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Title : *In vitro study* of *dendronized nanoparticles designed for targeted multimodal image guided therapy*

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The aim of *Theraget* project is to develop targeted multifunctional nanoplatforms that allow diagnosis and therapy (theranostic) and follow up diagnosis in breast and ovarian cancer context. Iron oxide nanoparticles (NPs) are synthesized by thermal decomposition method and coated with dendrons before functionalization [1]. Two targeting ligands were chosen: cRGD and folic acid, the 1st one is overexpressed in various tumor for the neovascularization [2], and the 2nd is known for its surexpression in breast and ovarian cancer [3]. The therapeutic part is based on magnetic hyperthermia, and MRI will be used for diagnosis.
In order to start *in vitro* part of the project; three different cell lines have been chosen. For each model, breast and ovarian, internalization study [4] will be carried. The internalization pathway is also be observed with confocal microscopy and transmission electron microscopy. After that, three complementary cytotoxicity tests will be used: lactate dehydrogenase (LDH) release based on the evaluation of the membrane integrity, Alamar Blue used to quantify cellular metabolic activity and Neutral Red which relies on the ability of neutral red to stain lysosomes of viable cells.
Lastly, *in vivo* biodistribution and bioelimination will be measured in healthy mouse model at short (2h) and long (24h) term after nanoparticle injection and compared to tumoral models with T_2 mutli-spin echo and T_2* multi-gradient echo MRI.

References

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