ImmunoTools IT-Box-Cy55M-Award 2013

Jana Balounová

PhD Supervisor: Dr. Dominik Filipp

Institute of Molecular Genetics, AS CR,
Videnska 1083, CZ14200, Prague, Czech Republic

The role of Toll like receptors in embryonic hematopoeisis

Toll-like receptors (TLRs) recognize conserved microbial structures and are critically important for triggering immune responses to infections. Recently, adult hematopoietic stem cells (HSC) have been shown to express TLRs, allowing them to directly sense the presence of infections. Notably, while TLR-independent bone marrow (BM) hematopoiesis is driven by a combination of endogenous cytokines and growth factors, TLR stimulation can nudge this process towards increased production of myeloid cells. This serves as an important back-up mechanism when the rapid replenishment of short-lived myeloid cells is crucial for the maintenance of adult immune homeostasis. Murine HSCs, appear in the AGM region at approximately 10.5 day of embryonic development, however their origin and developmental paths before they reach the adult HSC niche in the BM are still enigmatic.

The aim of my PhD project is to elucidate the role of TLRs at the onset of embryonic hematopoiesis. We have shown that embryonic hematopoietic precursors that are present in the embryo before *bona fida*e HSC develop express TLRs. Therefore my focus relies on development of numerous *in vitro* embryonic hematopoietic differentiation assays to reveal the differentiation potential of embryonic hematopoietic precursors. This experimental approach is based on optimizations of cytokine cocktails designed to support the growth and differentiation of embryonic hematopoietic progenitors and subsequent flow cytometric analyses. Currently our work wouldn't be possible without the use of following cytokines and growth factors: SCF, IL-3, IL-6, IL-7, Flt3L, MCFS, GM-CSF, but we wish to extend out cytokine panel to many other cytokines and growth factors including IL-9, IL-11, VEGF, EPO, G-CSF, CXCL10, LIF, PDGF-AA, PDGF-BB, SDF-1α, SDF-1β. To asses the differentiation and activation status of cells derived from embryonic hematopoietic precursors we can utilize antibodies produced by ImmunoTools such as anti-: CD3, CD4, CD8, CD11b, CD19, CD25, CD34, CD45, B220, CD62L, CD177, CD86, TER119, Gr-1 or TCR antibodies. Since our experimental approch is demanding in antibodies and recombinant protein consumption, we appreciate that the prices of ImmunoTools products are reasonable and that deliveries are on time.

ImmunoTools IT-Box-Cy55M for Jana Balounová

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