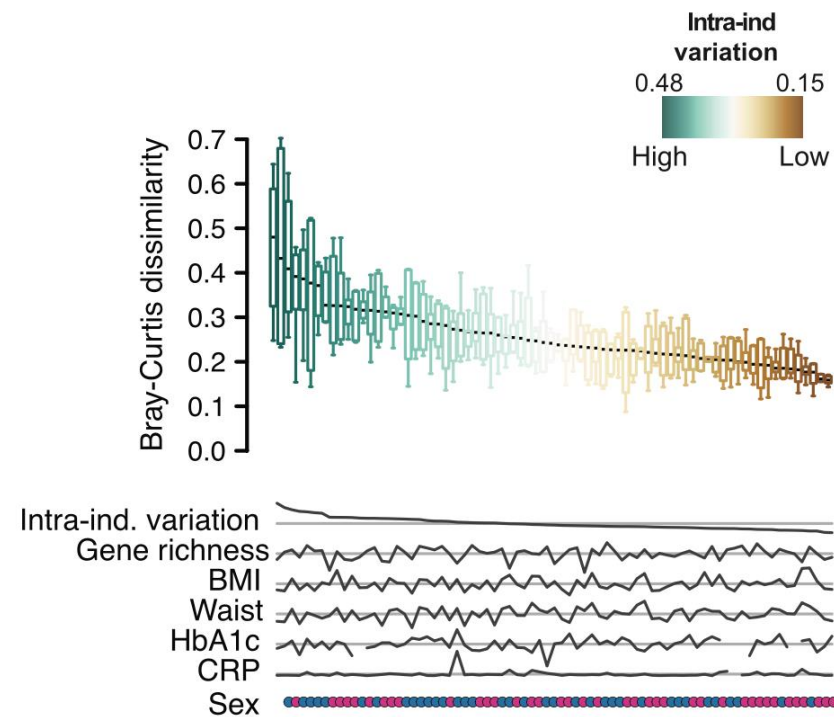
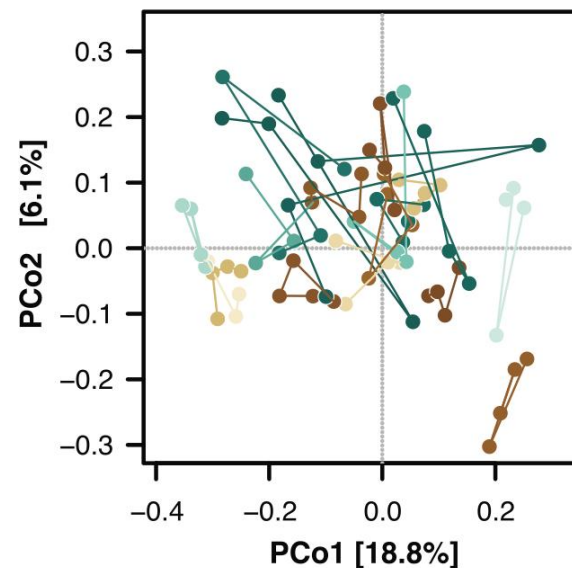
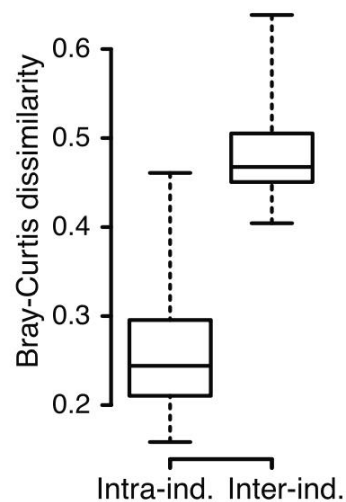
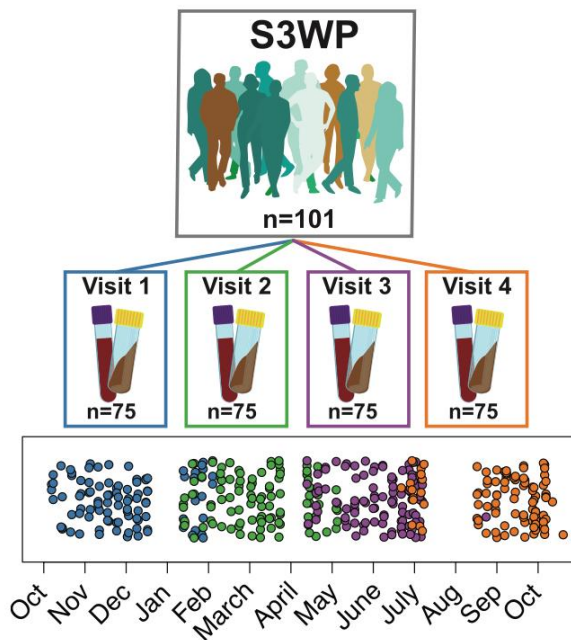
pH

