ImmunoTools IT-Box-139 Award 2013

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Functional crosstalk between human NK cells and 6-sulfo LacNAc (slan) DCs

Natural killer (NK) cells are a subset of large granular lymphocytes defined by the lack of CD3 and by the surface expression of CD56. They have a high cytotoxic capacity against tumor cells or virally infected cells without the need of antigen sensitization. A proportion of NK cells produce high levels of cytokines and chemokines, which play an important role in modulating immune responses as critical bridge between the innate and adaptive immune response.

Distinct human blood Dendritic Cell (DC) subsets has been described as M-DC8$^+$ and HLA-DR$^+$ cells lacking the lineage markers CD3, CD19, and CD56. This subset has recently defined as 6-sulfo LacNAc (slan) DCs (formerly termed M-DC8$^+$ DCs) comprising a major subpopulation of proinflammatory myeloid human blood DCs, which mainly differ from other blood DC subsets by their selective phenotype 6-sulfo LacNAc1 (a carbohydrate modification of P-selectin glycoprotein ligand-1), CD1c$^-$, CD11c$^+$, CD16$^+$, CD45RA$^+$, C5aR$^+$. Functionally, Slan DCs when activated with toll like receptor ligands are principal producers of the proinflammatory cytokines tumor necrosis factor (TNF)-α and interleukin (IL)-12. It has been reported that slan DCs efficiently improve the immunomodulatory and cytotoxic potential of NK cells. Reciprocally, it has been shown that resting NK cells have impact on maturation and cytokine production of slan DCs.

Apart from few cytokines such as TNF-α and IL-12 from slan DCs side and Interferon (IFN)-γ by NK cell, there is little evidence of involvement of other soluble substances in the crosstalk between the two cells. It has also been indicated that cell-cell contact is necessary for the slan DCs modulation of NK cell tumor-directed cytotoxicity. However, the exact receptor-ligand involving in this phenomenon is not fully discovered yet. Therefore, in this research, we have been finding out the responsible molecules for the bidirectional interaction between the NK cell and slan DCs.

I have been working on this project for the last one year. I have got encouraging outcomes since then. I will continue working for the next two or three years of my PhD. Surprisingly, I am using most of the antibodies in the *IT-box-139* for my research purpose. To mention some antibodies, I need for my research CD3, CD4, CD8, CD11b, CD11c, CD14, CD16, CD19, CD20, CD25, CD33, CD35, CD36, CD40, CD45, CD45RA, CD45RB, CD45RO, CD56, CD57, CD62L, CD69, CD80, CD86, CD95, HLA-DR, Control-IgG1, Control-IgG2a, Control-IgG2b, and Annexin V from the list. Additionally, since I left with more than two

home

years for my research; it is most probable that I can use appropriately all of these antibodies in case I got the award.

ImmunoTools *IT-Box-139.2* for **Dejene Tufa** includes 100 antibodies

FITC - conjugated anti-human CD1a, CD3, CD4, CD5, CD6, CD7, CD8, CD14, CD15, CD16, CD19, CD21, CD25, CD29, CD35, CD36, CD41a, CD42b, CD45, CD45RA, CD45RB, CD45RO, CD49d, CD53, CD57, CD61, CD63, CD80, CD86, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE - conjugated anti-human CD3, CD4, CD8, CD11b, CD15, CD14, CD18, CD19, CD20, CD21, CD22, CD31, CD33, CD38, CD40, CD45, CD45RB, CD50, CD52, CD56, CD58, CD62p, CD72, CD95, CD105, CD147, CD177, CD235a, HLA-ABC, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

PE/Dy647 -tandem conjugated anti-human CD3, CD4, CD8, CD14, CD19, CD20, CD25, CD54

APC -conjugated anti-human CD2, CD3, CD4, CD8, CD10, CD11a, CD11c, CD14, CD16, CD27, CD37, CD42b, CD44, CD45, CD59, CD62L, CD69, CD71, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V

DETAILS