# ImmunoTools IT-Box-Cy55M-Award 2013


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## New anti-inflammatory mechanisms of glucocorticoids *in vivo*

Glucocorticoids (GC) are the most powerful and most often used anti-inflammatory (AI) drugs. GC receptors are expressed in almost all cells of the body and therefore immunotherapy with GC is accompanied by serious side effects. Characterisation of specific molecular mechanisms of GC should lead to cell specific AI therapies with fewer side effects.

Our lab identified a stable, GC induced AI monocyte subset in humans (Ehrchen, Jan, et al. 2007). Cytokines which induce AI effects on macrophages (IL-4, IL-6 and IL-10) were not able to mimic the effect of GC on monocytes, but modified the phenotype when administrated simultaniously with GC (Tsianakas, Athanasios, et al. 2011).

To investigate the molecular AI mechanisms involved in disease conditions *in vivo*, we tried to find out wether there is a murine counterpart of these monocyte subset. Indeed, we found that murine bone marrow derived monocytes evolve a similar phenotype and functional properties after GC stimulation *in vitro* (Varga, Georg, et al. 2008).

Monocytes can differentiate into several macrophage as well as dentritic cell subsets under certain conditions *in vivo.* Different cytokines (e.g. Flt3L, GM-CSF, IFN-γ, IL-4, IL-10, M-CSF) are essential triggers for further differentiation of monocytes. Costimulation with recombinant murine cytokines will facilitate *in vitro* studies concerning the differentiation, functional properties like migration and suppressive properties in co-culture experiments of the GC stimulated monocytes (GCSM).

Taken together, attending high quality recombinant murine cytokines facilitate investigations of functional features *in vitro* and lead to more determined application of GCSM *in vivo*. Therefore a preceding use of ImmunoTools *IT-Box-Cy55M* reduces the consumption of experimental animals.


Ehrchen, Jan, et al. "Glucocorticoids induce differentiation of a specifically activated, anti-inflammatory subtype of human monocytes." Blood 109.3 (2007): 1265-1274.

Tsianakas, Athanasios, et al. "Induction of an anti-inflammatory human monocyte subtype is a unique property of glucocorticoids, but can be modified by IL-6 and IL-10." Immunobiology (2011).

Varga, Georg, et al. "Glucocorticoids induce an activated, anti-inflammatory monocyte subset in mice that resembles myeloid-derived suppressor cells." Journal of leukocyte biology 84.3 (2008): 644-650.

**ImmunoTools** IT-Box-Cy55M for **Michael Belz**
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