ImmunoTools IT-Box-139 Award 2012

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Transcriptional regulation of NLRP12 expression during Toll-like Receptor signaling and myeloid cell differentiation

Nucleotide-binding domain leucine-rich repeat (NLR) proteins are characterized by the presence of a conserved nucleotide binding and oligomerization domain and located in the intracellular compartments. Activation of NLR proteins causes inflammatory responses mediated by NF-κB, MAPK, or caspase-1 activation [1]. Thus, understanding of NLR signaling is important for the therapeutic intervention of various inflammatory diseases.

NLRP12 (NLR family, pyrin domain containing 12) is an NLR protein which is expressed primarily by cells of the myeloid-monocytic lineage [2]. In contrast to most NLR proteins that promote inflammation, NLRP12 negatively regulates canonical and non-canonical NF-κB signaling [3]**.** During the PhD thesis, the modulation of NF-κB signaling is going to analyse in response to TLRs stimulation and during myeloid cell differentiation, since NF-κB recruits both in differentiation and inflammation processes. Furthermore, the relevance of NLRP12 in the regulation of NF-κB as well as the regulation of NLRP12 expression in the transcriptional level are mainly aimed to be defined in the PhD research.

In the project, changes in the expression levels of CD14, CD16, CD11b, CD11a, CD18, CD1a, CD31, CD25, CD27, HLA-ABC, HLA-DR, IL-6, CD86, CD54, CD80, CD13, CD44, CD40 and CD56 are going to analyse in human monocyte,

macrophage and dendritic cell populations and cell lines in response to inflammatory or differentiating signals.

References

1. Arthur, J. *et.al*., Heat Shock Protein 90 Associates with Monarch-1 and Regulates Its Ability to Promote Degradation of NF-κB -Inducing Kinase. *Journal of Immunology,* 2007.
2. Zaki, H. *et.al*., The NOD-Like Receptor NLRP12 Attenuates Colon Inflammation and Tumorigenesis. *Cancer Cell*, 2011.
3. Lich, J., D. *et.al*, Cutting Edge: Monarch-1 Suppresses Non-Canonical NF-_B Activation and p52-Dependent Chemokine. *The Journal of Immunology,* 2007.