Mucus type
and thickness





Variation over time





Methods

What is the difference?

Price?

Resolution?

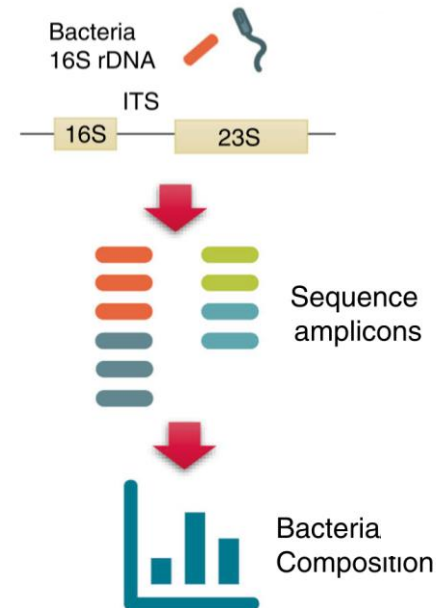
Which microorganisms?

What kind of research question?

16S

Amplicon

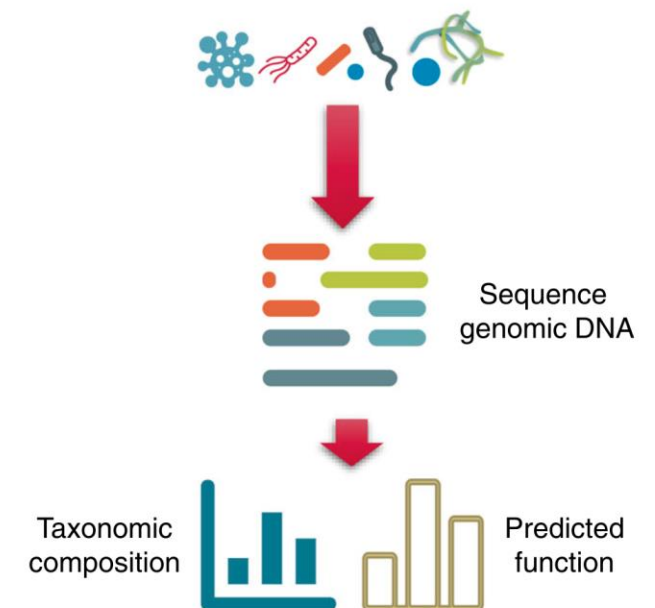
Amplify marker region by use of universal primers



