Jean Clairambault
Centre de Recherche INRIA (CRI) de Paris-Rocquencourt, INRIA | Paris, France
jean.clairambault@inria.fr

Linking PK-PD of anticancer drugs with proliferating cell population dynamic models

With the aim to optimise combinations of anticancer drugs, I will present models of proliferating cell dynamics coupled via external control targets, representing different drug effects, with pharmacological models of a few number of drugs that are of classical use in the clinic of cancers.

Cell population dynamic models are either systems of age-structured PDEs for the division cycle in cell populations or integro-differential equations structured in a continuous phenotype representing evolution towards drug resistance.

Pharmacological models are ODEs describing the fate of drugs in living organisms. Numerical optimisation algorithms used to design optimal combined drug delivery schedules in cell populations or at the whole body level, under toxicity or drug resistance constraints, will then be sketched.