Biostatistique et Gestion de données

Module in English

Bayesian Methods for Biomedical Research (BAYES)

From June 3 rd to June 5 th, 2024 (3 days)	Location : Isped, Carreire campus University of Bordeaux
Frais de formation :	
Inscription individuelle : 360 €	Inscription institutionnelle : 900 €
Coordinator : • Boris HEJBLUM	

Objectifs

› Understand and assess a Bayesian modelling strategy, and discuss its underlying assumptions

› Rigorously describe expert knowledge by a quantitative prior distribution

› Perform a Bayesian regression using R, applied to meta-analysis

› Put into perspective the results from a Bayesian analysis described in a scientific article

Programme

› This course provides an introduction to Bayesian tools, with an emphasis on biostatistical applications, in order to familiarize students with such methods and their practical applications.

› We will cover the following topics:

• Bayesian modeling (prior, posterior, likelihood, Bayes theorem);
• Bayesian estimation (Credibility Intervals, Maximum a Posteriori, Bayes factor);
• Bayesian applications to meta-analyses;
• Practical Bayesian Analysis with R and JAGS softwares;
• Critical reading of medical publications. All concepts will be illustrated with real-life examples from the medical literature.

Requirements

To be able to follow this course, participants need both:

› Some knowledge in statistics (most notably some familiarity with usual probality distributions, probability density functions, confidence intervals and Maximum Likelihood Estimation)

› A practical knowledge of R programming (especially functional programming, for loops and "if" statements, vector allocation, linear regression).