What is the ExposUM Doctoral Nexus?

PhD funding opportunities in Montpellier, France : ExposUM Doctoral Nexus

A Doctoral Nexus, as proposed by the ExposUM Institute, brings together networks of three to four PhD students from diverse disciplinary backgrounds, affiliated with at least two distinct research units.

Unlike traditional PhD programs, a Doctoral Nexus is designed to enhance collaborative skills and the ability to develop transdisciplinary projects, while allowing students to deepen their own field of expertise.

Nexus doctoral students will benefit from a dedicated training program and will have the opportunity to organize seminars within their Nexus network.

The ExposUM Institute provides full funding for four years, covering both the PhD students' salaries and an environmental allowance.

The context of the thesis: This thesis will be conducted under the supervision of Sofia Kossida in the "Hematopoiesis and Immunotherapy" laboratory at the Institute of Human Genetic in Montpellier (www.igh.cnrs.fr), as part of the Nexus Nutri-CART project, which also includes the teams of Valérie Zimmermann (IGMM) and Marie Péquignot (INM/Genopolys). The project focuses on understanding how nutritional and metabolic factors influence the proliferation, persistence, and functional states of CAR-T cells in patients with hematological cancer. Using single-cell TCR sequencing (scTCR-seq) and scRNA-seq, the study aims to identify clonotype-specific signatures linked to therapy response, integrating translational and computational approaches.

Planned start date: 01/09/2026

The title of the doctoral student's position: Evaluation of the impact of nutrition on metabolism and T-cell proliferation/persistence through TCR clonotyping in patients and in murine models.

Main mission:

The goal of the project is to characterize, at the single-cell level, the diversity and clonal dynamics of the TCR repertoire, using scRNA-seq to describe the cellular states of T lymphocytes, and analyzing the data with IMGT® tools. More specifically, it aims to link clonotypes, functional states, and nutritional/metabolic parameters to identify signatures associated with response or non-response to CAR-T therapy, while developing a standardized and reproducible pipeline compliant with IMGT® standards.

Activities:

- Process and analyze scTCR-seq and scRNA-seq data
- Develop and standardize bioinformatics pipelines for reproducible analyses
- Perform statistical and integrative analyses linking clonotypes to functional states and metabolic profiles
- Prepare results for publication and present findings at conferences

Expected skills and qualifications:

- Background in bioinformatics, computational biology, genomics, or immunogenetics
- Experience in NGS data analysis
- Programming skills in Bash, R and/or Python
- Knowledge of IMGT® tools and databases for TCR annotation
- Interest in immunology, and translational research
- Ability to work both autonomously and collaboratively within multidisciplinary international teams
- Strong organizational and analytical skills
- Good command of English, both written and spoken

Diploma/field required:

Bac+5 in Bioinformatics, Computational Biology, Genomics or Immunogenetics

Key words: Biological sciences

CNU section to which the applicant belongs: 85-Biostatistiques et bioinformatique

Application procedure

The application must include the following

- A CV
- A letter of motivation
- A copy of the diploma required for enrollment or, if unavailable, the most recent transcripts from Master 2 (semester 1 and/or semester 2)
- Any specific elements **possibly** required by the Doctoral School CBS2 (http://edcbs2.umontpellier.fr/)

If you would like to apply for this position, please send an e-mail to Sofia Kossida, sofia.kossida@igh.cnrs.fr, with a CC to the project initiator Valérie Zimmermann (valerie.zimmermann@igmm.cnrs.fr) and exposum-aap@umontpellier.fr to inform them of your interest.

Application deadline : Before 05/24/2026, 5:00 pm CET

The University of Montpellier

KEY FIGURES

RESEARCH CENTERS

From space exploration and robotics to ecological engineering and chronic diseases, UM researchers are inventing tomorrow's solutions for mankind and the environment. Dynamic research, conducted in close collaboration with research organizations and benefiting from high-level technological platforms to meet the needs of 21st century society.
The UM is committed to promoting its cutting-edge research by forging close links with local industry, particularly in the biomedical and new technologies sectors.
More Information: https://www.umontpellier.fr/en/recherche/unites-de-recherche

SCIENTIFIC APPEAL

Open to the world, the University of Montpellier contributes to the structuring of the European higher education area, and strengthens its international positioning and attractiveness, in close collaboration with its partners in the I-SITE Program of Excellence, through programs adapted to the major scientific challenges it faces.
More Information: https://www.umontpellier.fr/en/international/attractivite-scientifique