Long Read Metagenomics ONT & PacBio — Hands-on

Learn how to design and execute long read metagenomics projects using Oxford Nanopore Technologies (ONT) and PacBio platforms. This module covers platform concepts, QC and basecalling, long read mapping and assembly, polishing strategies and structural variant aware analysis for complex microbial communities.

Long Read Metagenomics ONT & PacBio

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Session Index

Session 1

Fee: Rs 8800 Apply Now

Long Read Metagenomics Foundations & Platforms

Why long reads for metagenomics

contiguity and resolving repeats | **plasmids, phages and mobile elements** | **haplotypes and structural variation**

ONT & PacBio platform basics

flow cells, chemistries and run parameters | **read length, yield and error profiles** | **HiFi vs noisy long reads**

Sample and library design for long read metagenomes

high molecular weight DNA requirements **host depletion and complexity considerations** **designing runs and multiplexing strategies**

Session 2

Fee: Rs 11800 Apply Now

ONT & PacBio QC, Basecalling & Alignment

Raw data handling and basecalling concepts

signal level data and basecalling workflows **quality scores and filtering thresholds** **demultiplexing barcoded libraries**

QC for long read metagenomic datasets

read length and quality distributions **adapter trimming and chimeric reads** **host read screening and removal**

Mapping long reads for metagenomic contexts

long read aligners and options **coverage, identity and error diagnostics** **exporting BAM and summary statistics**

Session 3

Fee: Rs 14800 Apply Now

Long Read Assembly, Polishing & SV Analysis

Assembly of long read metagenomes

long read assemblers for complex communities **contig evaluation and fragmentation patterns** **circular contigs and plasmids**

Polishing strategies and error correction

long read only polishing passes **short read assisted**

polishing concepts **tracking improvements with quality metrics**

Structural variation and genomic architecture glimpses

detecting large insertions and deletions **rearrangements in MAGs and contigs** **visualising alignments and breakpoints**

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Long Read Metagenome Pipeline

End to end long read metagenomics workflow

theory plus guided practical

From raw ONT or PacBio reads to polished assemblies

QC, basecalling and filtering **assembly and polishing steps chained** **simple annotation ready outputs**

Deliverables: pipeline scripts, QC summary and report

command log or workflow file **QC and assembly metrics tables** **PDF or HTML long read metagenome report**