

Monday, the 21st 2019

Title: Assessing the interplay of bacterial and host genetics on human infectious diseases

CONTEXT & OBJECTIVES

Applications are invited for a two years postdoctoral fellowship at the Institut Pasteur within the Statistical Genetics group in the Center of Bioinformatics, Biostatistics and Integrative Biology (C3BI).

The genetics of common human diseases has been extensively, and successfully, explored using the now popular GWAS (genome-wide association study) approach, an agnostic and systematic screening for association between genetic variants and phenotype. In recent years, the same principle has been applied to other predictors and outcome data (e.g. PHEWAS for Phenome-wide association studies, EWAS for Epigenome-wide association study). With increasing genetic data on human pathogens, the community is showing strong interest for the implementation of similar approaches to study the impact of bacterial genetics on human phenotypes, and the interplay between host and bacteria genetics. In collaboration with other research group at the Institut Pasteur, our group is developing methodologies to address these questions using some of the largest and richest dataset available to date with extended genetic, phenotypic and environmental data.

The work will address multiple statistical and computational challenges, and the population structure across bacterial strains in particular. The selected candidate will both lead method development and corresponding real data analyses. The project is highly collaborative, involving experts in statistics and computational sciences from our group and the C3BI (including over 100 biostatisticians and bioinformaticians), but also biologist and epidemiologist, as the functional impact of associated variants will be validated with genome editing (e.g., with Crisp-Cas9) in mice models, and with ex vivo assays in relevant human tissues.

The selected candidate will be mentored by Dr. Hugues Aschard, but will also work with members of our research group and collaborators involved in the project. She/he will have access to all resources at Pasteur, including in particular the High Performance Computing Cluster which includes over 2,000 cores, and the rich scientific life of the campus (over 1,000 researchers from 11 departments on site).

QUALIFICATIONS

The position requires advance knowledge in statistics and computer sciences. The applicants should therefore have substantial educational background in Statistics/Biostatistics, Bioinformatics, Computer Science or other relevant disciplines. Experience with linear mixed model is required.

ADDITIONAL INFORMATION

Interested applicants should send their curriculum vitae, a brief cover letter, and contact information from at least one referee to Dr. Hugues Aschard (hugues.aschard@pasteur.fr). More information about our group and the C3BI can be found here <https://research.pasteur.fr/en/team/statistical-genetics/> and here <https://research.pasteur.fr/en/center/c3bi/>.