Project Supervisor: Dr. Chaysavanh Manichanh

Group: Human Microbiome
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web pages:
> https://sites.google.com/site/manichanhlab/
> http://www.vhir.org/
> http://www.metahit.eu/index.php?id=388
> http://www.funhomic.eu

Project title: Integration of micro- and mycobiome sequence data

Project background

Fungal infections have a major impact on human health. Fungi infect about 2 billion people and kill about 1.5 million people each year (greater than malaria or breast cancer). The human microbiome has been intensively investigated over the last 15 years using meta-omics approach. Conversely, the human mycobiome (fungal microbiome) and in particular the interaction between microbiome and mycobiome are poorly understood. The aim of the present work is to develop and/or implement bioinformatics and statistical tools and to prepare a sequence database to analyze fungal communities.

Working environment and facilities

The Vall d'Hebron Research Institute (http://www.vhir.org/) is a multidisciplinary centre that promotes and develops innovative biomedical research. VHIR aims at undertaking high quality and competitive research and teaching at the international level in the field of health and life sciences. Involved in the areas of basic, clinical, epidemiological, economic and healthcare, VHIR is devoted to transfer knowledge allowing a better diagnosis, treatment and the prevention of health problems of our society.

The Human Microbiome Lab is a multidisciplinary research group that develops molecular, cellular as well as bioinformatics tools to understand the role of the microbiome in human health and disease. It is using meta-omic approaches to study the human microbiome associated with disorders. The group has collaborated with European consortia (MetaHIT and IHMS) to build a comprehensive gene catalogue from the human gut microbiome and to develop standard operating procedures (SOPs) and protocols in order to optimize data comparisons in the human microbiome field. http://www.metahit.eu/index.php?id=388

- The candidate will work in particular in the dry-lab conducting bioinformatics and biostatistical research. The candidate will be integrated in a young and collaborative environment with very passionate and talented people.
- We want to help you build solid foundations on the research method, so you will be assisted by more experienced colleagues.
- The candidate will apply classical statistical techniques such as hypothesis testing, ANOVA, regression, Diff-in-Diff but you will also develop Machine Learning algorithms such as Random Forests, SVM, k-NN, CART etc… You will have lots of freedom to decide and choose the approach that you consider most appropriate.

The current project is in the framework of FunHoMic: "Deciphering the fungus-host-microbiota interplay to improve the management of fungal infections" a MSCA European Innovative Training Network (ITN) which started on the 1st of January 2019. http://www.funhomic.eu

Eligibility criteria

Applicants can be of any nationality and must be Early-Stage Researchers in the first four years of their research career and must not have been awarded a PhD. They must not have resided or carried out their main activity (work, studies, etc.) in Spain for more than 12 months in the 3 years immediately prior to their recruitment.

Candidate profile (qualifications or something similar)

- BSc and MSc in Informatics, Statistics, Mathematics, Econometrics; engineer from Ecole Polytechnique, Ecole Normal Supérieure…

-Theoretical and practical knowledge of classical statistical inference and Machine Learning

-Strong coding experience in R (and Python if possible)

-Fluent in English (most of our team are foreigners, thus English is our language)

-Passion for health care and willing to learn about the medical field. You don't have to have a bio background but we seek someone motivated to learn.

Our offer

The successful candidate will pursue an exciting, challenging research project at the forefront of modern medical mycology and will gain in-depth interdisciplinary training through network-wide collaborations, inter-sectoral mentoring and secondments, summer schools and webinars. The PhD position is for 3 years.

Salary is paid according to the regulations of the Marie Skłodowska-Curie Actions and the successful candidate will benefit from a work contract in line with national regulations.

1. **Other information**

Enrolment in the Universitat Autònoma de Barcelona who will deliver degrees.

Deadline for applying: End of June 2019

Contact Email: cmanicha@gmail.com