

Introduction to Oxford nanopore (MinION) and MiSeq (illumina) technologies: microbial whole genomic, metagenomics and amplicon libraries preparation.

Dates: June 25th - June 28th 2019

Coordinator: Llúcia Martínez Priego (martinez_lucpri@gva.es)

The Sequencing Service of Fundació per al Foment de la Investigació Sanitària i Biomèdica de la Generalitat Valenciana (FISABIO – Salut Pública) propose a basic course in Oxford nanopore (MinION) and MiSeq (illumina) technologies. The goal of this course is to teach the fundamentals of nanopore and illumina library preparation protocols and sequencing. The training will be focused on microbiology NGS applications: microbial whole genomic, metagenomics and 16S amplicon protocols.

The course is addressed to professionals of microbiology services in hospitals, NGS laboratory technicians and other professionals in microbiology, health sciences and related fields who are interested in learning new techniques to approach the study of microbiota.

The module will be practical and hands-on, and will teach participants to prepare two different libraries for Illumina platforms: 16S amplicon libraries for taxonomy analyses and whole genome amplification libraries for genomic or metagenomic analyses and one library protocol for Oxford nanopore MinION platform: 16S amplicon libraries.

Brief theoretical sessions and practical hands-on sessions will be taught by FISABIO Sequencing Service staff.

Official language: English or Spanish (depending of the student's origin)

Instructors:

Llúcia Martínez Priego PhD. Manager in the Sequencing Service of FISABIO-SP.

Griselda de Marco. MS. Research Assistant in the Sequencing Service of FISABIO-SP.

COURSE PROGRAM:

Tuesday June 25th:

09:15 – 10:00 An Introduction to NGS library preparation

Llúcia Martínez Priego

10:00 – 10:30 Best practices in a NGS laboratory

Llúcia Martínez Priego

Break

11:00 – 12:00 DNA quantification and normalisation

Llúcia and Griselda

12:00 – 13:00 Starting illumina 16S amplicon protocol: first amplicon PCR

Llúcia and Griselda

Lunch

- 14:30 – 16:30 Starting illumina microbial whole genomic protocol: DNA tagmentation and library clean up
Llúcia and Griselda
- 16:30 – 17:30 Indexing *both* illumina protocols
Llúcia and Griselda

Wednesday June 26th:

- 09:00 – 10:00 Cleaning up both illumina protocols
Llúcia and Griselda
- 10:00 – 10:30 Bioanalyzer set up for illumine libraries validation
Llúcia and Griselda
- Break
- 11:00 – 11:30 Library quantification
Llúcia and Griselda
- 11:30 – 13:00 Review of library validation results
Llúcia Martínez Priego
- Lunch
- 14:30 – 16:30 Library normalization
Llúcia Martínez Priego
- 16:30 – 17:30 Create Sample sheet for Illumina MiSeq RUN
Llúcia Martínez Priego

Thursday June 27th:

- 09:15 – 10:30 An Introduction to Oxford nanopore technology
Llúcia Martínez Priego
- Break
- 11:00 – 13:00 Nanopore 16S amplicon library preparation
Llúcia and Griselda
- Lunch
- 14:30 – 16:30 Run ONT device and assess sequencing performance during the run
Llúcia and Griselda

Friday June 28th:

- 09:00 – 10:45 Preparing the MiSeq and the loading cartridge
Llúcia Martínez Priego
- Break
- 11:00 – 13:30 Loading libraries for sequencing
Llúcia Martínez Priego
- 13:30 – 15:00 Course feedback and wrap up
Llúcia Martínez Priego