

## POST-DOCTORAL PROPOSAL: MODELING LARGE GENOMIC DATA SETS TO PREDICT IMMUNE COMPOSITION AND SURVIVAL IN CANCER PATIENTS.

**Duration :** 12 months  
**Starting date :** October - December 2018  
**Location :** Université de Montpellier  
**Lab :** Institut Montpelliérain Alexander Grothendiek,  
research team Probability and Statistics

### **Project description.**

The applicant will develop statistical models for the analysis of pseudo-longitudinal RNA-Seq data (the data have been pre-treated by a bioinformatics team and are available as a matrix of counts). Main goals will include (i) identifying gene signatures responsible for the disease evolution and the response to treatment and (ii) developing survival prediction models. This implies more specific challenges such as deconvoluting the signal in cell-types (with the help of flow cytometry measurements), detecting key time points in the disease evolution, etc. Depending on the results, the generation of a more refined dataset will be considered. Statistical methodologies will likely involve generalised linear mixed models, clustering, graphical models, and time series analysis.

This project is associated to a research program led by the Oncopole of Toulouse aiming at identifying markers of the immune environment of tumor cells, with a particular focus on, but not limited to, Multiple Myeloma. Involvement in biology will depend on the candidate's will.

### **Profile.**

The candidate should hold a PhD in statistics or biostatistics.

She / he should have previous experience in

- Development of models for large data-sets, if possible for count data,
- Clustering techniques,
- Autonomy and team spirit,
- Organizational skills, ability to provide synthetic and didactic presentation of scientific results are also required.

**Application.** Interested individuals should include a 1-2 page cover letter describing their research experience and publications along with a CV and the names and contact information of three references.

### **Contact.**

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