ImmunoTools IT-Box-Cy55M-Award 2013

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Defining the nature of CD4 T-cell help for the CTL response to optimize immunotherapy of cancer

In our lab we are studying the key molecular mechanisms that optimize CTL response as a result of CD4 T cell help, with a focus on the contribution by costimulatory TNF (receptor) family members. CD4 T cells recognize MHC Class II/peptide complex on the DCs, become activated and send a number of signals, which result in the DC 'licensing'. In result DCs deliver the signal to CD8 T cells, which allows it to develop into a CTL with optimal quality. Such CTLs produce high numbers of TNFα and IFNgamma. We make use of an experimental model in which we administer DNA vaccine to the mice and either engage CD4 T-cell help or not, in this way we can identify how important and at which stage the CD8 T cells need to be 'helped'.

Simultaneously, we would like to better characterize the nature of the CD4 T cell mediated help on a single cell level. In order to study these interactions we need to perform a number of ex vivo experiments. We isolate mouse bone marrow, generate dendritic cells *in vitro* using rmFlt3L and stimulate them with rmCD40L (primary signal delivered by CD4 T cells) to see which costimulatory molecules are primarily upregulated. Identifying the role of different subsets of CD4 T cells including Th1, Th17 and Tregs in our setting will be possible with the use of a number of recombinant proteins applied ex vivo (e.g. rmIFN-g, rmIL-2, rmIL-6 and rmIL-10).

With the help of ImmunoTools IT-Box-Cy55M we could potentially identify a number of key molecules that play a role in eliciting an optimal anti-tumor immune response. Such molecules can be deliberately triggered in combination with vaccines further improving their effect. Moreover, we will identify novel potential target and markers for immunotherapy guidance, thereby widening the perspectives for clinical success.

ImmunoTools IT-Box-Cy55M for Tomasz Ahrends
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