



SUMMER SCHOOL 2019
Day to day programme

DAY 1 Monday, June 25

13:30 – 14:00 *Welcome and Registration*

14:00 – 14:45 **Talk: Quality control system for ChIP-Seq and related deep sequencing-generated datasets**

Marco-Antonio MENDOZA-PARA, team leader CNRS, Genoscope-UMR 8030, Centre national de séquençage, Institut Jacob, CEA, Evry

Objectives and outcomes: assessing quality descriptors with the NGS-QC Generator; to interpret the generated reports and to explore the database of QC indicators

14:00 – 14:45 **Intitiation to LINUX**

Nicolas WIART, Lilia MESROB, Florian SANDRON, CNRGH, CEA

19:00 – 21:00 DINNER

8:00 – 8:45 BREAKFAST

9:00 – 12:00 **Transcriptomics** (including coffee break)
Fariza TAHI, *Université d'Evry-Val d'Essonne*

- RNA secondary structure prediction and identification and prediction of ncRNAs in large-scale genomic sequences

12:00 – 13:30 LUNCH

13:30 – 17:00 **Generation and analysis of data** (including coffee break)
Valentin LOUX, *INRA*,

- Workflow for quality Control, alignment and variant calling - GALAXY

17:00 – 18:00 **FREE TIME** : time for self training or for sport activities proposed on the campus site

18:00 – 19:00 **Flash talk session I** (by the participants)

- Presentation by the trainees of their research work

19:00 – 21:00 DINNER

DAY 3

Wednesday, June 27
PRACTICAL SESSION – BIOSTATISTICS

8:00 – 8:45 BREAKFAST

9:00 – 12:30 **Variation in the human genome – 1 (SNPs, CNV...)** *(including coffee break)*

Vincent MEYER, Lilia MESROB, Florian SANDRON, *CNRGH, CEA*

- Whole Exome/Genome Sequencing as a strategy to identify the genetic bases of common Mendelian disorders and rare diseases.

12:00 – 13:30 LUNCH

13:30 – 17:30 **Variation in the human genome - 2 (SNPs, CNV...)** *(including coffee break)*
Continuation

18:30 – 19:30 **Flash talk session II** (by the participants)

- Presentation by the trainees of their research work

19:00 – 21:00 DINNER

8:00 – 8:45 BREAKFAST

9:00 – 12:30 **Network-based visualization of genomics data** (*including coffee break*)
Andrei ZINOVYEV and Cristobal Monraz, *Institut Curie - Inserm U900 - Systems Biology of Cancer Institut Curie*

Objective and outcomes: to provide to the students practical experience of using biological networks for omics data visualization. After this session, students will master using several popular platforms for network-based visualization of genomics data: Cytoscape, NaviCell, MINERVA. The students will be able to visualize a transcriptomic, proteomic, mutational, copy-number profile on an existing biological network (for example, from Atlas of Cancer Signaling Network), or to construct an ad hoc biological network from a pathway database, and use it for data visualization.

12:30 – 13:30 LUNCH

13:30 – 17:30 **Metagenomics : Bioinformatics tools for the study of microbial communities in human health** (*including coffee break*)
Katarzyna HOOKS, *Université de Bordeaux and CNRS*

Outcomes: After this workshop you will be able to: find a suitable tool to analyse the metagenomic sequencing, extract publicly available data from repositories (e.g. EBI Metagenomic), analyse and visualise it using web-based resources.

18:30 – 19:30 **Talk: topic in the field of “metagenomics with a particular focus on the microbes that inhabit the human body”** (Title to be completed)

Prof. Mihai POP, Department of Computer Science – Director, Institute for Advanced Computer Studies (UMIACS), University of Maryland

19:30 – 21:00 DINNER

DAY 5

Friday June 29

PRACTICAL SESSION – Genome and transcriptome analysis

8:00 – 8:45 BREAKFAST

9:00 – 12:30

Statistical methods (1) *(including coffee break)*

Christophe AMBROISE, *Université d'Evry-Val d'Essonne*

Guillem RIGAILL, *Inra Université d'Evry Val d'Essonne*

- Transcriptome / RNA-Seq analysis (Whole Transcriptome Sequencing): quantification and differential expression ;
- How to choose the appropriate statistical methodologies: detecting bias and troubleshoots and interpreting statistical results.

12:30 – 13:30 LUNCH

13:30 – 17:30

Statistical methods (2)

Christophe AMBROISE, *Université d'Evry-Val d'Essonne*

Guillem RIGAILL, *Inra and Université d'Evry Val d'Essonne*

- Statistical inference /hypothesis testing
- Quantitative genetics

18:00 End of the summer school - departure