**PROJECT PROPOSITION - Lab1** (M1, second semester)

Supervisor(s): Marion Buffard and Ovidiu Radulescu………………………………..

Contact email: [marion.buffard@umontpellier.fr](mailto:marion.buffard@umontpellier.fr), ovidiu.radulescu@umontpellier.fr………………………………..

Hosting lab:LPHI ………………………………..

Period of proposed project (put **x** instead of ロ) :

ロ Only 1st slot ロ Only 2nd slot

ロ One slot, but I have no preference on which x Both slots (with different groups)

1st slot: thursdays and fridays, from 3/2/2021 to 18/3/2021

2nd slot: thursdays and fridays (except for the last 2 weeks), from 31/3/2021 to 6/5/2021

PROJECT’S TITLE

Semi-quantitative analysis of signaling networks in oncology

Subject (5 lines max for the description)

Signaling networks control many of cancer’s hallmarks and are deregulated in various ways in cancer cell lines. There are several models of signaling networks: static (graphs), semi-quantitative (weighted graphs), quantitative (chemical reaction networks), qualitative (Boolean networks), etc. Using quantitative phosphoproteomic data from four different melanoma cell lines and the Modular Response Analysis technique we reconstruct semi-quantitative networks specific to different conditions. We further analyse the differences between the networks.

Technical tools to be used:

Phos2Net, a Python pipeline for reconstruction of static networks.

MRAnalyser, a tool for reconstruction of semi-quantitative networks.

Both tools were developed in our team.

Objectives:

Understanding the quantitative biology of signaling networks.

Understanding the differences between cancer cells and the origin of resistance to targeted treatment.

Testing strategies to avoid the resistance to treatment.