**MICROSAL: Investigating the variability of the salivary microbiome and its regulation in the French population**

**Envisioned funding:** ARED/UBO for 3 years

**Target start date:** October 1st, 2025

**Supervision:** Ozvan Bocher and Emmanuelle Génin (UMR1078, Brest, France)

**Summary of the project:** The development of genomic technologies has enabled the genetic characterization of diverse cohorts, as well as the description of associations between genetic variants and complex traits through genome-wide association studies (GWAS). Additionally, technological advancements have allowed for the characterization of omic profiles, such as the transcriptome or the microbiome, enabling the study of molecular traits closer to complex diseases. However, the microbiome is still often absent from large cohorts in the general population and is mainly limited to the gut microbiome. The salivary microbiome, more sensitive to environmental changes such as diet, remains largely unexplored to date. The POPGEN project was initiated to create a reference panel of genomes from individuals representative of the French metropolitan population. The GOLD project plans to reuse these data in connection with phenotypic data, such as participants' lifestyle habits, and potential pathologies, as well as their salivary microbiome. The aim of this thesis will be to characterize the diversity of the salivary microbiome in the French population and the environmental and genetic factors regulating it, especially through the determination of QTLs (quantitative trait loci). A second part of the project will aim to establish a link between the salivary microbiome and different diseases by: (1) comparing the microbiome profiles of participants based on their status for relevant diseases; (2) integrating the QTLs described in the first part of the project with GWAS data to better understand the genetic associations described with complex traits. To achieve these objectives, specific statistical methods will need to be used and likely developed to account for the nature of the data. These developments, as well as the results generated, will be made available to the scientific community.

**About the lab:** The UMR1078 in Brest gathers expertise from various fields ranging from functional genomics to computational analyses. We develop health translational research centred around the understanding of the role of genes and the regulation of their expression in the phenotypic variability and on the development on new therapeutic strategies. The PhD student will be part of the Statistical Genetics and Bioinformatics group which has an expertise in genomic data analyses. He/she will be supervised by Ozvan Bocher who has recently joined UMR1078 as a Junior Professor with a research focus on statistical analyses of genomics and multi-omics data.

**Required skills:**

* Background in statistics, epidemiological genetics or related field
* Programming competence in R, Python or related languages
* Fluency in English will be highly favoured to work with international collaborators
* Experience in omics analysis or knowledge on the microbiome is advantageous but not required

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