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, 2025-2026

Unité INSERM ou CNRS ou Université : Institut Jacques Monod, CNRS UMR7592 **Intitulé Equipe :** Dynamique des membranes et trafic intracellulaire **ED d'appartenance :** BioSPC **Responsable de l'Equipe :** C. Jackson et J-M. Verbavatz	**Responsable du Stage :** Mélina Heuzé **Contacts** Adresse : Institut Jacques Monod, 15 rue Hélène Brion, 75013 Paris Email : melina.heuze@ijm.fr Tel : 0157278005

Titre du projet :

Understanding the role of VAP-mediated membrane contact sites during migration and invasion of cancer cells

Résumé du Projet de Stage

Our team, located in Institut Jacques Monod, is interested in the role of **membrane contact sites** (MCS) during cancer cell migration. MCS are sites of close apposition between the ER and other organelles and serve as platforms for lipid and calcium exchange. Despite the growing knowledge of the molecular composition of MCS, their roles in patho-physiological processes remains poorly understood. We have recently discovered that **VAPA**, an ER-resident MCS tether, plays a key role in **cancer cell motility** and **cell-matrix adhesion** (1). We now intend to define precisely how lipid exchange taking place at VAPA-mediated MCS controls cell-matrix adhesion dynamics and to which extend it regulates 3D invasion capacity of cancer cells.

The objectives of the M2 internship will be to study the **motile behaviour** and the **dynamics of lipid transfer at adhesion sites** in WT and VAPA KO cells migrating in different contexts, ranging from well-controlled micro-patterned tracks to complex 3D microenvironments. The M2 student will use cutting-edge cell biology approaches, combining cell culture, micro-patterning approaches, optogenetics, high resolution microscopy and quantitative imaging.

Publications de l'équipe relatives au projet de stage

(1) Siegfried H, Le Borgne R, Durieu C, De Azevedo Laplace T, Verraes A, Daunas L, Verbavatz J-M, Heuzé ML. The ER tether VAPA is required for proper cell motility and anchors ER-PM contact sites to focal adhesions. BioRxiv Preprint. 2023. https://doi.org/10.1101/2022.10.17.512434.

(2) Jackson CL, Walch L, Verbavatz JM. Lipids and Their Trafficking: An Integral Part of Cellular Organization. Dev Cell. 2016 Oct 24;39(2):139-153. doi: 10.1016/j.devcel.2016.09.030. PMID: 27780039.