



## Postdoctoral researcher

### Synthesis of peptides for the evaluation of their self-assembly capacity

Laboratory of Immunology, Immunopathology and Therapeutic Chemistry (CNRS, Strasbourg, France) under the supervision of Dr. Cécilia Ménard-Moyon

Team website: <https://ibmc.cnrs.fr/en/laboratoire/i2ct-en/equipes/therapeutic-multifunctional-carbon-and-2d-nanomaterials/>

#### Project description

Organic nanotubes are promising nanomaterials displaying many applications in nanotechnology, in particular in nanomedicine. Peptide nanotubes are a class of organic nanotubes attracting immense interest due their wide range of bio- (and other) functionalities, which leads to many potential use in nanotechnology and biomedicine. The supramolecular stacking of cyclic peptides is a versatile approach for the formation of nanotubes. Peptide nanotubes are generally very long (several micrometers) and their length is difficult to control. Up to now, one of the main limitations of most nanoparticles used in nanomedicine is their lack of size homogeneity, resulting in potential variability in terms of organ biodistribution, cellular internalization, elimination, and fate *in vivo*. Therefore, there is a strong need of synthesizing size-monodisperse short nanotubes that will certainly be excellent candidates for future clinical translation.

In this context, this project is centered on the synthesis of length-controlled polymer-peptide hybrid nanotubes as carriers for the delivery of an anticancer drug. For this purpose, biocompatible polymers will be conjugated to cyclic peptides and the self-assembly capacity of the polymer-peptide conjugates will be assessed. The presence of the polymer chains will put strain on the peptide core through steric repulsions, allowing to reduce the length of the nanotubes and enable their use as carriers of an anticancer drug.

The project is focused on 1) the synthesis of the cyclic peptides, 2) the conjugation of polymers, 3) the study of the self-assembly capacity of the polymer-cyclic peptides into nanotubes, 4) the loading of an anticancer drug in the nanotubes and 5) the evaluation of the pH-controlled release of the drug.



### **Eligibility criteria**

The candidate must have a PhD with a strong background in organic synthesis, in particular peptide synthesis. Knowledge on supramolecular chemistry and cell biology would be appreciated.

The candidate must be an independent, well-organized and rigorous person. He / she must have good interpersonal skills. He / she must manage his own research and coordinate the different aspects of the work to meet deadlines. He / she must provide ideas for new research projects, carry out scientific bibliography, compile results for publication in peer-reviewed journals and present the results orally. He / she should actively participate in laboratory meetings.

**Interested candidates must apply on the recruitment platform of CNRS by 3<sup>rd</sup> November 2023:**

**<https://emploi.cnrs.fr/Offres/CDD/UPR3572-CECMEN-007/Default.aspx?lang=EN>**

**Further information can be requested from Cécilia Ménard-Moyon ([c.menard@ibmc-cnrs.unistra.fr](mailto:c.menard@ibmc-cnrs.unistra.fr)).**

Provisional start date: 01/12/2023

Contract for **6 months**