

BIOINFORMATICIAN

Application deadline: July 2021

Open position: postdoctoral and/or engineer (master's degree +)

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

Team : Human Systems Immunology & Inflammatory Networks

<https://hipi-lab-saint-louis.fr/research-teams/human-systems-immunology-inflammatory-networks-team/>

Job description summary

The research group of Prof Vassili Soumelis is recruiting degree-qualified bioinformaticians. Successful candidates will be dedicated to **system immunology studies applied to human diseases** in the frame of fundamental and translational research projects.

Context

Projects will be developed under the supervision of Prof Vassili Soumelis. His team aims to improve the understanding of complex inflammatory and immune reactions, as well as basic mechanisms of signal integration and cell behavior.

The team is integrated in the INSERM Unit U976 **HIPI**: “**Human Immunology, Physiopathology and Immunotherapy**” at the St Louis Research Institute in the Saint Louis Hospital, located in the heart of Paris, in the very lively and dynamic neighbourhood of République and canal Saint Martin. The hospital hosted Prof 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 coding for the major histocompatibility complex. The research campus is part of the University Paris Diderot (Paris-Sorbonne-Cité) 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 active seminar programs 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.

Projects

The open positions are in line with recent developments at the interface between Immunology, Bioinformatics and Systems Biology (*Michea et al, Nat Imm 2018*; *Noël et al, Nat Commun 2021*; *Saichi et al, Nat. Cell Bio 2021*).

The projects aim at studying molecular regulation and related functions of immune cells in pathological context such as cancer, lupus nephritis, atopic dermatitis and rare inflammatory diseases:

- 1- **Multivariate modeling of immune cell communication:** Integrative biology and mathematical modeling of human T helper cell differentiation, systems level combinatorial analysis of signal integration.
- 2- **Single cell RNAseq Project:** Dissection of immune cell diversity and function in the context of cancer and infectious diseases from fresh human *ex vivo* samples in a multidisciplinary context.
- 3- **Multi-omic data integration in human disease (ImmuAID, and ImmuCAN):** Integration and analysis by computational approaches of multi-omics data such as bulk and single cell RNAseq



HIPI

Human Immunology
Pathophysiology
Immunotherapy

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transcriptomic data, secretome, proteome (IF and IMC), WES coming from human cells/tissues to classify rare inflammatory diseases and cancer.

- 4- **Theoretical disease modeling:** multiscale mathematical modelling of auto-inflammatory diseases exploiting original disease knowledge maps performed in collaboration with medical doctors.

Mission

- Development of high-quality tools for data analysis, quality control and automatic processing
- Mastering DESeq2, Seurat or Scanpy for the implementation of analysis workflows
- Research and development of novel algorithms and techniques for data analysis and visualization
- Pathway analysis: functional high-throughput data analysis and computational approaches
- Integrate methodological and biomedical aspects to address challenging questions
- Interpretation of the analysis results with biologists and medical doctors in interdisciplinary projects teams
- Presenting results at seminars and international conferences

Profile

Qualification:

- **PhD in bioinformatics**
- Expertise in computational life science, data science, computational biology
- Demonstrated programming skills in at least one programming language, e.g. Python or R

Desirable Knowledge, skills and abilities in:

- Immunology, not mandatory but would be highly appreciated
- In transcriptomics data analysis, multiple omics dataset integration
- Approaches for high-throughput data analysis, statistical modeling, and classification
- Databases and experience with high-performance computing environments

Personal traits & work ethics

- 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 environment
- Ability to work independently and well-organized in a fast-paced work environment
- Good proficiency in English

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

!!! Postdoctoral candidates should be eligible (in terms of age and research output) to apply for regional and international fellowships, and behold ambitions to do so.

Precise salary will depend on past experience of the candidate.

Please send a **CV (including the publication list), motivation letter, and contacts of two referees** to hsiin.recruitment@gmail.com

Please entitle your application documents using the following formats:

CV document : **CV_surname_bioinfo**

Motivation letter: **ML_surname_bioinfo**