Master « Systèmes Complexes »

INTERNSHIP PROPOSAL

Laboratory name: Laboratoire de Physique Statistique
CNRS identification code: UMR8550
Internship director'surname: **Martine Ben Amar**
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Internship location: LPS
Laboratory name: Physico-chimie Curie
Internship director'surname: **Jean-François Joanny**. e-mail: jfjoanny@gmail.com

Thesis possibility after internship: YES. (Ecole Doctorale)
Funding: YES/NO If YES, which type of funding:

Title

The immune system and cancer

The action of the immune system on a tumor remains poorly understood. But new therapies to boost its effectiveness have emerged these last ten years. The response of patients to this kind of treatment is quite variable depending on the individual. However, the immune system has the potential to recognize cancer and precancer cells as foreign and kill them. The T lymphocyte or effector T cell becomes activated to kill the tumour cell by recognizing those components in the cells that distinguish them from their normal counterparts; Then, they can be stimulated to recognize unique molecular features of tumour cells. The purpose of the internship and potentially of the thesis will aim to better understand this interaction immune system-cancer cells since many agents come into play and not only T cells. To do this, we will propose a dynamical system of type " population dynamics" for the different agents which will be confronted with the composition present in the first lymphatic nodes (analyzed at Curie Hospital). The internship is mostly analytical and numerical.

Condensed Matter Physics: YES Macroscopic Physics and complexity: YES
Quantum Physics: YES Theoretical Physics: YES