COMPUTATIONAL BIOLOGIST – GIGA/FARAH – ULIEGE
Systems biology applied to immunology
Postdoctoral researcher

Project FEDER *SYST-IMM : Systems biology applied to immunology: integration of multi-omics data to study responses to vaccines and respiratory pathogenic viruses.*

A consortium of immunology research groups of the FARAH and the GIGA at Liège University is looking for a **postdoctoral computational biologist**. The consortium is involved in the study of lung immune responses in preclinical models of inflammatory diseases, exposure to viruses and/or environmental pollutants (1-5). The project aims to identify predictive signatures of the nature of the immune response to respiratory pathogens using multi-omics approaches in preclinical models. The multi-omics approaches will include integration of single-cell RNA sequencing data (10X Genomics, BD Rhapsody), ATAC-seq, spectral flow cytometry (Sony ID7000, FACSymphony A5SE), and spatial transcriptomics.

The post-doctoral researcher will have a minimum experience in bioinformatics analysis of sequencing data, ideally in the domain of immunology, and an incentive to develop new analysis tools for the benefit of the project. The person hired will also be motivated by academic research and have a clear desire to put their knowledge of the field to good use in partnership with other computational biologists specialists working on the same research project.

References

1. M. Gong, F. Myster, A.Azouz, G. Sanchez Sanchez, S. Li, B. Charloteaux, B. Yang, J. Nichols, L. Lefevre, J. Javaux, S. Leemans, O. Nivelles, W. van Campe, S. Roels, L. Mostin, T. van den Berg, A.J. Davison, L. Gillet, T. Connelley, D.Vermijlen, S. Goriely, A. Vanderplasschen, B.G. Dewals.Unraveling clonal CD8 T cell expansion and identification of essential factors in γ-herpesvirus-induced lymphomagenesis. *PNAS*, 2024 DOI 10.1073/pnas.240453612. In press.
2. Yang B, Sanchez-Sanchez G, Lavergne A, Piedfort O, Peng G, Madrigal Aguirre A, Petrellis G, Katsandegwaza B, van Isterdael G, Van Duyse J, Bai Q, Marichal T, Machiels B, Nitschke L, Najafabadi HS, King IL, Vermijlen D, Dewals BG. IL-4 induces CD22 expression to restrain the effector program of self-reactive virtual memory T cells. *Preprint*. doi: 10.21203/rs.3.rs-2747693/v1
3. Loos P, Baiwir J, Maquet C, Javaux J, Sandor R, Lallemand F, Marichal T, Machiels B, Gillet L.Dampening type 2 properties of group 2 innate lymphoid cells by a gammaherpesvirus infection reprograms alveolar macrophages. *Sci Immunol*, 2023, 8: eabl9041.
4. Maquet C, Baiwir J, Loos P, Rodriguez-Rodriguez L, Javaux J, Sandor R, Perin F, Fallon PG, Mack M, Cataldo D, Gillet L, Machiels B.Ly6Chi monocytes balance regulatory and cytotoxic CD4 T cell responses to control virus-induced immunopathology. *Sci Immunol,* 2022, 7: eabn3240.
5. Radermecker C, Sabatel C, Vanwinge C, Ruscitti C, Maréchal P, Perin F, Schyns J, Rocks N, Toussaint M, Cataldo D, Johnston SL, Bureau F, Marichal T. Locally instructed CXCR4hi neutrophils trigger environment-driven allergic asthma through the release of neutrophil extracellular traps. *Nat Immunol*, 2019, 20: 1444-1455.
6. Vanneste D, Bai Q, Hasan S, Peng W, Pirottin D, Schyns J, Maréchal P, Ruscitti C, Meunier M, Liu Z, Legrand C, Fievez L, Ginhoux F, Radermecker C, Bureau F, Marichal T. MafB-restricted local monocyte proliferation precedes lung interstitial macrophage differentiation. *Nat Immunol*, 2023, 24: 827-840.

TASKS

- Analysis of single-cell sequencing data (10X Genomics, BD Rhapsody, Parse Biosciences, etc.);
- Analysis of spatial transcriptomics data.
- Integration of spectral flow cytometry data.
- Integration of spectral imaging data.
- Teamwork on joint projects, with direct links to the GIGA and FARAH laboratories.
- Development of new bioinformatics analytical approaches for the integration of multiple data.
- Participation in the planning of preclinical experiments prior to analysis.

PROFILE

- PhD in (bio)medical, veterinary or related sciences.
- Proficiency in bioinformatics analysis tools.
- Demonstrated ability in state-of-the-art bioinformatics analysis through scientific publications.
- Willingness and ability to develop new bioinformatics tools for analyzing complex biological data.
- Organizational skills and the ability to work independently.
- A taste for teamwork.
- Ability to manage a team.

HIRING CONDITIONS

- Full-time fixed-term contract for 1 year, renewable (up to 6 years in total)
- Basic gross monthly salary (scale 116S) **4.990,78 euros** (index update on 01/12/2023) with the possibility of recognition of seniority that can be valorized)
- Start date: immediately

PARTNERS OF THE PROJECT

- Laurent Gillet   Didier Cataldo
- Bénédicte Machiels   Thomas Marichal
- Frédéric Baron   Benjamin G. Dewals

COMPLEMENTARY INFORMATION

- For additional information on the nature of the tasks, applicants are invited to contact Laurent Gillet (L.Gillet@uliege.be). (☎+3243664286)

HOW TO APPLY?

Applications (quoting the reference number), together with a CV and covering letter, should be sent to Christina Espert (christina.espert@uliege.be) by 9/08/2024
Date de parution : 19/07/2024