Institut de Génétique Moléculaire de Montpellier
IGMM / CNRS – Université de Montpellier
1919 Route de Mende, 34293 Montpellier Cedex 05

2027 Internship Offer

Master 1: YES– Duration: 6 months **Master 2**: YES– Duration: 6 months

Team, Contact	Guillaume Bossis, guillaume.bossis@igmm.cnrs.fr Denis Tempé, denis.tempe@igmm.cnrs.fr
Title	Transcriptional control of Acute Myeloid Leukemias response to therapies
Research Themes and questions	Our project aims at better understanding how Acute Myeloid Leukemias respond to therapies (chemotherapies and targeted therapies) to better fight chemoresistance, which is responsible for high relapse rates and poor prognosis. We have demonstrated that SUMOylation, a post-translational modification, plays a critical role in controlling AML response to therapies, in particular through its ability to regulate specific transcription factors and co-regulators, which we have identified using ATAC-seq based footprinting or genome-wide CRISPR screens. The goal of the internship will consist in validating their involvement in transcriptional control of AML response to therapies.
Methods and experimental approaches	- Chromatin immunoprecipitations, CUT&RUN - Flow cytometry - CRISPR/Cas9 (Knock-out, knock-in, inducible degradation)
2-3 Publications	1. Boulanger, M., Aqrouk M, Tempé D, Kifagi, C., Ristic, M., Gabellier, L., Akl,D., Hallal,R., Tempé, D., Sigurdsson, J.-O., Kaoma, T., Andrieu-Soler, C., Forné, T., Soler, E.,Hicheri, Y., Gueret, E., Vallar, L., Olsen, JV., Cartron, G., Piechaczyk, M. and Bossis G. DeSUMOylation of chromatin-bound proteins limits the rapid transcriptional reprogramming induced by anthracyclines in Acute Myeloid Leukemias. 2023. **Nucleic Acids Research.** 51(16):8413-8433 https://doi.org/10.1093/nar/gkad581 2. Gabellier, L., De Toledo M, Chakraborty M, Akl D, Hallal R, Aqrouq M, Buonocore G, Recasens-Zorzo C, Cartron G, Delort A, Piechaczyk M, Tempé D and Bossis G. SUMOylation inhibitor TAK-981 (subasumstat) synergizes with 5-azacitidine in preclinical models of acute myeloid leukemia. 2024. **Haematologica;** 109 (1): 98-114. https://doi.org/10.3324/haematol.2023.282704 3. Hallal, R., De Toledo M, Tempé D, Berrahouane R, Zemiti S, Coënon L, Gitenay D, George S, Schussler N, Laguette N, Bonnet S, Gabellier L, Cartron G, Pelegrin M, Villalba M and Bossis G. Targeting SUMOylation triggers interferon-b-dependent activation of patient and allogenic Natural Killer cells in preclinical models of Acute Myeloid Leukemias. 2026. **Mol Cancer Ther**; 25 (1): 129-139. https://doi.org/10.1158/1535-7163.mct-25-0504