**Tools installation and packages:**

- SRAtoolkit version 2.11

- FastQC version 0.11

- MultiQC version py37/1.8

- QIIME2 version 2021.4

- QIIME2 Plugins:

- cutadapt trim-paired (https://docs.qiime2.org/2022.2/plugins/available/cutadapt/trim-paired/)

- demux summarize (https://docs.qiime2.org/2022.2/plugins/available/demux/summarize/)

- dada2 denoise-paired (https://docs.qiime2.org/2022.2/plugins/available/dada2/denoise-paired/)

- metadata tabulate (https://docs.qiime2.org/2022.2/plugins/available/metadata/tabulate/)

- feature-table filter-samples (https://docs.qiime2.org/2022.2/plugins/available/feature-table/filter-samples/)

- feature-table summarize (https://docs.qiime2.org/2022.2/plugins/available/feature-table/summarize/)

- feature-table tabulate-seqs (https://docs.qiime2.org/2022.2/plugins/available/feature-table/tabulate-seqs/)

- phylogeny align-to-tree-mafft-fasttree (https://docs.qiime2.org/2022.2/plugins/available/phylogeny/align-to-tree-mafft-fasttree/)

- feature-classifier classify-sklearn (https://docs.qiime2.org/2022.2/plugins/available/feature-classifier/classify-sklearn/)

- taxa filter-table (https://docs.qiime2.org/2022.2/plugins/available/taxa/filter-table/)

- taxa barplot (https://docs.qiime2.org/2022.2/plugins/available/taxa/barplot/)

- diversity core-metrics-phylogenetic (https://docs.qiime2.org/2022.2/plugins/available/diversity/core-metrics-phylogenetic/)

- diversity pcoa (https://docs.qiime2.org/2022.2/plugins/available/diversity/pcoa/)

- taxa collapse (https://docs.qiime2.org/2022.2/plugins/available/taxa/collapse/)

- feature-table relative-frequency (https://docs.qiime2.org/2022.2/plugins/available/feature-table/relative-frequency/)

- srs SRS (https://library.qiime2.org/plugins/q2-srs/31/)

- diversity alpha-group-significance (https://docs.qiime2.org/2022.2/plugins/available/diversity/alpha-group-significance/)

- diversity beta-group-significance (https://docs.qiime2.org/2022.2/plugins/available/diversity/beta-group-significance/)

- composition add-pseudocount (https://docs.qiime2.org/2022.2/plugins/available/composition/add-pseudocount/)

- composition ancom (https://docs.qiime2.org/2022.2/plugins/available/composition/ancom/)

- LEfSe version 1.0

- PICRUSt2 version 2.4

- R version 4.1.2

- tidyverse package (https://www.tidyverse.org/packages/)

- qiime2R package (https://github.com/jbisanz/qiime2R)