



1SC4295 – Use of innovative methods to predict health and disease in exposome studies

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Department: DOMINANTE - VIVANT, SANTÉ, ENVIRONNEMENT
Language of instruction: FRANCAIS
Campus: CAMPUS DE PARIS - SACLAY
Workload (HEE): 40
On-site hours (HPE): 27,00

Description

Summary. The exposome, described as "the totality of human environmental exposures from conception onwards", recognizes that individuals are exposed simultaneously to a multitude of different environmental factors and takes a holistic approach to the discovery of etiological factors for disease. The exposome's main advantage over traditional 'one-exposure-one-disease' study approaches is that it provides an unprecedented conceptual framework for the study of multiple environmental hazards (urban, chemical, lifestyle, social) and their combined effects.

The objective of this EI is to promote innovative statistical, data science, or other quantitative approaches to studying the health effects of complex high-throughput measurement of exposure indicators (exposome). In this EI, you will be offered an opportunity to test your statistical methods of choice on a real case scenario exposome dataset and later exhibit their findings at the workshop. The dataset will include multiple health outcomes (continuous and categorical), multiple exposures, -omics and additional non-exposure variables (e.g., potential confounders).

Place. Campus Paris-Saclay

Link to ATLHETE project. <https://athleteproject.eu>

Quarter number
ST4

Prerequisites (in terms of CS courses)
Statistics and Machine Learning
Biology and Statistics

Class components (lecture, labs, etc.)
The students involved in this project will be divided into sub-groups that



will analyze the data using different techniques. As the data and the problem are provided by the ATHLETE partners (see <https://athleteproject.eu/consortium>), students will have to meet them several times. Finally, they will have to present their results to all the actors of the project (all the students involved in the project, partners, supervisors).

Grading

Report and oral defense

Resources

The data and the problem being provided by the ATHLETE Project, students will have to meet this partner several times. Finally, they will have to report their results to all the students involved in the project, partners and supervisors.