BIOINFORMATICIAN / DATA SCIENTIST

Open positions: 1 postdoctoral or engineer

Location: Inserm U976, Hôpital Saint Louis, Paris, France

Date posted: December 2020

Application deadline: February 2021

Job description summary

The research group of Pr Vassili Soumelis (Inserm U976, Paris, France) is seeking a degree-qualified computational scientist. The bioinformatician will be dedicated to an ambitious international collaborative research IMI (Innovative Medicine Initiative) project IMMUcan. This is a fundamental/translational project involving academia/industry partnerships to unravel the immune micro-environment in human cancer and the impact therapeutic interventions implicit on it.

Context

The project will be developed under the supervision of Pr Vassili Soumelis. The team's efforts focus on improving the understanding of complex inflammatory and immune reactions, as well as basic mechanisms of signal integration and cell behaviour.

The research group is integrated into the newly created INSERM Unit U976 HIPI: "**Human Immunology, Physiopathology and Immunotherapy**" at the St Louis Research Institute in the world-renowned Hôpital Saint Louis (Paris, France) in a both cultural and scientific rich environment. Hôpital Saint Louis is located in the heart of Paris, in the lively and dynamic neighbourhood of Republique and canal Saint Martin. Hôpital Saint Louis hosted Pr Jean Dausset, a pioneer in Haematology and Immunology who received the Nobel prize in Medicine in 1980 for the discovery and characterisation of the genes making the major histocompatibility complex. The research campus is part of the Université Paris Diderot (now Paris University) and hosts the headquarters of the European School of Haematology. The Immunology Unit includes 10 independent research teams in the fields of basic and applied immunology, working in a collaborative and international environment.

The team offers the opportunity to expand and develop your career in an exciting professional environment promoted by an open culture and a spirit of community. The site has an active seminar program and hosts regular training sessions in molecular and cellular biology. An active association for graduate and post-graduate students 'Adelih' is based on the research campus.

Project

The project aims at addressing key biomedical challenges related to immuno-oncology by developing approaches to analyse and integrate complex multivariate datasets and biological knowledge generated in IMMUcan, while keeping a strong link between biological mechanisms and clinical impact. The aimed project outputs should provide 1) improved understanding of cellular and molecular mechanisms of ant-tumour immunity and response to immunotherapy 2) novel patient stratification algorithms, 3) prognostic signatures, 4) multivariate predictive biomarkers of therapeutic response and toxicity, 5) novel therapeutic target candidates, 6) guidelines for precision drug combination strategies.

To address these challenging questions, we seek a candidate fully dedicated to IMMUcan to distribute the work between on the following tasks:

1- **Bulk RNAseq transcriptomics data analysis:** Quality control and analysis of transcriptomics data generated from FFPE samples.
2- **Multi-omic data integration in human cancer:** Integration and analysis by computational approaches of multi-omics data such as bulk and single cell RNAseq transcriptomic data, secretome/proteome, WES, immunofluorescence, imaging mass spectrometry coming from cells/tissues obtained from tumour patient samples. A major challenge is to effectively connect those complex biological variables to clinical data for diagnostic classification and predictivity of patient outcome.
3- **Public database curation:** Updating an existing database of single cell cancer studies, validating and developing standardised tools for data mining and re-analysis.
4- **Follow-up, reporting:** Frequent participation in discussions via web conference including periodic oral and written reporting of the work progress.

Mission

- Development of high-quality tools for data analysis, quality control and automatic processing
- Mastering DESeq 2, Seurat or Scanpy for the implementation of analysis workflows
- Research and development of novel algorithms and techniques for data analysis and visualization
- Integrate methodological and biomedical aspects to address challenging questions
- Working with researchers and medical doctors in interdisciplinary project teams to explain the results of your analyses
- Presenting your results and reporting

Profile

Qualification:

- Master or PhD in bioinformatics, mathematics, computer science, or related field
- Expertise in data science, machine-learning, computational life science, computer science, computational biology, applied mathematics or statistics
- Demonstrated strong programming skills in at least one programming language, e.g. Python or R

Desirable Knowledge, skills and abilities:

- Some knowledge in biology/onco-immunology is not mandatory but would be appreciated
- Knowledge in approaches for high-throughput data analysis, statistical modelling, and classification
- Knowledge of biological databases and experience with high-performance computing environments
- Scientific rigor and excellent analytical and synthetic capabilities.
- Dynamic personality with passion for innovation and problem-solving
- Excellent interpersonal and communication skills and the initiative to actively communicate with data producers and data users in an interdisciplinary international environment
- Ability to work independently and well-organized in a fast-paced work environment
- Very good proficiency in English both in writing and speaking

The position will be funded for 12 months with possibility for extension.

Precise salary will depend on past experience of the candidate.

Please send CV and two references to vassili.soumelis@aphp.fr and to jasna.medvedovic@inserm.fr