

FORMULAIRE STAGE Recherche-M2 BBSG
(période de stage : du 5 janvier 2016 au 3 juillet 2016)

Titre du stage :

The application of machine learning to predict drug response in NCI-60 cell lines

Laboratoire (intitulé, adresse, site web) :

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Descriptif du stage :

This 6-month project aims at investigating the degree of accuracy with which the inhibition of human cancer cell lines by drug molecules can be currently predicted. Accurate models of drug response are crucial for phenotypic drug design, which is a research area of great interest for academia and industry.

The project will exploit NCI-60 [1] data using a range of machine learning techniques already implemented in various R packages. NCI-60 cell lines have been recently profiled [2] in a way that permits the integration of genomic features of the cells with chemical features from the drugs, as we have done before with analogous data [3].

This project is suitable for a self-motivated and diligent master student wishing to gain experience in advanced data analysis techniques and their application to cancer research. Basic programming knowledge is desirable, but not required.

[1] Shoemaker, R. H. The NCI60 human tumour cell line anticancer drug screen. *Nat Rev Cancer* 6, 813–823 (2006).

[2] Abaan, O. D. et al. The Exomes of the NCI-60 Panel: A Genomic Resource for Cancer Biology and Systems Pharmacology. *Cancer Res* 73, 4372–4382 (2013).

[3] Menden, M. P. et al. Machine Learning Prediction of Cancer Cell Sensitivity to Drugs Based on Genomic and Chemical Properties. *PLoS ONE* 8, e61318 (2013).