Post-doctoral position in bioinformatics (up to 2 years):

Prediction of single-cell miRNA-seq data in cancer

microRNAs (miRNAs) are small non-coding RNAs known to further regulate protein coding genes. They are important in many physiological and pathological processes. In cancer, in particular, they were demonstrated to be implicated in all steps of carcinogenesis: initiation, propagation and metastasis.

Single cell mRNA-seq has revolutionized our vision of tumor composition, further decrypting the cross-talk between cancer cells and cells of the microenvironment. Many public datasets exist for various cancer subtypes. Single cell miRNA sequencing has recently been conducted but remains challenging. In addition, datasets are rare (and will remain rare for a long time).

The goal of the work is first to predict single cell miRNA-seq data from public single cell mRNA-seq datasets in cancer. Then, the method will be evaluated with experimental single cell miRNA-seq data.

A particular focus will be given to adrenocortical and kidney carcinomas which are well studied in the hosting team.

The research will be conducted in a small and dynamic team composed of both bioinformaticians and wet lab biologists. It is part of a larger project gathering 3 teams, including clinicians and experts in artificial intelligence.

To candidate: Send CV, references and motivations to Laurent Guyon laurent.guyon@cea.fr (contact email)

Funding & duration: The post-doctoral researcher will receive a salary following French standards depending on his qualifications/experience, and the duration is up to 2 years. It will start ideally in Spring 2023 (to be discussed).

Web links: http://laurent.guyon.phd.free.fr/ and https://smallrna-bioinformatics.eu/

Keywords: data analysis, bioinformatics, systems biology, miRNAs, single cell mRNA-seq

Requirements: PhD diploma. Experience in bioinformatics (ideally with R, but Python is ok) with single cell data analysis. Experience in the microRNA and/or machine learning fields would be a plus.

Related publications of the team:

1. Giroux, P., Bhajun, R., Segard, S., Picquenot, C., Charavay, C., Desquilles, L., ... & Guyon, L. (2020). miRViz: a novel webserver application to visualize and interpret microRNA datasets. Nucleic Acids Research. (link)
2. Cherradi N. microRNAs as Potential Biomarkers in Adrenocortical Cancer: Progress and Challenges. Front Endocrinol (Lausanne). 2016;6:195. (link)
3. Reda El Sayed, S., Cristante, J., Guyon, L., Denis, J., Chabre, O., & Cherradi, N. (2021). MicroRNA therapeutics in cancer: current advances and challenges. Cancers, 13(11), 2680. (link)