PhD scholarship in Machine Learning for Precision Oncology

FUNDED BY	Institut Paoli Calmettes (IPC)
SUPERVISED BY	Dr Pedro Ballester
STIPEND	INSERM gross monthly salary of €1760 for three years
CLOSING DATE	Friday 15 February 2019
STARTING DATE	March 2019

Working environment

The Cancer Research Center of Marseille (CRCM) is the basic science and translational research unit of the IPC (http://crcm.marseille.inserm.fr/en/the-care-center/). Also affiliated to INSERM, CNRS and Aix-Marseille University, the 250 researchers working at the CRCM form a strongly multi-disciplinary research environment characterized by frequent and close collaborations with IPC clinicians. IPC is a member of the UNICANCER network (http://www.unicancer.fr/en/unicancer).

Project

This project will address the question of how to leverage clinical data to improve our ability to predict which cancer patients will respond to a drug treatment. The CONSORE project within IPC has completed the structuration of electronic health records from clinical practice. As a result, we now count with a large volume of structured data from the IPC (currently 258,168 patient records). The successful candidate will investigate and implement predictive models exploiting these data resources. This includes the application of suitable machine learning techniques to reduce the dimensionality of data in building these *in silico* models. Other project components are mining public and in-house clinical data as well as research on optimal ways to use model predictions to support clinical decision-making and assess uncertainty.

Selection criteria - Essential

- An excellent first or master degree with a major focus on computational analysis of experimental data, preferably in an area directly relevant to the project.
- Skilled in the implementation of R or Python scripts for scientific data analysis.
- Comfortable working in linux environments.
- Ability to communicate effectively in English, both orally and in writing.

Selection criteria - Desirable

- Master project and/or internship in the application of machine learning to solve real-world problems in the context of biomedical research.
- Prior use of computational tools and resources based on pharmaco-omic data.
- Background in cancer biology and/or drug discovery.
- Familiarity with the processes of handling, integrating, processing and analysing omics data (especially genomic and transcriptomic data from NGS technologies).
- Software engineering skills using C++, C and/or Python (numPy/SciPy/scikit-learn) including version control tools (e.g. git).
- Prior use of high-performance computing to train machine learning algorithms.
- An excellent command of French language.

Centre de Recherche en Cancérologie de Marseille, 27 Boulevard Leï Roure, BP 30059, 13273 Marseille Cedex 9 – Tel 04 86 97 72 00 – Fax 04 86 97 74 99 - http://crcm.marseille.inserm.fr/

What we offer
The successful candidate will register as a PhD student and receive a gross monthly salary of €1760 for three years to cover accommodation, subsistence and registration fees (ca. €400 per year). This is an exciting opportunity for a highly motivated and diligent scientist to carry out a PhD project on a timely data science problem of great therapeutic importance. The results of this project will be applied to clinical research case studies in collaboration with IPC oncologists.

The student will join the Ballester team at the CRCM, which is currently composed of one postdoc and three PhD students. In terms of quality of life, the CRCM is located in Marseille and thus the student will enjoy living in an exciting multi-cultural city at the French Mediterranean coast.

How to apply
Candidates must send an email with their CV, grades for each held university degree and a covering letter (maximum two pages) to pedro.ballester@inserm.fr with subject line "IPC PhD scholarship". This letter must explain how they meet the essential selection criteria, which desirable selection criteria are also met and how this position would fit in their future career plans. This email must also state the names and emails of two scientists involved in assessing their academic performance, who are willing to provide a reference. Please also mention in the letter where did you see this position advertised.