

GRAL MSc RESEARCH SCHOLARSHIP 2020-2021  
RESEARCH INTERNSHIP PROPOSAL

**Institute / Group**

IRIG / IBS – IRPAS

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**Research Project Title**

Molecular interplay at the phagocytic synapse

**Description of the project**

Phagocytosis is a key process in immune response and for tissue homeostasis. The recognition between a macrophage and its potential prey determines the efficiency and the specificity of the phagocytosis. Apoptotic cells are cleared in a tolerogenic way, but dysregulation of the macrophage recognition functions leads to autoimmune diseases. Cancer cells are poorly recognized and generally not phagocytosed despite the presence of macrophages in the tumoral microenvironments.

Thus, elucidating the molecular details that tightly control interactions at the interface between an apoptotic cell or a cancer cell and the macrophage is crucial for developing new therapeutical strategies against either autoimmune diseases or cancers.

The M2 project will be focused on the study of molecular complexes at the macrophage surface that, are involved in the cell-cell contact and the uptake of the target. The study will be done at the molecular level (nanoscale) in a cellular context thanks to super-resolution imaging technics (STORM and PALM). The ideal candidate will have a good background in biochemistry and cellular biology and ready to collaborate with biophysicists.

**Keywords**

phagocytic synapse macrophage receptors, immune response, super resolution microscopy

**Relevant publications of the team**

INVESTIGATING THE ARCHITECTURE OF APOPTOTIC CELLS ASSOCIATED MOLECULAR PATTERNS RECOGNIZED BY C1q AT THE NANOSCALE Dufour, Samy; Tacnet, Pascale; Thielens, Nicole M.; Kleman JP; Bourgeois D and Philippe Frachet MOLECULAR IMMUNOLOGY Volume: 114 Pages: 430-430 Meeting Abstract: 54 Published: OCT 2019

CALRETICULIN RELEASE AT AN EARLY STAGE OF DEATH MODULATES THE CLEARANCE BY MACROPHAGES OF APOPTOTIC CELLS Rim Osman; Pascale Tacnet-Delorme; Jean-Philippe Kleman; Arnaud Millet and Philippe Frachet. 2017 Frontiers in Immunology DOI: 10.3389/FIMMU.2017.01034

INVESTIGATIONS ON THE C1Q-CALRETICULIN-PHOSPHATIDYLSERINE INTERACTIONS YIELD NEW INSIGHTS INTO APOPTOTIC CELL RECOGNITION. Païdassi H, Tacnet-Delorme P, Verneret M, Gaboriaud C, Houen G, Duus K, Ling WL, Arlaud GJ, Frachet P. J Mol Biol. 2011 Apr 29;408(2):277-90