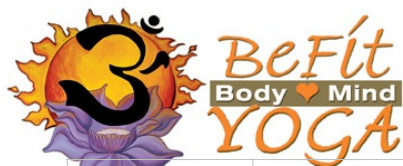


Table 1. Summary of selected cytokines and their functions. From [ThermoFisher scientific.com](http://ThermoFisherScientific.com)

Cytokine	Classification	Main Sources	Receptor	Target Cell	Major Function
Erythropoietin		Endothelium	EpoR	Stem cells	Red blood cell production
G-CSF	Pro-inflammatory	Fibroblasts, endothelium	CD114	Stem cells in BM	Granulocyte production
GM-CSF	Adaptive immunity	T cells, macrophages, fibroblasts	CD116, CDw131	Stem cells	Growth and differentiation of monocytes, and eosinophil, granulocytes production
IL-1	Pro-inflammatory	Macrophages, B cells, DCs	CD121a	B cells, NK cells, T-cells	Pyrogenic, pro-inflammatory, proliferation and differentiation, BM cell proliferation
IL-2	Adaptive immunity	Th1 cells	CD25	Activated T and B cells, NK cells	Proliferation of B cells, activated T cells, NK cell function
IL-3	Adaptive immunity	T cells	CD123, CDw131	Stem cells	Hematopoietic precursor proliferation and differentiation
IL-4	Adaptive immunity	Th Cells	CD124	B cell, T cell, macrophages	Proliferation of B and cytotoxic T cells, enhances MHC class II expression, stimulates IgG and IgE production
IL-5	Adaptive immunity	Th2 Cells and mast cells	CDw125, 131	Eosinophils, B-cells	B-cell proliferation and maturation, stimulates IgA and IgM production
IL-6	Pro-inflammatory	Th Cells, macrophages, fibroblasts	CD126, 130	B-cells, plasma cells	B-cell differentiation



IL-7	Adaptive immunity	BM stromal cells, epithelial cells	CD127	Stem cells	B and T cell growth factor
IL-8	Pro-inflammatory	Macrophages	IL-8R	Neutrophils	Chemotaxis for neutrophils and T cells
IL-9	Adaptive immunity	T cells	IL-9R, CD132	T cell	Growth and proliferation
IL-10	Anti-inflammatory	T cells, B cells, macrophages	CDw210	B cells, macrophages	Inhibits cytokine production and mononuclear cell function
IL-11	Pro-inflammatory	BM stromal cells	IL-11Ra, CD130	B cells	Differentiation, induces acute phase proteins
IL-12	Anti-inflammatory	T cells, macrophages, monocytes	CD212	NK cells, macrophages, tumor cells	Activates NK cells, phagocyte cell activation, endotoxic shock, tumor cytotoxicity, cachexia
IL-17	Pro-inflammatory	Th17 cells	IL-17R	Monocytes, neutrophils	Recruits monocytes and neutrophils to the site of infection. Activation of IL-17 in turn activate downstream of many cytokines and chemokine, such as IL-1, IL-6, IL-8, IL-21, TNF- β , and MCP-1
IL-18	Pro-inflammatory	Macrophages, dendritic cells, and epithelial cells	CD218a (IL-18Ra)	Monocytes and T cells	Recruits monocytes and T lymphocytes. Synergist with IL-12 in the induction of IFN- γ production and inhibition of angiogenesis.
IL-22	Anti-inflammatory	Activated T-cells and NK cells	IL-22R	Stromal and epithelial cells	Stimulation of cell survival, proliferation

IL-37 (1L-1F7)	Anti-inflammatory	B-cells, NK cells, and monocytes	CD218a (IL-18Ra) and potentially SIGGR		Believed to act as a negative regulator inside the cell where it interacts with SMAD3 that is activated downstream of TGFβ activity.
IL-38 (IL-1F10)	Anti-inflammatory	B cells and macrophages	IL-1R1		Unknown
IFN-α	Pro-inflammatory	Macrophages, neutrophils, and some somatic cells	CD118 (IFNAR1, IFNAR2)	Various	Anti-viral
IFN-β	Pro-inflammatory	Fibroblasts	CD118 (IFNAR1, IFNAR2)	Various	Anti-viral, anti-proliferative
IFN-γ	Pro-inflammatory	T Cells and NK cells	CDw119 (IFNG R1)	Various	Anti-viral, macrophage activation, increases neutrophil and monocyte function, MHC-I and -II expression on cells
M-CSF	Adaptive immunity	Fibroblasts, endothelium	CD115	Stem cells	Monocyte production and activation
TGF-β	Anti-inflammatory	T cells and B cells	TGF-βR1, 2, 3	Activated T and B cells	Inhibits T and B cell proliferation, inhibits hematopoiesis, promote wound healing
TNF-α	Pro-inflammatory	Macrophages	CD120a, b	Macrophages	Phagocyte cell activation, endotoxic shock
TNF-β	Pro-inflammatory	T Cells	CD120a, b	Phagocytes, tumor cells	Chemotactic, phagocytosis, oncostatic, induces other cytokines

Abbreviations: IL; interleukin, TNF; tumor necrosis factor, IFN; interferon, G-CSF; granulocyte colony stimulating factor, GM-CSF; granulocyte macrophage colony stimulating factor, M-CSF; macrophage colony stimulating factor, TGF; transforming growth factor, CD; cluster of differentiation; CDw; cluster of differentiation designated by only one monoclonal antibody, BM; bone marrow, DC; dendritic cells