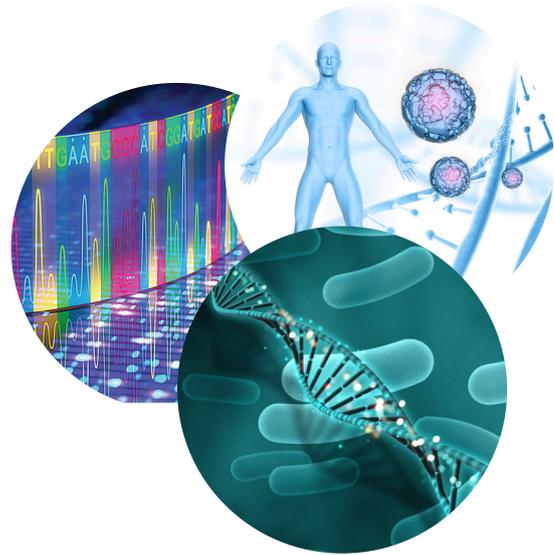Online Workshop on

Understanding the Microbiome Diversity through Metagenomics

Integrating Metagenomics in Molecular Diagnostics

About this course:

In this **4-week online workshop on Understanding Microbiome Diversity through Metagenomics** participants will gain a comprehensive understanding of the microbiome and its significance in human health. Through hands-on sessions, they will learn how to process and analyze 16s rRNA sequencing data using the R programming language and packages like Dada2. The workshop will cover crucial steps such as quality filtering, sequence alignment, taxonomic assignment, and interpreting microbial community profiles. Participants will also explore real-world applications of metagenomics in areas like gut health, personalized nutrition, and disease diagnostics. This workshop is ideal for researchers, bioinformaticians, and healthcare professionals seeking to expand their expertise in microbiome analysis and apply it in their work.

By attending, participants will:
- Develop practical skills in metagenomic data analysis using cutting-edge tools.
- Gain insights into the role of microbiota in health and disease.
- Enhance their ability to integrate microbiome data into broader research or clinical applications.

This workshop is an opportunity to stay ahead in the rapidly evolving field of metagenomics and make impactful contributions to microbiome research.

Prerequisites: Basic biology knowledge and eagerness to learn—no programming experience required.

Who should attend: Students, PhD scholars, clinicians, researchers, and teachers from fields like genomics, microbiology, and biotechnology.

Focused Training in Gut Microbiome Data Analysis

Detailed Topics

Bioinformatics Basics
- Introduction to Bioinformatics
- Overview of Gut Microbiome and Health
- Databases for public data retrieval

R Programming
- What is R?
- Objects in R
- File operations
- Plotting and Visualization
- Introduction to Bioconductor

Metagenomics Methods
- Sequencing technologies (e.g., 16S rRNA, whole-genome shotgun).
- Sequencing methods and platforms.
- Bioinformatics workflows

16s rRNA Data Analysis
- Introduction to software tools (e.g., DADA2).
- Step-by-step guide to data analysis.
- Case Studies (16s rRNA amplicon Seq)

Statistical Methods for Data Visualization and Interpretation
- Alpha and beta diversity analysis
- Taxonomic classification
- Functional analysis of the identified taxa

Other details of the workshop:

- Duration of the course: 20 April to 12 May 2026 | Every Monday and Tuesday | 6:30 to 8:00 PM IST
- There will be assignments, practice sessions, etc. Participants are encouraged to try the commands and tools during their free time.
- The sessions will be conducted online via Zoom meetings.
- An e-Certificate will be provided to each participant.
- The course material will be provided to each participant on Google Drive.

Registration Fee with early bird discount: Rs 2500 | USD 35 per participant

FAQ:

1) **What is the last date of registration?**
   Registration is open till 11th May 6 PM IST
2) **What if I miss some of the sessions?**
   We provide a recording of each session. You can watch the recording and complete the topic
3) **How can I get answers to my doubts post-session?**
   You can ask your doubts via email or WhatsApp

For Registration:

- https://academy.genespectrum.in/metangs/

For any queries:

- training@genespectrum.in
- Whatsapp - +91 7021386045

GeneSpectrum Academy

A training unit of GeneSpectrum Life Sciences LLP, Pune