ImmunoTools IT-Box-139 Award 2013

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Triggering the adaptive immune response
Importance of dendritic cell α2,3- and α2,6-sialylation

The PhD project focuses on sialylation impact on the dendritic cell (DC) immunobiology. DCs are key players of the immune system, their main function being to bridge the innate and the adaptive immune responses, excelling at this function: they show remarkable antigen uptake, processing functions and enhanced presentation features to the adaptive immune effector cells taking advantage of unique functional cell structures. Deriving from these features, they ultimately set themselves as skewers in the very fine balance between inflammation and tolerance.

Sialylation – the presence of terminal sialic acid on glycoconjugates – has been an elusive subject regarding DC immunobiology. Its terminal position makes it a relevant molecule on key processes of the DC cell cycle such as endocytosis, cell migration and antigen presentation but its full influence is far from being described. Work so far has unravelled a relevant role of sialic acid in endocytosis (1, 2) and T-cell presentation but this work is still to be consolidated and approached regarding the DC migration phase.

ImmunoTools fluorescently-labelled antibodies are a crucial part of an immunologist's toolbox. Cell characterization by flow cytometry is essential in all steps, ranging from simple phenotyping (using antibodies against cell markers as CD11b, HLA-DR, CD40, CD80/86) to ensure proper assay setup, up to determination of activation states and proliferation rates in mixed lymphocyte cultures where antibodies against T and B cells markers (i.e. CD3, CD4/8, CD25, CD19, CD45RO) are essential to determine T cell polarization and posterior relation with the antigen-sialic acid binomial. The recent and future results of this work uncover new forms of immunoregulation, thus contributing to a clearer view of the immunological balance – features with high clinical implications, such as the development/enhancement of specific DC immunotherapies.

References:

1) Crespo HJ, Cabral MG, Teixeira AV, Lau JT, Trindade H, Videira PA. Effect of sialic acid loss on dendritic cell maturation. Immunology. 2009 Sep;128(1 Suppl):e621-31 2009
2) Videira PA, Amado IF, Crespo HJ, Algueró MC, Dall'Olio F, Cabral MG, Trindade H. Surface alpha 2-3- and alpha 2-6-sialylation of human monocytes and derived dendritic cells and its influence on endocytosis. Glycoconj J. 2008 Apr;25(3):259-68. Epub 2007

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ImmunoTools *IT-Box-139.3* for **Helio Crespo** includes 100 antibodies

FITC - conjugated anti-human CD1a, CD2, CD3, CD4, CD5, CD6, CD7, CD8, CD9, CD11a, CD11b, CD14, CD15, CD16, CD18, CD19, CD21, CD25, CD29, CD36, CD41a, CD43, CD45, CD45RA, CD46, CD52, CD53, CD54, CD58, CD62p, CD63, CD69, CD71, CD80, CD86, CD95, CD235a, HLA-ABC, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE - conjugated anti-human CD2, CD3, CD4, CD8, CD11b, CD14, CD15, CD18, CD19, CD20, CD21, CD22, CD27, CD33, CD34, CD37, CD38, CD40, CD42b, CD45, CD45RB, CD50, CD72, CD95, CD105, CD147, CD177, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE/Dy647 -tandem conjugated anti-human CD45

APC -conjugated anti-human CD3, CD4, CD7, CD8, CD10, CD11c, CD14, CD16, CD19, CD27, CD37, CD40, CD44, CD56, CD59, CD61, CD62L, CD62P, CD69, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V DETAILS

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