



Sanofi is dedicated to supporting people through their health challenges. We are a global biopharmaceutical company focused on human health. We prevent illness with vaccines, provide innovative treatments to fight pain and ease suffering. We stand by the few who suffer from rare diseases and the millions with long-term chronic conditions. With more than 100,000 people in 100 countries, Sanofi is transforming scientific innovation into healthcare solutions around the globe.

INTERNSHIP

MISSION

Subject: Optimizing clinical trial by leveraging historical information in a bayesian framework by participating in the development of an interactive Rshiny application.

Context : Bayesian methods can leverage historical knowledge to optimize the decision making by « combining » the historical data (from publications or previous studies) with the data collected during the trial. Using informative prior allows a lower number of patients or a greater Probability of Success (POS) of the trial; thus resulting in an optimized clinical trial. Several prior methods had been developed as those of “power prior” based on weighting or those of “MAP prior” based on hierarchical model (*). As such statistical technics are challenging and computationally quite intensive, an in-house interactive application is being developed using R-shiny in order to increase our efficiency.

Mission : After gaining a deep understanding of the context, the methodology and related publications, the intern will take up the work already done, including the existing R programs developed for this purpose. He/she will be part of an existing Sanofi working group, working on the historical data borrowing bayesian methods. This group consists of statisticians across different sites (France, US, Belgian, Japan ...) who are currently working on the development of the Rshiny application. Since he/she will take the responsibility of a part of this work, focusing on the case of parallel two-arm comparison trial on binary endpoint and, time permitting, expanding the work to normal endpoint; he/she will have to work closely with the members of this working group.

PROFILE

Level: MASTER/ BAC + 5 (ENSAI, INSA, Master 2 University, ISUP ...)

Required Skills:

Good knowledge of R and Rshiny, Bayesian methods knowledge would be appreciated

Rigor, Autonomy, initiative and proposal

Very good level of English required (active participation to meetings in English)

Duration: 6 months (beginning between February and April)

Location: Sanofi, Chilly Mazarin (FR)

If you are interested, please apply directly to the following tutor by mail:

Caroline Petit

Sanofi-Aventis R&D, Chilly Mazarin (FR)

caroline.petit@sanofi.com

(*) Main bibliographic references:

Viele K., Berry S., Neuenschwander B., Amzal B., Chen F., Enas N., Hobbs B., Ibrahim J. G., Kinnersley N., Lindborg S., Micallef S., Roychoudhury S. and Thompson L., *Use of historical control data for assessing treatment effects in clinical trials, Pharmaceutical Statistics* (2014), 13 : 41–54. doi : 10.1002/pst.1589

Beat Neuenschwander, Gorana Capkun-Niggli, Michael Branson, and David J Spiegelhalter. *Summarizing historical information on controls in clinical trials. Clinical Trials*, 7(1) :5–18,2010.