Microbiome and Metagenomics Foundations — Hands-on

Gain a clear, practical foundation in microbiome science and metagenomics before diving into specialized pipelines. This module orients you to host–microbe ecology, amplicon versus shotgun strategies, One Health and AMR motivations, and the data standards that support modern microbiome projects.

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Help Desk · WhatsApp

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Session 1

Fee: Rs 8800 Apply Now

Microbiome Ecology & One Health Context

Microbiome basics and host–microbe interactions

gut, skin, soil, marine **community structure** **drivers of dysbiosis**

Microbiomes in One Health and AMR frameworks

clinical and public health **environmental reservoirs** **AMR surveillance signals**

Omics landscape for microbiome projects

16S, ITS, 18S amplicons **shotgun metagenomics**

metatranscriptomics and beyond

Session 2

Fee: Rs 11800 Apply Now

Amplicon vs Shotgun: Data Types & Workflows

Sequencing platforms and read structures

Illumina short read | long read overview | paired-end concepts

Amplicon versus shotgun study trade-offs

taxonomic depth | functional resolution | cost and complexity

From samples to fastq and metadata

sample sheets | barcodes and indices | MIxS style fields

Session 3

Fee: Rs 14800 Apply Now

Pipelines, Standards & Reproducibility

Bioinformatics pipeline landscape

QIIME 2, mothur | Kraken2, MetaPhlAn | MEGAHIT, metaSPAdes

Data standards and FAIR thinking

FAIR principles | ENA and SRA submissions | metadata templates

Reproducible environments and workflow mindset

Conda and containers | Snakemake and Nextflow overview | version control basics

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Framing a Microbiome Study

Problem framing and hypothesis definition

theory plus guided exercise

Outline of sampling and contamination-aware plan

negative and positive controls batch structure metadata capture

High-level analysis plan and deliverables

proposed pipeline steps report and figure sketch FAIR oriented checklist