ImmunoTools *special* Award 2014

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Immature myeloid cells in the decidua as mediators of immune tolerance in pregnancy

Myeloid derived suppressor cells (MDSC) are immature immune cells that potently suppress immune answers to promote cancer growth and metastasis. Also MDSC are assumed to be key immunoregulatory cells in transplantation, immune diseases and infection. In mice, MDSC are well defined as $Gr1^+CD11b^+$ cells with a granulocytic and a monocytic subset. Unfortunatelly, in humans the classification is not such consistent with different surface marker combinations described so far. Inter alia, MDSC are characterized as $CD33^+CD11b^+$. They restrain T cell activation and proliferation. Their immunsuppressive tools are inter alia arginase, inducible NO-synthase and indoleamine 2,3-dioxygenase. Further MDSC are known to inhibit the cytotoxicity and cytokine secretion of natural killer (NK) cells by direct cell-cell contact. MDSC were found in the peripherial blood of patients with cancer or were isolated from tumor tissue.

The immune tolerance of the maternal immune system towards the embryonic and fetal antigens is still a surprising phenomenon, which is a key for a successful pregnancy. The implantation of the pregnancy takes place invasively in the inner third of the myometrium, although the embryonic cells with the surrounding trophoblast cells are genetically alien to the maternal tissue. Recurrent early misscarriage is an important cause for infertility. It has been proposed, that a disturbed immune tolerance within the uterine mucosa of a pregnancy the decidua, seems to be responsible. The decidua contains a remarkable number of immune cells, they account for about 50% of the tissue. In this regard, the different decidual immune cells are of interest. Besides the already known uterine natural killer (uNK) cells, mature and immature dendritic cells (DC), monocytes and T cells, there is preliminary

evidence that there are considerable numbers of $CD33^+/CD11b^+$ cells found in the decidua which await further characterization.

Thus, my project focuses on the characterization of $CD33^+/CD11b^+$ cells in the decidua, especially to analyze their presumable activity as MDSC being equivalent to those already known in cancer. To this end I will isolate those cells from decidual tissue, characterize their phenotype by flow cytometry analysis, analyze expression of arginase, inducible NO-synthase and indoleamine 2,3-dioxygenase and further known immunosupressive tools and especially characterize their impact on T cell proliferation and function (e.g. cytokine profile) i*n vitro.* Further I will examine the interaction of the decidual $CD33^+/11b^+$ cells with other immune cells in the decidua especially with the most prominent population of uNK cells

The ImmunoTools antibodies CD11b, CD14, CD15, CD33, CD66b, HLA-DR will be used to characterize the decidual $CD33^+/CD11b^+$ cells by flow cytometry. Annexin V will allow to test apoptosis. The IFN-gamma ELISA Set will be most important to characterize the reaction of T-cells which were co-cultured with the $CD33^+/CD11b^+$ decidual presumable MDSC.

ImmunoTools *special* AWARD for **Catharina Bartmann** includes 16 reagents

FITC - conjugated anti-human CD11b, CD14, CD15, CD66b, HLA-DR, IL-6, Control-IgG1, Control-IgG2a, Control-IgG2b, Annexin V,

PE - conjugated anti-human CD33, Control-IgG1, Control-IgG2a,

human IFN-gamma ELISA-set for 96 wells, (3 reagents)

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