

Date of publication of the job offer: 17th November 2021

Job title

DCEXS- María de Maeztu Core Facilities (Genomics- Scientific IT)
Bioinformatics Technician position

Job description

The Department of Experimental and Health Sciences - Faculty of Health and Life Sciences (DCEXS - FCSV; <https://www.upf.edu/cexs/>) of the Pompeu Fabra University (Barcelona) is specialized in Biomedical Research (Cell and Molecular Biology, Molecular Medicine, Evolutionary Biology and Complex Systems, Biomedical Informatics, Genetics and Neurosciences, Biomedical Engineering, and Public Health and Education in Health Sciences), Teaching Degrees (Human Biology, Medicine and Biomedical Engineering) and Teaching Master's degrees (Biomedical Research, Bioinformatics for Health Sciences, Pharmaceutical and Biotechnology Industry, Clinical Analysis Laboratory, and Public Health).

We are seeking for motivated Bioinformatics Technician to work in joint projects of DCEXS Genomics (<https://www.upf.edu/web/sct-genomics>) and Scientific IT (<https://www.upf.edu/web/sct-sit>) Core Facilities.

Within the Genomics Core Facility, the functions of the **DCEXS- María de Maeztu Core Facilities Bioinformatics Technician** will be those related to the analysis of the second and third generation sequencing results. Data may come from projects carried out entirely in the facility, as well from DCEXS researchers' own projects, and which require analysis and interpretation. Among the great diversity of projects in which the Bioinformatics Technician will participate (always applying the latest methodologies and the most appropriate in each case), the following can be highlighted: analysis of sequences of exomes or complete genomes for variant detection; analysis of environmental samples for metagenomics and species identification studies, either from shotgun sequences or amplicon sequences, such as 16S or ITS; differential expression analysis from RNAseq experiments, or even single cell RNAseq; sequence analysis of single-molecule Oxford Nanopore technology.

This kind of analysis are essential to process the data of the sequencing projects and to be able to extract the necessary results for the end users. Therefore, a high learning ability and adaptability are required to perform these analyses. It is also required for this position to have knowledge of genome alignment and mapping tools (BWA, STAR, BLAST, WHEAT, Muscle), sequence quality controls (FastQC, MultiQC, Qualimap), programs to identify Variants (SAMtools, GATK), for expression studies (HTSeq), among others (Trimmomatic, BEDtools, SAMtools, Picard, Kraken2, ...), as well as computer skills in BASH, Python, R, MySQL, HTML, PHP and other languages.

Regarding the Scientific Informatics Service, the figure of the Bioinformatics Technician is key for the functions of interpretation between the world of biological sciences and the world of computer science. Their functions are related to the use of

applications and software to perform the various analysis, their installation, parameterization and improvement. To perform these tasks, the candidate must have knowledge of Linux system administration, both at the operating system level as well as in compiling and installing applications. Knowledge of computer cluster management is also required (such as Slurm, EasyBuild, etc., file systems as NFS, GPFS, Luster, beefs), virtual application execution environments (Conda, Dockers, Singularity, Python, ...), application development tools (git, bitbucket, ...), and pipeline development tools (NextFlow, Bash, Python, R, Perl, ...). The Bioinformatics Technician should be a problem-solver, able to assist users, and participating in users' training.

The successful candidate will work in truly interdisciplinary projects. They will be based in the UPF facilities in the Barcelona Biomedical Research Park (PRBB, one of the most important scientific hubs in southern Europe, <https://www.prbb.org/>) and will have all the necessary equipment and expert support. With state-of-the-art research facilities and an international atmosphere, PRBB offers the ideal scientific environment.

Project and Institution that finance the contract

DCEXS Unidad de excelencia María de Maeztu, Pompeu Fabra University, funded by the Ministerio de Ciencia e Innovación (MCIN) and the Agencia Estatal de Investigación (AEI, DOI: 10.13039/501100011033).

Official number reference

CEX2018-000792-M

Information on the requirements of the position

- Bachelor's degree in Biology or related disciplines.
- Degree in Bioinformatics or related disciplines.
- Second and third generation sequencing data analysis:
 - Variant detection from exome, genome, or amplicon panels or capture data.
 - Metagenomics studies, species identification in genome or amplicon data
 - Differential expression studies based on RNAseq or single cell RNAseq data.
 - Variant detection from single molecule sequencing data.
- Interpretation, statistical analysis and presentation of results.
- Provide advice to users of the CFs, and answer their enquiries.
- Install applications and packages on computer systems as well as external utility developments.
- Design and parameterization of pipelines for the resolution and application of computational techniques in biological experiments.
- Participation in training activities for users.
- Knowledge of programming languages and other specific software:
 - Bash, Python, R, Perl, MySQL, HTML, PHP
 - WOOD, STAR, MINIMAP2, BLAST, ROCK, MUMmer, MAFFT, Muscle, FastQC, MultiQC, Trimmomatic, HTSeq, Kraken2, ResFinder, BEDtools, SAMtools, Picard Tools, GATK, SNPEff, Qiime2, Nanopolish, REPET, among others.
- Systems administration knowledge:

- Linux, Virtualization, Slurm, EasyBuild, Lxc, Dockers, Singularity, ...
- Professional and personal skills:
 - Emotional management
 - Analysis and problem solving
 - Effective interpersonal communication
 - Team management
 - Flexibility and change management
 - Innovation and creativity
 - Leadership and influence
 - Organization of work and time
 - Quality and results orientation
 - User orientation
 - Proactivity, initiative and autonomy
 - Teamwork and cooperation
- Good level of English, written and spoken.

Benefits of the opening

The candidate will receive a full-time contract and an annual salary according to the UPF salary guidelines. They will be able to receive training in scientific skills, as well as in complementary skills, through courses of DCEXS, UPF, and the PRBB Intervals Programme.

Information on the application process

Please send the following documents:

- CV
- Cover letter

to the email address avaluacio.cexs@upf.edu with "DCEXS-MM Bioinformatician position application" in the email title.

Confidentiality in document handling and equality of opportunities policy are guaranteed by Pompeu Fabra University.

Deadline to submit applications:

01/12/2021