

Sequence Analysis Bootcamp

Fall 2024

September 4th , 11th, 18th and 25th
From 9:00 am – 12:00 pm in Amphitheater III

Pre-bootcamp session

Date: (August. 28th, 9:00 am-12:00 pm)

Location: Online

<https://umassmed.zoom.us/j/92431999929?pwd=A0wGuQUIVafcKA3dvJ9UzQPuT1SjW1.1>

- **Goals:**

- HPC account creation.
- Foundry account creation and connection testing.

Session 1: Omics Analysis

Date: September 4th

Time: **From 9:00 am – 12:00 pm**

Location: **Amphitheater III**

- **Goals:**

- Introduction to sequencing analysis.
- Using UMass HPC Cluster.
- Overview of file formats (Fasta, Fastq, etc.).
- File transfer with FileZilla.

Session 2: Via Foundry Introduction

Date: September 11th

Time: **From 9:00 am – 12:00 pm**

Location: **Amphitheater III**

- **Goals:**
 - RNA-Seq pipeline introduction.
 - FastQC interpretation.
 - RNA-Seq preprocessing steps.
 - Alignments with STAR and Hisat2.
 - Transcriptome quantification tools.
 - Sequencing data visualization.

Session 3: Differential Expression Analysis

Date: September 18th

Time: **From 9:00 am – 12:00 pm**

Location: **Amphitheater III**

- **Goals:**
 - Theory of differential expression analysis.
 - Using the DE analysis module.
 - Post-processing QC.
 - Normalization and batch effect correction.
 - Functional analysis.
 - GSEA Explorer for GO, pathway, and disease analysis.

Session 4: Single Cell RNA Analysis

Date: September 25th

Time: **From 9:00 am – 12:00 pm**

Location: **Amphitheater III**

- **Goals:**

- Introduction to single cell RNA-Seq and spatial transcriptomics.
- Single cell RNA-Seq pipeline execution.
- scRNA-Seq data visualization.
- Spatial transcriptomics pipeline execution and visualization.