

## 12 months Post-doc proposal

### Superferrimagnetic Nanoassemblies of iron oxides nanorods for autoimmune hepatitis therapy

**Host laboratory:** CEISAM-UMR6230

**Location:** 2 rue de la Houssinière 44322 NANTES CEDEX 3

**Starting date:** Fall 2020 for 12 months

**Application deadline:** June 30<sup>th</sup> 2020

**Salary:** around € 2500 gross per month

#### Brief description of the project:

Autoimmune hepatitis is a rare autoimmune disease whose therapy has hardly changed over the past 30 years. Recent preclinical studies have highlighted an effective and safe therapeutic approach involving tolerogenic nanoparticles, consisting in the vectorization of the autoantigen epitopes on the surface of nanoparticles. At the same time, researchers have shown that heat shock proteins can play an immunoregulatory role in this type of pathology.

The project proposes, the preparation of a nanoscale platform based on curcumin derivative and including biodegradable iron oxide nanoparticles with strong magnetic anisotropy. This platform will be functionalize with a peptide, autoantigen epitope, specific of CD4<sup>+</sup> T-cells. This platform is also designed to produce a strong thermal response under an alternating magnetic field to produce heat shock proteins.

The project will be carried out in collaboration with CRTI team (Dr. S. Conchon) specialist in the immunological properties of liver. This team is developing autoimmune hepatitis-specific mouse model and methods for characterizing antigenic specificity CD4<sup>+</sup>T cells involved in the pathology.

#### Candidate Activities:

1. Synthesis and characterization of magnetic iron oxide nanorods;
2. Self-assembly of magnetic nanoparticles in a matrix based on curcumin derivative;
3. Colloidal stabilization with commercial polymers and peptide bioconjugation;
4. Study of magnetothermal properties of the nanoassemblies.

**We are looking for candidate with excellent experience in surface functionalization (bioconjugation), synthesis and characterization of nanomaterials and used to interact with biologists. Knowledge of nanomagnetism would be a plus without it being mandatory.**

To apply (and/or for more information), please send a cover letter outlining your motivation, a complete CV with the list of publications and at least two references to:

- Lénaïc Lartigue : [lenaic.lartigue@univ-nantes.fr](mailto:lenaic.lartigue@univ-nantes.fr).