Master’s degree in Biology – Chemistry-Biology Department

Master 2 internship project
Year 2020-2021

Laboratory/Institute: Institute for Advanced Biosciences    Director: Pierre Hainaut
Team: Cancer target and experimental therapeutics    Head of the team: Jean-Luc Coll

Name and status of the scientist in charge of the project: Amandine HURBIN    HDR: yes ☑ no ☐
Address: IAB INSERM U1209, Allée des Alpes, Site Santé, 38700 La Tronche
Phone: 04 76 54 95 53    e-mail: amandine.hurbin@univ-grenoble-alpes.fr

Program of the Master’s degree in Biology:
☐ Immunology, Microbiology, Infectious Diseases    ☐ Integrative Structural Biology
☒ Physiology, Epigenetics, Differentiation, Cancer    ☐ Neurosciences and Neurobiology
☐ Planta International

Title of the project:
Resistance mechanisms to targeted therapies in melanoma: role of tumor microenvironment and identification of therapeutic targets

Objectives (up to 3 lines):
Our objective is the study of the resistance mechanisms to targeted therapies, which appears according to the tumor microenvironment in melanoma.

Abstract (up to 10 lines):
Inhibitors of hyperactivated BRAF protein (BRAFV600E), vemurafenib and dabrafenib, have been major breakthroughs in the treatment of melanoma. However their effectiveness is diminished by resistance mechanisms, which it is important to characterize to improve the management of patients. We will analyze the role of IGF1R and its cross-talks with integrins or other receptors present on tumor cells or microenvironment, as well as the deregulation of signaling pathways, in melanoma cell lines resistant to vemurafenib and cultured in monolayer and in 3D-spheroids. This project will allow the identification of therapeutic targets to counteract resistances to targeted therapies in melanoma.

Methods (up to 3 lines):
Human melanoma cells culture (2D and 3D-spheroids); cytotoxicity assays; confocal microscopy; flow cytometry, and western-blotting.

Up to 3 relevant publications of the team:
- Guerard M et al., Cancer Lett. 2018 Apr 28;420:146-155.
- Jia T et al., Biomaterials. 2018 Feb;155:64-79.

Requested domains of expertise (up to 5 keywords):
melanoma, targeted therapies, cell culture, resistance, survival signaling pathways