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

Parcours : **Biologie et Développement Cellulaires 'BDC'**
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Fiche de Projet de Stage de M2, 2026-2027

Unité INSERM ou CNRS ou Université : CNRS UMR144 **Intitulé Equipe :** Intracellular Transport : Engineering and Mechanisms **ED d'appartenance :** ED 657 : Sciences du vivant (PSL) **Responsable de l'Equipe :** Franck PEREZ	**Responsable du Stage :** **Francesca FORNO** **Contacts** Adresse : 12, rue Lhomond – 75005 Paris Email : Francesca.Forno@curie.fr Tel :

Titre du projet :
Biogenesis and homeostasis of the Golgi complex

Résumé du Projet de Stage (en 300 mots maximum, mots clés en gras)
The Golgi apparatus is a central hub of the secretory pathway, coordinating protein sorting, membrane trafficking, and glycosylation. Despite its essential role in cellular organization and homeostasis, the molecular mechanisms governing Golgi biogenesis, regeneration, and adaptation to stress remain poorly understood.
Building on our recent work, we will investigate the molecular and cellular mechanisms controlling functional recovery following Golgi damage. Using complementary models of Golgi inactivation (e.g. enzymatic Golgi depletion; Golgi fragmentation induced by the oncolytic compound LTX401) we will characterize how Golgi architecture, trafficking capacity, and gene expression programs are coordinated during organelle regeneration.
Previous studies from the laboratory identified the ER-resident transcription factor CREB3L1 as a potential regulator of Golgi biogenesis. To further define the transcriptional networks involved, we will perform RNA sequencing during Golgi recovery, allowing us to identify regulated pathways and validate the role of candidate transcription factors controlling Golgi regeneration.
In parallel, we will investigate the mechanisms underlying the transient trafficking block observed following LTX401 treatment. Advanced live-cell imaging and super-resolution microscopy will be used to characterize the structural alterations of Golgi subcompartments and determine the impact on cargo transport.
Finally, we will explore the molecular basis of LTX401 targeting to the Golgi apparatus and develop novel Golgi damage and repair sensors to monitor Golgi integrity in real time. These tools will provide new opportunities to study organelle stress responses and recovery mechanisms in living cells.
By combining cell biology, transcriptomics, advanced microscopy, and molecular tool development, this project will provide new insights into the regulation of Golgi homeostasis and secretory pathway function in health and disease.

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

1. Brault JB, Bardin S, Lampic M, Carpentieri JA, Coquand L, Penisson M, Lachuer H, Victoria GS, Baloul S, El Marjou F, Boncompain G, Miserey-Lenkei S, Belvindrah R, Fraisier V, Francis F, Perez F, Goud B, Baffet AD. RAB6 and dynein drive post-Golgi apical transport to prevent neuronal progenitor delamination. EMBO Rep. 2022 ; 23:e54605. PubMed PMID: 35979738. DOI: 10.15252/embr.202254605.
2. Farhan H, Raote I, Campelo F, Ge L, Hirschberg K, Forrester A, Zanetti G, Lippincott-Schwartz J, Pastor-Pareja JC, Perez F, Saito K, Malhotra V. Towards a unified framework for the function of endoplasmic reticulum exit sites. Nat Rev Mol Cell Biol. 2025; 26:957–69. PubMed PMID: 41023495. DOI: 10.1038/s41580-025-00899-0.
3 Cannata Serio M, Vitale F, Scerra G, Bonavita R, Poullet P, Caporaso MG, Marrone L, Romano S, Renna M, Perez F, D'Agostino M. A delayed translocation into the endoplasmic reticulum controls the post-translational modifications of PD-L1. Nature communications. 2026; 17(1). PubMed PMID: 41965805. DOI: 10.1038/s41467-026-71760-x.
4. Forno F, Abete D, Polishchuk EV, Bujanda Cundin X, Renda F, Crispino R, Salzano J, Petruzzelli R, De Cegli R, Sofia M, Sorrentino NC, Vaccaro L, Cacchiarelli D, Verbakel J, De Boer J, Goud B, Khodjakov A, Perez F, Polishchuk RS. A coordinated transcriptional program controls de novo Golgi biogenesis. EMBO J. 2026. PubMed PMID: 42251155. DOI: 10.1038/s44318-026-00828-7.