



MASTER THESIS PROJECT: IN IMMUNOTHERAPIES

Unlocking the Role of Memory NK Cells in Cancer: A Path to Innovative Immunotherapies

Immunotherapies have accelerated the progress of cancer treatments with the continuous effort to improve clinical efficacy and reduce side effects. In this endeavour, combination therapies that target multiple immune compartments offer promising strategies to improve tumor control, prevent relapse, and prolong survival. Alongside T cells, **natural killer (NK) cells**—known for their potent cytotoxicity and cytokine production—are critical players in this fight. While the importance of stem-like CD8⁺ T cells is now increasingly appreciated, **the existence and significance** of other memory immune populations, including **memory NK cells**, in immunotherapy responses are largely unknown.

Our preliminary findings revealed the existence of a memory NK cell population in the spleen, induced by primary tumor exposure. These NK cells persisted long-term (up to 8 weeks) and showed enhanced control of rechallenged tumors compared to naïve NK cells. The aim of this master project is to characterise in depth the tumor-induced memory NK cells as compared to naïve NK cells by leveraging ***in vitro* functional assays, multi-color flow cytometry and immunofluorescent imaging.**

Under the guidance of Prof. Alfred Zippelius and the direct supervision of Dr. Thuy Luu—who brings extensive expertise in NK cell biology and cancer immunotherapy—you will gain hands-on experience with advanced techniques. You'll also work with **innovative mouse models**, including lineage tracing via tamoxifen induction, and learn to **dissect and process mouse organs**, including tumors, spleens, and blood.

This project offers an unparalleled opportunity to be at the forefront of cancer immunology research, where your contributions could shape the next breakthrough in immunotherapy.

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