What is the ExposUM Doctoral Nexus?

The Doctoral Nexus proposed by the ExposUM Institute are networks of 3 to 4 PhD students from different disciplines and affiliated to at least two different research units.
Compared with a traditional PhD, taking part in a Doctoral Nexus will encourage the ability to work in a team and to design projects in a transdisciplinary way while deepening one's own field of expertise.
A specific teaching programme will be offered and the doctoral students concerned will also have the opportunity to organise a seminar within the Nexus network.
Theses are funded from the outset for 4 years, including the PhD student's salary and an environmental allowance

Co-condensation of yeast prion-like proteins (Nexus AMYLOPATH)

Prions, characterized by the formation of self-templating amyloids, are common epigenetic elements in budding yeast, and are essential for cellular adaptations to environmental stresses. More than a dozen of classical prions have been described in *S. cerevisiae*, and we have started to characterize new atypical prions, in the context of a cellular memory. The PhD student recruited in the AMYLOPATH Nexus will firstly aim at addressing whether atypical yeast prion-like proteins do co-aggregate and seed each other, using both in vitro reconstitutions and in vivo live cell fluorescence microscopy combined with yeast genetics. In a second step, the project will aim at testing whether these complex amyloids also cross-seed mammalian prion-like proteins.

Specifically, building on our previous publications (Caudron & Barral, Cell, 2013; Lau, Oamen et al., Current Biology, 2022) and our unpublished data we will be testing whether the prion-like protein Whi3 does co-condensate with other prion-like proteins that form condensates in the same conditions as Whi3. We have obtained solid preliminary data for several of them. The in vitro part will be supported by undergoing preliminary work by a PhD student in the group, and the in vivo by a second PhD student. Therefore, this project will bridge two other projects in the group and will benefit strongly from these close interactions. The candidate will develop skills in biochemistry (protein purification, phase separation assays, formation of amyloid fibrils and observation with electron microscopy) and in yeast genetics and cell biology (introduction of protein tags, mutations, high resolution live cell microscopy).

The IGMM conducts excellent and innovative fundamental research in molecular and cellular biology. The scientific environment of the IGMM is international, multidisciplinary and very dynamic, in particular thanks to interactions with neighbouring institutes, and its resolutely collaborative and convivial spirit. The IGMM has access to the BioCampus platforms of Montpellier, including outstanding microscopy, genomics and proteomics facilities. Last but not least, Montpellier is a dynamic Mediterranean city with an exceptional environment, culture and quality of life. It is home to numerous high–quality research institutes, a vibrant 70,000 student population and one of the world's oldest medical schools.

This project is part of a Nexus involving the groups of Andrey Kajava (CRBM) and Sylvie Claeysen (IGF).

Application procedure

The application must include the following

- a CV
- a letter of motivation
- a copy of the degree required for registration (Master 2 degree)
- Transcripts of all courses (with marks) taken since the start of your university studies (see the doctoral school requirements here)
- 2 letters of reference

If you would like to apply for this position, please send an e-mail to Fabrice Caudron (fabrice.caudron@igmm.cnrs.fr), with a CC to Andrey Kajava (andrey.kajava@crbm.cnrs.fr) and exposum-aap@umontpellier.fr to inform them of your interest.

Before Monday 31 May, 2:00 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