ImmunoTools IT-Box-139 Award 2013

Mandy Vanhees

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The role of the transcription factors Tox and Id2 in the development of human natural killer cells:

Natural killer (NK) cells form a first line of defence against tumor and pathogen-infected cells. In contrast to T cells, they do not require prior sensitization to exert their cytolytic effector functions. Additionally, NK cells produce several cytokines, growth factors and chemokines, which reflects their immunoregulatory function. Due to these characteristics, NK cells form a new and upcoming therapeutic tool for the treatment of cancer.

Unfortunately, this type of immunotherapy depends on the availability of large numbers of NK cells. Although these lymphocytes can be isolated directly from peripheral or umbilical cord blood, they are only present at low numbers. Ex vivo NK cell expansion is possible, but induces cell exhaustion and subsequently ineffective target cell killing. To bypass these obstacles, NK cell development from hematopoietic stem cells (HSCs) is an appealing option.

NK cell development is only starting to be unravelled. Most of our knowledge is based on mouse studies, but linking these data to human NK cell development is hampered by important differences between human and mouse NK cell development. That is why further studies on the transcriptional regulation of human NK cell differentiation are urgently needed.

The TFs Tox and Id2 have been demonstrated to be involved in mouse NK cell differentiation, but their exact function and the subsequent processes driven by these TFs are still incompletely defined. Using recently developed techniques, we will investigate the role of Tox and Id2 in human NK cell development. One of the major research questions is: to which developmental stage do the NK cells that we generate from HSCs belong to? To answer this question, we will perform a broad phenotypic analysis of the generated NK cells. B, T and myeloid cells that will be generated in parallel, will also be phenotypically analysed. For this, we will be needing a multitude of antibodies, e.g. CD1, CD3, CD4, CD5, CD7, CD8, CD14, CD15, CD16, CD19, CD56, that can be provided by ImmunoTools.

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ImmunoTools *IT-Box-139.3* for **Mandy Vanhees** 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

plus CD56 PE, CD45 APC

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