



## RESEARCH TOPIC MEM1

### Immunosuppression in the tumor microenvironment mediated by regulatory T cells Curriculum MEM

#### Laboratory name

Lab of Translational Immunology, via Montalcini 4, 20089, Rozzano, MI

#### Pre-clinical Supervisor

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#### Abstract

We use high-content single cell approaches including single cell RNA sequencing, epigenetics, high-dimensional flow cytometry, tissue profiling and bioinformatics to dissect the diversity of the human T cell compartment in the cancer microenvironment, with the final aim of identifying those T cell subsets to be targeted by immunotherapy. Our approach enables the rapid investigation of dozens of human specimens from patients, especially during the course of immunotherapeutic treatments. We have identified peculiar characteristics of immunosuppressive T cell populations in tumors that can be targeted by pharmacological or gene engineering approaches, so to evoke anti-tumor immune responses. The candidate will work with an enthusiastic team of researchers to develop novel immunotherapies against cancer.

#### Main technical approaches

Cellular and molecular immunology, single cell genomics, high-dimensional flow cytometry and in situ tissue profiling, bioinformatics (with the support of in-lab expertise) applied to human patients' samples, genetic perturbations and functional assays.

#### Scientific references

- Alvisi, G. et al. Multimodal single-cell profiling of intrahepatic cholangiocarcinoma defines hyperactivated Tregs as a potential therapeutic target. *J. Hepatol.* (2022).
2. Galletti, G. et al. Two subsets of stem-like CD8(+) memory T cell progenitors with distinct fate commitments in humans. *Nat. Immunol.* 21, 1552-1562 (2020).
3. Alvisi, G. et al. IRF4 instructs effector Treg differentiation and immune suppression in human cancer. *J. Clin. Invest.* 130, 3137-3150 (2020).

**Type of contract**

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