MONOLIX: Un Proyecto Pluridisciplinario de Bio-estadística

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Abstract MONOLIX (MOdèles NOn LInéaires à effets miXtes) is a multi-disciplinary group born in october 2003. It has been meeting every month to exchange and develop activities in the field of mixed effect models. It involves scientists with varied background, interesed both in the study and applications of these models: academic statisticians (theoretical and methodological developments) researchers from several national institutes (applications in pharmacology, agronomy, animal genetics and microbiology, oncology, ...).

An important activity of the group is the development of the MONOLIX software. The objective of this software is to perform:

- Parameter estimation, computing the maximum likelihood estimator of the parameters, without any approximation of the model.
- Model selection, comparing several models using some information criteria (AIC, BIC), testing hypotheses using the Likelihood Ratio Test, testing parameters using the Wald Test.
- Goodness of fit plots.
- Data simulation.

Several stochastic algorithms are used in MONOLIX: stochastic approximation of EM (SAEM), Importance Sampling, MCMC, Simulated Annealing...