

# POST-DOC POSITION IN STATISTICS

- Recruitment grade: young researcher (i.e. with PhD)
- Location: Anglet (France, 64) and/or Villejuif (France, 94) with international collaboration (flexible)
- Duration: 12 to 36 months, starting November 2020 or as soon as possible
- Deadline: position open until filled
- Gross Salary Range: 2699 euros / month

## Context and aims

We are currently seeking to recruit a post-doctoral researcher at LMA (Laboratory of Mathematics and its Applications, UMR CNRS 5142, Anglet, France, <https://lma-umr5142.univ-pau.fr/fr/index.html>) in collaboration with the “Exposome and heredity” team of the CESP research center (Centre de Recherche en Epidémiologie et Santé des populations, Villejuif, France, <http://cesp.inserm.fr/>). The location of the position would be either in Anglet (64) or in Villejuif (94), at the choice of the applicant.

Recent technological advances in molecular biology and genomics given rise to numerous large-scale datasets. The sheer size and complexity of these data sets imposes new methodological challenges. The aim of the AMLAP (Advanced Machine Learning Algorithms for leveraging Pleiotropy effect) project, funded by the “ITMO Cancer d’Aviesan”, is to boost and enhance the current toolkit for integrative analysis of massive datasets, especially for detecting pleiotropy. Novel methods for the association between blocks of data, such as relating to gene, will be developed and so dealing with the most challenging issues raised in computational biology. This project will generate innovative methodologies that overcome the big data challenge in a real-life context and thus help the full exploration of existing and yet under exploited data. This research contributes to extend pleiotropy knowledge in human disease in order to drive diagnosis, therapeutic intervention and individualised treatment within precision medicine. The new statistical approaches will be applied to enrich our insights about the genetic mechanisms of cancers. Exploring the genetic relationship between cancers would help to elucidate the common mechanisms between diseases and could lead to improve their diagnostic and therapeutic management.

The overall aims of this project are thus two-fold. We aim to develop novel big data analytics methods for leveraging pleiotropy using specific data structures (gene or pathway-level) and to apply these to large individual data sets and to massive data sets using summary statistics.

## Tasks

- 1) Methods development for pleiotropy analyses
- 2) Simulation studies design and validation of methods. Performances of developed methods will be compared to those of most commonly used methods.
- 3) Development of R packages.
- 4) Writing of scientific article

## Young Researcher skills required

- The applicants should have a Phd in Computer Science or in Statistics, have strong experience with programming, good communication skills and interest in working in a cross-disciplinary team.
- A successful post doc candidate might have experience in the development and application of Bayesian and Frequentist methods for computationally challenging problems.

- A successful candidate will also have experience in scientific computing. Prior experience in genetics is not necessary, but is counted as an advantage.

## **Supervision and Contact**

Benoit Liquet (benoit.liquet@univ-pau.fr) at the LMA : Laboratory of Mathematics and its Applications, UMR CNRS 5142 (<https://lma-umr5142.univ-pau.fr/fr/index.html>) on the campus of Anglet (64600) France.

For additional information and proposal, please contact: Pr Benoit Liquet, Tel: + 33 6 95 46 10 61 Email: benoit.liquet@univ-pau.fr

## **Salary**

The salary of the successful candidate will be based on level chart for research personnel in the salary system of French universities. The salary will be 2699 euros/month (gross salary).

## **Applications**

Please submit your application by email to benoit.liquet@univ-pau.fr. Please attach the following documents as a single pdf file: motivational letter (max 1 page), CV (max 2 pages) and publication list. Include also contact information of two persons who can provide a reference letter based on request.