



« Conception of nanomedicines with the help of imaging modalities »

Nathalie Mignet, Ph.D.

Directrice de recherche CNRS

Faculté de pharmacie

Université Paris Descartes, France

Jeudi, 3 novembre 2016

Pavillon Jean-Coutu

S1-125 – 16h30

À l'invitation de la professeure Jeanne Leblond-Chain

Nanoparticles have potentials in imaging in particular as enhanced contrast agent for techniques with low sensitivity, such as MRI or Ultrasound imaging. They also have a role to play in bimodal imaging. Indeed, thanks to their possible functionalization, various chromophores or contrastophor can be linked to the surface or within the core to provide new properties or to allow obtaining a high number of valuable informations in preclinical studies, while highly reducing the number of animals. The conception of a dedicated nanoparticle for long-term optical imaging studies (Maldiney et al.) will be presented followed by few examples of the interest of bimodalities in preclinical evaluation will be shown. First, the conception of a protein scaffold for the measurement of the functional hepatic reserve (Chaumet-Riffaud et al. 2010). A radioactive label provide quantitative informations on the liver function while an optical label will provide evidence on the specificity of the targeting. A second example will concern gaz microbubbles designed for gene transfer. Thanks to both ultrasound and optical imaging, microbubbles surface, injection and sonoporation parameters have been optimized to achieve liver gene transfer (Manta et al. 2015). In our quest of local delivery for colorectal primary cancer and metastases, thermogels were conceived and optimized thanks to physico-chemical characteristics and in vivo imaging. Absence of recurrence post surgery was shown thanks to local administration of anticancer drug filled hydrogel (N. Zeng, 2014, 2015).