

## PhD position in Clinical Metabolomics (Life Sciences – FBM - UNIL)

Metabolomics group at the University of Lausanne (PI: Dr. J. Ivanisevic) is looking for a motivated PhD student to join a young and dynamic team in the newly established metabolomics unit at the Faculty of Biology and Medicine. It is an interdisciplinary project, in a collaboration with CoLaus clinical consortium (University Hospital Lausanne) with a goal to draw a global and quantitative picture of the human blood biochemical profile using well-characterized 'healthy' sample of the Lausanne population and the state-of-the-art metabolomic approaches.

### Project Description

*Title: Metabolic phenotyping of adult Caucasian population of Lausanne: quantifying human plasma metabolome - from baseline metabolic variance to altered metabolic traits*

Metabolomics is emerging as an indispensable technology for the transition towards stratified and personalized approach to medicine. However, before associating the altered metabolic pathways with a disease, for metabolomics to make its way to the clinics, the framework of human metabolism in health and aging needs to be defined. Metabolite profiling should be made more quantitative to allow for systematic (comparable across laboratories and studies) and comprehensive definition of concentration ranges of small molecules in clinically important biofluids and tissue types, including the sources of their variation and their effects at the system's level. Given that the biochemical changes associated with a disease state may be significantly influenced by study design, it is imperative to establish the "normal" concentration ranges of metabolites in a generally healthy population and assess their variations as a function of age, gender, circadian rhythm, various anthropometric (i.e. BMI, WHR) and lifestyle traits (i.e. smoking, alcohol intake, physical activity, food intake or diet, medication, sociodemographic variables). This is especially important for the study of complex diseases that are not amenable to lifestyle controls (e.g. Alzheimer's disease, schizophrenia and other mental disorders) and rare diseases and syndromes (e.g. amyotrophic lateral sclerosis (ALS), chronic pain, chronic fatigue) where the available cohorts are very small.

In two consecutive aims with this project we wish to 1) comprehensively quantify human metabolome and lipidome to provide a valid reference or baseline dataset for establishing the concentration ranges in 'healthy' individuals 2) explore the metabolite variation associated with phenotypic and lifestyle characteristics with a main focus on gender and age. The comprehensive quantification of human plasma metabolome will include a panel of several hundred physiologically relevant lipophilic (acylcarnitines, bile acids, sphingolipids, eicosanoids, steroids, phospholipids, tri- and di-acylglycerols, free fatty acids and cholesterol esters) and hydrophilic metabolites (amino acids and derivatives, intermediates in glycolysis, TCA cycle, and energy currency metabolites) of clinical interest.

The successful candidate should be able to carry out the metabolite analyses on a large cohort of individuals, from sample preparation, data acquisition by liquid chromatography-tandem mass spectrometry to data analysis. We expect the candidate to be independent, take the initiative and explore the acquired data as best as possible in terms of statistical modelling, pathway and network-embedded analyses.

### Your profile

- Master in chemistry / biochemistry / biology / computational biology or medical sciences
- Commitment and capacity to work effectively in an international and multidisciplinary team
- Excellent demonstrated communication skills in English (spoken and written)
- Practical experience in laboratory work, and in particular the experience with liquid chromatography - mass spectrometry is highly desired

- Experience with statistical data modelling (multivariate statistics including multiblock PCA, linear mixed effects models, multiple regression analysis, etc.) will be considered as an important advantage
- Knowledge and understanding of biochemistry is a useful merit

### **Place of employment and work**

The candidate will work in the Metabolomics group at the University of Lausanne (UNIL), located in the center of Lausanne. For more information about our service and research group please visit: [www.unil.ch/metabolomics](http://www.unil.ch/metabolomics). UNIL offers an outstanding scientific environment and a competitive salary, while Lausanne provides a high standard of living and dynamic cultural atmosphere. Ideally situated along the lake of Geneva, near Lausanne's city center, UNIL campus brings together over 120 nationalities. The seminars with high-profile international speakers as well as other events are organized on a regular basis within the LIMNA network.

### **Terms of employment**

Deadline for application: **May 20th 2018**

Project start date: **As soon as possible upon selection**

Employment fraction: **100%**

Duration of the position: **Planned for 3 years minimum (renewable up to 2 more years)**

Activity: **Minimum 80% for PhD project (20% involved in other research projects)**

### **Application**

Please submit your application through UNIL website

<https://www.unil.ch/central/fr/home/menuinst/organisation/emplois.html> including:

- A curriculum vitae focusing on experiences relevant for this position.
- A letter of motivation explaining why you are interested in this project and PhD in general, what is your previous experience and acquired skills that will be an added value in the development of the proposed project
- A copy of degree certificates

### **Contact person**

For further information about the position please contact Dr. Julijana Ivanisevic at [julijana.ivanisevic@unil.ch](mailto:julijana.ivanisevic@unil.ch) or Dr. Hector Gallart Ayala at [hector.gallartayala@unil.ch](mailto:hector.gallartayala@unil.ch).