



**LabTAU - Unité de recherche U1032**  
Applications des ultrasons à la thérapie  
Jean-Yves Chapelon, directeur

## 2 years Post-Doctoral Position Available

“Acoustic cavitation for enhanced drug delivery and cancer treatment”

Conventional chemotherapies demonstrated their relative efficacy but remain associated to a significant systemic toxicity. The non-specific distribution of the cytotoxic drugs results in reduced therapeutic efficacy and side effects. Acoustic cavitation can be defined as the generation of bubbles of vapour under an ultrasonic field. It is clearly established in the literature that cavitation favours trans-membrane penetration of molecules and increases the efficacy / toxicity ratio of chemotherapies.

LabTau (INSERM U1032) and a start-up, CAVISKILLS, collaborate for developing an ultrasonic medical device which could potentialize chemotherapy for the treatment of various cancers. The technology consists in combining several ultrasonic beams for stabilizing and monitoring the cavitation cloud both in time and space. Preliminary animal experiments demonstrated that the combination of this ultrasonic treatment with a liposomal version of Doxorubicin significantly reduces the tumour growth compared to liposomes, ultrasound or drug applied alone.

INSERM is the only French public organization entirely dedicated to biological, medical and public health research. Within this context, LabTau- Unit 1032 specializes in applications of biomedical ultrasound and is a world leader in developing methods and devices for this purpose. The role of the post-doctoral fellow at LabTau in this project is to design the ultrasonic generator of the device. This generator includes a network of focused transducers for stabilizing the cavitation cloud and a monitoring system for quantifying the level of cavitation.

The candidate should be skilled in medical ultrasound for imaging and therapy, and wave physics and should have some experience with numerical analysis, preferably applied to wave propagation. The 2-year post-doctoral position will ideally begin on February 1st, 2013.

### Contacts:

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