ImmunoTools IT-Box-Cy55M-Award 2013

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Fc-receptors for targeted delivery of antigens

Dendritic cells are one of the most important antigen presenting cells. They are not only responsible for the induction of protective immune responses but also for the maintenance of peripheral tolerance. We recently showed that specialized DC subpopulations are able to induce different T cell responses after targeting antigens to the endocytic receptors DEC205 and DCIR2 (33D1) *in vivo*. As dendritic cells express a lot of antigen uptake receptors, we wondered if beside C-type lectin receptors, also other receptors are suitable for antigen targeting. Fc receptors are highly efficient in endocytosis od antibody immune complexes and expressed on a variety of antigen presenting cells. First we evaluated the expression pattern of Fc receptors on various DC subpopulations and found them differentially expressed depending on the DC subpopulation and the analyzed tissue. In a next step we wanted to explore if Fcγ receptors are useful for *in vivo* antigen targeting. Therefore, we have cloned the variable regions of a variety of anti-Fcγ receptor antibodies in frame to a non-Fc receptor-binding murine IgG1 constant region. Additionally, we genetically fused the model antigen ovalbumin into the C-terminus of the cloned antibodies to take advantage of the big variety of immunological ovalbumin related tools. Our first results show that targeting antigens via recombinant ovalbumin carrying Fc receptor antibodies *in vivo* induces different T cell responses. Although Fcγ receptors are also expressed on other immune and cell populations (e.g. monocytes, B cells, granulocytes) we provide evidence that the expression of Fcγ receptors only on DCs is needed for the induction of T cell responses.

The induction of these responses is dependent on cell-cell contacts via cell surface receptors as well as on the secretion of cytokines and chemokines. To study the mechanism in greater detail it would be important to establish *ex vivo* primary dendritic cell cultures. For that issue we would need to test a bunch of different cytokines and combinations thereof giving the Dendritic cells a more natural environment for keeping them longer alive and in their “isolated” stage. The ImmunoTools *Box IT-Box-Cy55M* would be ideal for pushing this project forward.

ImmunoTools *IT-Box-Cy55M* for **Christian Lehmann**
includes 55 recombinant mouse cytokines

rm EGF, rm Eotaxin / CCL11, rm FGF-a / FGF-1, rm FGF-b / FGF-2, rm FGF-8, rm Flt3L / CD135, rm G-CSF, rm GM-CSF, rm GRO-a / CXCL1, rm GRO-b / CXCL2, rm IFNgamma, rm IL-1alpha, rm IL-1beta, rm IL-2, rmIL-3, rm IL-4, rm IL-5, rm IL-6, rm IL-7, rm IL-9, rm IL-10, rm IL-11, rm IL-13, rm IL-15, rm IL-16, rm IL-17A, rm IL-17C, rm IL-17F, rm IL-19, rm IL-20, rm IL-21, rm IL-22, rm IL-25 / IL-17E, rm IL-27, rm IL-31, rm IL-33, rm IP-10 / CXCL10, rm LIF, rm MCP1 / CCL2, rm M-CSF, rm MIP-1α/ CCL3, rm MIP-1β / CCL4, rm MIP3α / CCL20, rm MIP3β / CCL19, rm NGF-beta, rm PDGF-AA, rm PDGF-BB, rm RANTES / CCL5, rm sCD40L / CD154, rm SCF, rm SDF-1α / CXCL12a, rm SDF-1β / CXCL12b, rm TNFα, rm TPO, rm VEGF DETAILS