Master Biologie Moléculaire et Cellulaire 'BMC',
Université Paris Cité - *UFR Sciences du Vivant*

Parcours : **Biologie et Développement Cellulaires 'BDC'**
http://www.master2bdc.fr/
Fiche de Projet de Stage de M2, 2024-2025

UMR7216 CNRS/Université Paris Cité **Equipe : Equipe "Dynamique et interprétation de la méthylation de l'ADN"** **ED d'appartenance : HOB, ED561** **Responsable de l'Equipe : Pierre-Antoine Defossez**	**Responsable du Stage : Pierre Therizols** **Contacts** Adresse : 35 rue Hélène Brion 75013 Paris Email : pierre.therizols@cnrs.fr Tel : + 33 1 57 27 89 26

Identification and Characterization of Epimutagens

The risks associated with toxic substances to human health are of growing concern. While traditional toxicity tests are effective in detecting mutagens, they are unable to identify substances that act solely on the epigenome - epimutagens. These agents cause important cell dysfunctions, such as deregulation of gene expression, without inducing direct genetic mutations. For example, common compounds such as dioxin or certain fungicides have been linked to serious health problems despite their lack of proven mutagenicity. Our team works on the development of screening method to identify and characterize epimutagens. We are looking for an M2 candidate to continue on to a PhD.
In this context, our project proposes a novel approach to identify and characterize epimutagens. We use an innovative cell line, the "DASH" line, in which a fluorescent marker is epigenetically repressed. We will develop a screening assay capable of detecting these epigenome-altering substances. By optimizing the use of high-throughput microscopy methods, we aim to maximize the sensitivity and reproducibility of this test.
By testing a selection of 12 molecules known for their potential toxicity, we will assess their epigenetic impact and seek to understand the underlying mechanisms. This approach will enable us not only to identify new epimutagens, but also to propose possible explanations for their mode of action.
The M2 student will be closely supervised by an experienced scientist and a group leader. We use cutting-edge techniques including epigenomics, proteomics, CRISPR, and live-cell imaging. We are confident we offer an excellent chance to learn a lot, working on an exciting project in a stimulating environment. The team is friendly, international, and productive. We have had excellent success at the Ecole Doctorale, with 100% success rate (11/11 students obtained a PhD fellowship, 4 were ranked 1st).

Publications de l'équipe relatives au projet de stage (max 5)

- Yakhou et al., *Nucleic Acid Research* 2023, PMID: 37650637
- Gupta et al., *Nat Struct Mol Biol.* 2023, PMID: 37488355
- Yamaguchi et al., *Nat Commun.* 2024, In press.
- Laisné et al. Oncogene 2024, PMID : 38467851
- Marchal et al. Epigenetics 2022 ; PMID : 36000449