FISABIO SUMMER SCHOOL 2024

Module 3 / Basic Computational Skills for Genomic Analysis

Dates: July 1st - July 5th

The course is addressed to students and professionals of biology, biomedical research, the health sciences and related fields who are interested in learning the basic computational skills required to pursue their own genomic analyses. The module will be eminently practical and hands-on and will teach participants skills ranging from the installation and basic use of Linux systems to the building of analysis pipelines and the utilization of Qiime2 as platform for metataxonomy analysis. Theoretical lectures and practical hands-on sessions will be taught by FISABIO researchers and informaticians. Official language: English. Central Europe Time.

Instructors:

- Pascual Asensi. Systems Administrator, University of Valencia.
- Giuseppe D'Auria. PhD., FISABIO-SP, Head of Bioinformatics Service.
- Rosario Gil. Associate professor, University of Valencia.
- Mariana Reyes. PhD., FISABIO-SP, Bioinformatician at Sequencing and Bioinformatics Service.
- David Perez-Villarroya. Bioinformatics technician.

Course program:

Monday, 01/07/2024

09:15 – 10:00 Next generation sequencing technologies: the birth of the Genomics Era (Rosario Gil)

10:00 – 10:45 Comparative genomics for genome annotation and functional analysis. (Rosario Gil)

11:00 – 11:45 NGS in microbial ecology (Taxonomy and metagenomics). (Rosario Gil)

11:45 – 13:00 Linux system, installing a new distro I. (Pascual Asensi)

14:30 – 16:00 Linux system, installing a new distro II. (Pascual Asensi)

16:00 – 16:30 From office automation to computation for NGS. (Giuseppe D'Auria)

16:30 – 17:30 Unix commands, moving around the system, practice I. (David Perez-Villarroya)

Tuesday, 02/07/2024

09:00 – 10:45 Unix commands, moving around the system, practice II. (David Perez-Villarroya)

11:00 – 12:00 One command line pipelines, practice. (David Perez-Villarroya)

12.00 – 13.00 NGS Bioinformatics formats, managing data. (David Perez-Villarroya)

14.30 – 15.30 NGS Bioinformatics formats, managing data, practice. (David Perez-Villarroya)

15:30 – 16:30 Genome Assembly and mapping. (Giuseppe D'Auria)

16:30 – 17:30 Genome assembly, practice. (Giuseppe D'Auria)

Wednesday, 03/07/2024

09:00 – 10:45 Genome mapping, practice. (Giuseppe D'Auria)

11:00 – 12:00 Qiime2: Introduction. How to install the environment, applications. (Mariana Reyes)

12:00 – 13:00 Qiime2: Data formats and operations. (Mariana Reyes)

14:30 – 15:30 Qiime2: Hands-on section. (Mariana Reyes)

15:30 – 16:30 Qiime2: Denoising. (Mariana Reyes)

16:30 – 17:30 Qiime2: Hands-on section. (Mariana Reyes)

Thursday, 04/07/2024

09:00 – 10:45 Qiime2: Taxonomic annotation and descriptive statistics. (Mariana Reyes)

11:00 – 12:00 Qiime2: Alignment and phylogenetic reconstruction. (Mariana Reyes)

12:00 – 13:00 Qiime2: Qiime2: Hands-on section. (Mariana Reyes)

14:30 – 16:00 Qiime2: Differential abundance analysis. (Mariana Reyes)

16:00 – 17:30 Qiime2: Qiime2: Hands-on section. (Mariana Reyes)

Friday, 05/07/02024

09:00 - 09:45 Creating scripts and pipelines. (Giuseppe D'Auria)

09:45 - 10:45 Students projects. (Giuseppe D'Auria)

11:00 - 12:00 NGS sequencing and beyond. (Rosario Gil)

12:00 - 13:00 Questionnaires and closure. (Giuseppe D'Auria)

Official language: English**.**

Central Europe Time.

Module costs: 350 euros