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: Translational Epigenetics / Cell adhesion Dynamics and Differenciation
Head of the team: Jérôme Govin / Corinne Albiges Rizo

Name and status of the scientist in charge of the project:
Anouk Emadali / Olivier Destaing
HDR: yes ☒ **no** ☐
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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:

CYCLON dynamics during cell cycle

Objectives (up to 3 lines):

Functionally characterize the dynamics of CYCLON, a new therapeutic target in B-cell lymphoma, using imaging techniques

Abstract (up to 10 lines):

CYCLON is nuclear protein abnormally expressed in B-cell lymphoma. We have preciously shown that CYCLON is directly associated with tumor development, but also with treatment resistance in high-risk lymphomas. This protein therefore represents a very attractive therapeutic target, especially since its level of expression can be controlled by the use of a new type epigenetic drugs, bromodomain protein inhibitors. In order to better understand how CYCLON controls these gene expression programs linked to the aggressiveness of the disease, we have characterized its protein interactions (IP/MS) and revealed cell-cycle-dependent functions. In this project, the objective is now to further study the role of CYCLON at the interface between chromatin remodeling, nucleolar functions and cell division using live imaging techniques. To do so, we will us both biochemistry and microscopy in order to characterize the dynamics of the processes controlled by CYCLON.

Methods (up to 3 lines):

Cell biology, molecular biology, live imaging, viral infection, cytometry and cell sorting, image processing, biochemistry

Up to 3 relevant publications of the team:

Emadali A, Rousseaux S, Bruder-Costa J, Rome C, Duley S, Hamaidia S, Betton P, Debernardi A, Leroux D, Bernay B, Kieffer-Jaquinod S, Combes F, Ferri E, McKenna CE, Petosa C, Bruley C, Garin J, Ferro M, Gressin R, Callanan MB, Khochbin S. Identification of a novel BET bromodomain inhibitor-sensitive, gene regulatory circuit that controls Rituximab response and tumour growth in aggressive lymphoid cancers. EMBO Mol Med. 2013 Aug;5(8):1180-95.

DNA mechanotechnology reveals that integrin receptors apply pN forces in podosomes on fluid substrates. Glazier R, Brockman JM, Bartle E, Mattheyses AL, Destaing O* and Salaita K.*(2019) Nat. Com 18;10(1):4507.

Cellular tension encodes local Src-dependent differential β 1 and β 3 integrin mobility. De Mets R, Wang I, Balland M, Oddou C, Moreau P, Fourcade B, Albiges-Rizo C, Delon A and Destaing O.* (2019) MBOC 15;30(2):181-190.

Requested domains of expertise (up to 5 keywords):

General cell biology, molecular biology, microscopy, cancer epigenetics