

One short stay (maximum of 6 months long) is now available.

The applicant should contact the scientist in charge. After agreement with this scientist, he/she should send his/her application (see <http://www.lcc-toulouse.fr/nanotool/application.html>) before the 15th of September 2009.

SHORT STAY RESEARCH PROJECT

Elaboration and biological evaluation of catanionic vesicles and gelled nanoparticles as new carriers for drug delivery

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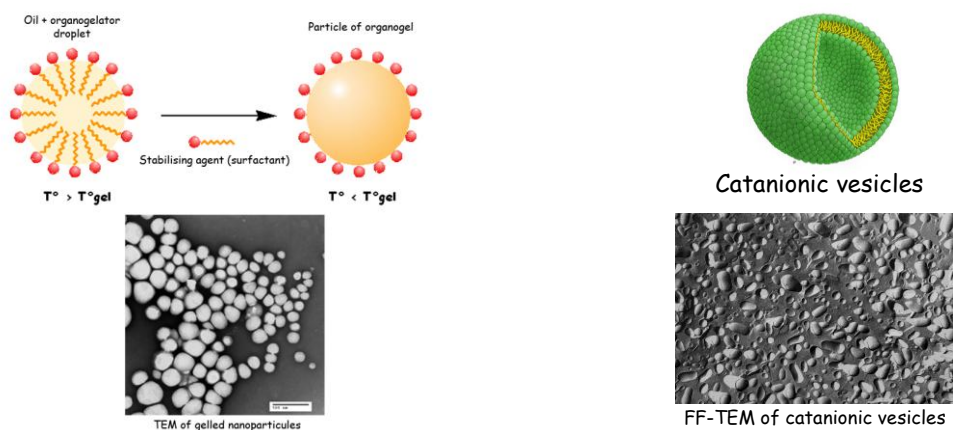
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Description of the research project :

The aim of this project is to evaluate the biological behaviour of two different nanocarriers, a “soft” one like catanionic vesicle and a “hard” one like gelled oil nanoparticle, towards the cell penetration. Relationships will be established between the penetration route and the particle nature and its elaboration process.

Catanionic vesicles are “soft” nanocarriers made of oppositely charged surfactants. These amphiphiles have the exceptional property to spontaneously self-assemble in aqueous solutions to form thermodynamically stable vesicles.

Organogels are materials which result from the immobilisation of an organic liquid in a three dimensional network by a gelator. The preparation process is based on the sol-gel phase transition of the organogel obtained by a hot emulsification in presence of an emulsifying agent (polymer or surfactant) and then cooling, leading to a dispersion of gelled nanoparticles in water.



The project will be carried out according to the following steps:

- 1- Elaboration of the catanionic vesicles and physicochemical characterization
- 2- Elaboration of the gelled nanoparticles and physicochemical characterization
- 3- Fluorescent probing of the carriers and biological tests on cell cultures
- 4- Relation between structure and cell penetration

Techniques used: Cell culture, flow cytometry, electron microscopy, confocal microscopy, dynamic light scattering, zeta potential.

Multidisciplinary aspect of the project: This project combines expertise in cell biology as well as in physico-chemistry. Knowledge in these two subjects will be essential for the success of this short stay research project.