

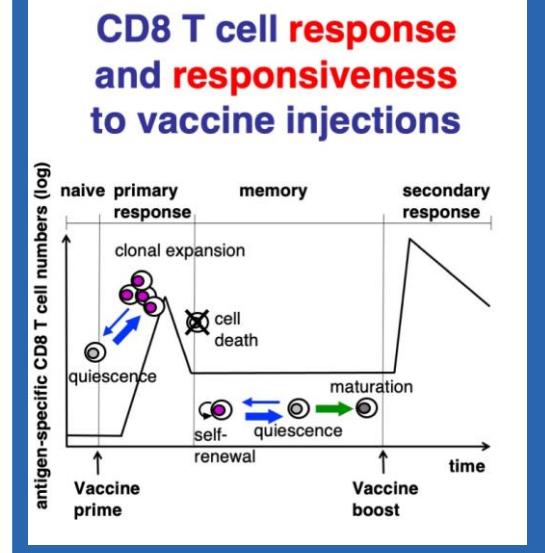
Project title: One Health Basic and Translational Research Actions addressing Unmet Needs on Emerging Infectious Diseases

Acronym INF-ACT

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The IBPM unit is involved in **WP1.2** (Virus-Host interactions and virus Immunoediting), specifically in **WP1.2.6** (Adaptative immune responses: the role of protective as well as pathogenetic T-cells in infection and disease) of Research **node 1** (Emerging and re-emerging viral threats).

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Description:

Although memory CD8 T cells are critical for durable protection against viral infections and tumors, some questions of their biology are still unsolved. Some vaccines, including those based on adenoviral vectors and on mRNA, can effectively elicit CD8 T cell responses. Nevertheless, there is no clear protocol for how best to induce long-lasting immunity in a predictable manner in respect to vaccine dose and route of administration. Similarly, there is no current agreement on the criteria for setting the appropriate time intervals between repeated injections. Our projects addresses these issues using experimental mouse models and state-of-the-art flow cytometry and transcriptomics techniques.

Aims:

We aim at analysing:

1. The kinetics of CD8 T cell proliferative response to antigenic stimulation in vaccinated mice
2. Kinetics of increased CD8 T cell responsiveness to secondary antigenic stimulation in vaccinated mice
3. Addressing the implications for human CD8 T cell responses

Solving these issues can be extremely beneficial for immunological understanding of CD8 T cell responses and for public health policy, as emphasized by the recent COVID-19 pandemic.

Expected results:

We expect to establish a new memory CD8 T cell molecular profile of increased responsiveness to vaccine boost, giving a valuable contribution to the rational design of vaccination protocols. Advancements in this field are much needed, as defining the time interval between vaccine shots represents one of the current challenges after the success of many anti-SARS-CoV-2 vaccination strategies, including those based on adenoviral-vectors and on mRNA.