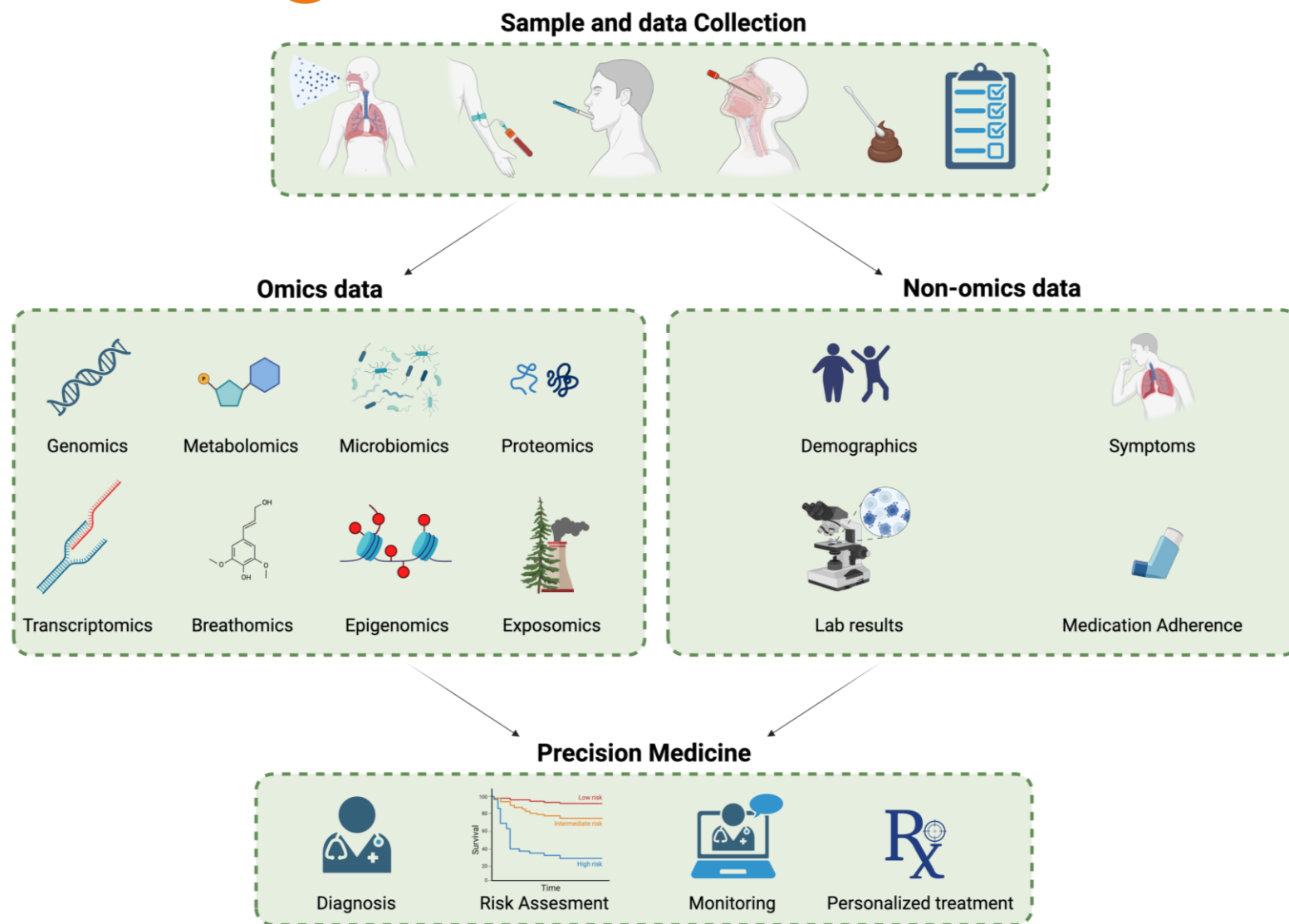
Shotgun

Metagenomics

Genomic DNA from bacteria, fungi, viruses, and other microorganisms



Sampling and data collection





Practical

8 groups of 5

Choose one research question

These are primary research questions you can expand it based on your preference and budget

There are many ways you can design your study, but there are limitations like budget

You can choose one or multiple timepoint/s (visit/s)

Discuss it in your group and design your study to answer your research question

Think about the Sampling site, population size, cross-sectional, repeated measures, methodology, case-control

15 minutes



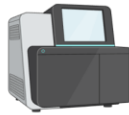
	Primary research questions	Budget (€)
1	To assess the association of eye color with microbiome and gender in a healthy population	900,000
2	To assess the association of medication use like oral PPI (omeprazole) with microbiome in a general population	100,000
3	To assess the association of residential location (Amsterdam vs. Belgrade) on microbiome	500,000



Prices



16S sequencing
€30



Shotgun sequencing
€200



Feces sampling
€5



Saliva sampling
€5



Blood sampling
€5



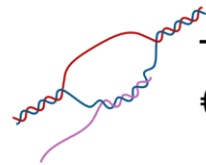
Metabolomics
€200



Genomics
€200



Exposomics (pollutions)
€200



Transcriptomics
€200



Proteomics
€200



Oral health assessment
€50



Dietary intake assessment
€20



Blood/saliva lab tests
€50



Demographic assessment
€50



Medication use assessment
€50