ImmunoTools IT-Box-Cy55M-Award 2013

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Role of poly-(ADP-ribose)-polymerase-1 in helper and regulatory T cell differentiation:

Peripheral T cell differentiation to effector Th cells, such as Th1, Th2 or Th17 cells, or to regulatory $CD25^{+}Foxp3^{+}$ cells requires the integration of multiple synergic and antagonistic signals. A proper balance between the different effector cell populations and the immune-regulatory T cell subset leads to protective not-harmful immune responses. PolyADP-ribosylation is a post-translational modification of proteins catalyzed by polyADP-ribose polymerases (PARPs). Recent findings showed that PARP-1 plays a crucial role in inflammatory/immune responses whereas its enzymatic inhibition confers protection in several models of immune-mediated diseases. The aim of my PhD thesis is to verify whether PARP-1 might contribute to the balance between regulatory and effector programs.

To address this issue I'll stimulate naïve CD4 T cells purified from wild type (WT) and PARP-1KO mice in the presence of different combinations of cytokines (IL-12, IL-4, TGFβ, IL-6, IL-21) to induce specific T helper o regulatory T cell polarization. Stability of regulatory T cell phenotype will also be evaluated by stimulating these cells in the presence of different combinations of pro-inflammatory cytokines (IL-1, IL-6, TNFa). ELISA and Flow Cytometry will be used to assess cytokine production (IFN-γ, IL-4, IL-5, IL-17) and frequency of Th1 ($IFN\text{-}\gamma^{+}$), Th2 ($IL\text{-}4^{+}$) and Th17 ($IL\text{-}17^{+}$) cells, respectively. Besides cytokine production I'll also study the expression of lineage specific transcription factors as induced by cytokine-driven expression (GATA3, Tbet, RORgt, Foxp3).

The high number of cytokines present in the ImmunoTools *IT-Box-Cy55M* would therefore allow me to perform several experiments for my PhD thesis to address the scientific questions raised above. Several of them will be used in culture to stimulate cell differentiation while other ones could be useful as ELISA standard or to investigate cell migration and activation by chemokines.

ImmunoTools *IT-Box-Cy55M* for **Flavia Novelli**
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