Ambito:
Biochimica

Cantone: **CH-VD**

Bogado, Gabriel, studente
Liceo Cantonale di Mendrisio, Mendrisio

Ho avuto la possibilità di sviluppare il mio lavoro di maturità in un ambito della biochimica che mi aveva sempre affascinato: Come si difende il nostro corpo dagli agenti estranei? Oltre a ciò ho potuto conoscere il mondo della ricerca e sono entrato in contatto con l'ambiente universitario e post-universitario.

Croci, Luigi, docente
Liceo Cantonale di Mendrisio, Mendrisio

Romero, Pedro, Prof. e Donda, Alena, Dr. esperti
Ludwig Cancer Research (UNIL), Losanna

The killing ability of T CD8$^+$ OT-1 cells transduced in order to express an invariant receptor (CAR-L363 receptor) capable of identifying the invariant CD1d+α-GalCer complex seems to increase. The iNKT cells have the habit of recognizing this complex with their TCR, which have a lower variability

Note: ***This maturity work has been expanded upon the Nina Dumauthioz's Master work, under development at the University of Lausanne (UNIL) and under the supervision of Prof. Pedro Romero and Dr. Alena Donda.***

Abstract: ***H-2Kb/OVA cytotoxic CD8$^+$ T cells (OT-1) were transduced to express an invariant receptor called CAR-L363 capable of recognizing the complex of CD1d+α-GalCer expressed in particular by Antigen Presenting Cells (APC).***

The aim was to increase the crosstalk between T cells and APCs which would potentially lead to a stronger antigen priming. This innovative approach of cancer immunotherapy would offer a dual activation of the T cells via the tumor-specific TCR and via the interaction with CD1d, which might be additive or even synergize. Safety issues will have to be carefully evaluated to avoid any unspecific activation, although the antigen specificity of the L363 antibody has been so far restricted to CD1d only when loaded with the synthetic glycolipid ligand α-GalCer.
This approach is expected to fight against the tumors in two ways, 1) by enhancing the T cell priming against tumor antigens, OVA being the model antigen used in this study, 2) by directly killing CD1d-expressing myeloid cells known to render the tumor environment immunosuppressive.

The experimental phase where I was personally present is the step where the retroviral vectors have been developed. Three different linkers between the domains of the L363 heavy and light chains have been tested. These vectors have been used to transduce the CAR-L363 receptor in the OT-1 CD8$^+$ T cells. Unfortunately, it has been impossible for me to follow all the project due to its length.

Luogo e data: Genestrerio, 8 Febbraio 2016