Les mardis de L'IAB

PR. MARC CHADEAU-HYAM

Imperial College London

EXPOSOME ANALYTICS: METHODOLOGICAL DEVELOPMENTS AND NEEDS.

9.SEPTEMBER 2025– 11 AM – LECTURE HALL

The Exposome concept has been developed as a necessary complement to the genome to better understand the determinants of health and of the risk of chronic diseases. The external exposome combines a large range of external stressors (i.e. non-genetic) factors potentially impacting human health from conception onwards. These external exposures (i) are heterogeneous in nature, scale, and variability, (ii) feature complex correlation patterns and (iii) may operate as mixtures. The internal exposome can be defined as the way these exposures are embodied and its exploration relies on the screening and integration of high-resolution molecular data. While methods for omics data analyses are established, their application in an exposome context is raising specific methodological challenges including the analysis of complex and correlated exposures. Furthermore, the isolated exploration of an omic profile offers the possibility to capture stressor-induced biological/biochemical alterations, potentially impacting individual risk profiles, but this may only yield a fractional picture of the complex molecular events involved, therefore limiting our understanding of the effective mechanisms mediating the effect of the exposome.

Taking examples from real-world exposome projects we will illustrate the use of statistical and machine learning techniques to accommodate co-occurring exposures contributing to population stratification, explore the links between these and health outcomes, and investigate the (multi)-omic response to these sets of exposures.

Invited by : Valérie Siroux

Twitter : IAB_Officiel
Website : https://iab-grenoble.fr/

Allée des Alpes, 38700 La Tronche (tram line B, stop : Grand Sablon)
The seminar is followed by discussions and exchanges with the speaker and a sandwich buffet is offered

UGA Université Grenoble Alpes   Inserm La science pour la santé From science to health   cnrs   CHU GRENOBLE ALPES   EFS ÉTABLISSEMENT FRANÇAIS DU SANG Du donneur aux patients