Master's degree in Biology – Chemistry-Biology Department

Internship project Master 2
Year 2017-2018

Laboratory/Institute: Institute for Advanced Biosciences
Team: RNA and epigenetic

Director: Pierre Hainaut
Head of the team: André Verdel

Name and status of the scientist in charge of the project: Faure, MCU HDR: yes ☐ no x
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Program the Master's degree in Biology:
☐ Neurosciences and Neurobiology ☐ Immunology, Microbiology, Infectious Diseases
☐ Integrative Structural Biology X Physiology, Epigenetics, Development, Differentiation

Title of the project: role of non coding RNA in epigenetic control during cellular stress.

Objectives (up to 3 lines):
- further define the importance of the transcription factor HSF1 in the control of the epigenome
- characterize new actors in the stress response

Abstract (up to 10 lines):
In response to stress, cells activate a defense mechanism called "heat shock response" to protect them. This process is also involved in the development of tumorigenesis. Our laboratory has shown that during stress, the transcription factor HSF1, one of the main actor of the heat shock response, activates transcription of non-coding regions of the genome. Remarkably, this transcription allows protection of heterochromatin regions with functions in genomic stability. The molecular mechanisms involved are still unknown.
The M2 project is to address more precisely the role of HSF1 in the transcriptional control of non-coding transcripts in cancer cell.

Methods (up to 3 lines):
culture of human cells, RNA extraction, RNA FISH, RT-qPCR, chromatin immunoprecipitation, immunofluorescence, western blot.

Up to 3 relevant publications of the team:
Pernet et al, "HDAC6-ubiquitin interaction controls the duration of HSF1 activation after heat shock" Mol Biol Cell 2014
Requested domains of expertise (up to 5 keywords):
cellular and molecular biology, epigenetic, non-coding RNA