

TABLE 372e-7 CYTOKINES AND CYTOKINE RECEPTORS (CONTINUED)

Cytokine	Receptor	Cell Source	Cell Target	Biologic Activity
IL-24	IL-20 R1/IL-20R2	Macrophages,	Nonhematopoietic cells such as fibroblasts	Promotes wound healing
	IL-22R1/IL-20 R2	T _H 2 cells		
IL-25 (also called IL-17E)	IL-17RB	CD4 T cells, mast cells	Fibroblasts, endothelium, epithelium, macrophages	Proinflammatory; induces cytokine production
IL-26	IL-20 R1/IL-10R2	T _H 1, T _H 17 T cells, synovial cells	Epithelial cells	Proinflammatory; induces cytokine production
IFN- α	Type I interferon receptor	All cells	All cells	Promotes antiviral activity; stimulates T cell, macrophage, and NK cell activity; direct antitumor effects; upregulates MHC class I antigen expression; used therapeutically in viral and autoimmune conditions
IFN- β	Type I interferon receptor	All cells	All cells	Antiviral activity; stimulates T cell, macrophage, and NK cell activity; direct antitumor effects; upregulates MHC class I antigen expression; used therapeutically in viral and autoimmune conditions
IFN- γ	Type II interferon receptor	T cells, NK cells	All cells	Regulates macrophage and NK cell activations; stimulates immunoglobulin secretion by B cells; induction of class II histocompatibility antigens; T _H 1 T cell differentiation
TNF- α	TNFR _I , TNFR _{II}	Monocytes-macrophages, mast cells, basophils, eosinophils, NK cells, B cells, T cells, keratinocytes, fibroblasts, thymic epithelial cells	All cells except erythrocytes	Fever, anorexia, shock, capillary leak syndrome, enhanced leukocyte cytotoxicity, enhanced NK cell function, acute phase protein synthesis, proinflammatory cytokine induction
TNF- β	TNFR _I , TNFR _{II}	T cells, B cells	All cells except erythrocytes	Cell cytotoxicity, lymph node and spleen development
LT- β	LT β R	T cells	All cells except erythrocytes	Cell cytotoxicity, normal lymph node development
G-CSF	G-CSFr; gp130	Monocytes-macrophages, fibroblasts, endothelial cells, thymic epithelial cells, stromal cells	Myeloid cells, endothelial cells	Regulates myelopoiesis; enhances survival and function of neutrophils; clinical use in reversing neutropenia after cytotoxic chemotherapy
GM-CSF	GM-CSFr, common β	T cells, monocytes-macrophages, fibroblasts, endothelial cells, thymic epithelial cells	Monocytes-macrophages, neutrophils, eosinophils, fibroblasts, endothelial cells	Regulates myelopoiesis; enhances macrophage bactericidal and tumoricidal activity; mediator of dendritic cell maturation and function; upregulates NK cell function; clinical use in reversing neutropenia after cytotoxic chemotherapy
M-CSF	M-CSFr (<i>c-fms</i> protooncogene)	Fibroblasts, endothelial cells, monocytes-macrophages, T cells, B cells, epithelial cells including thymic epithelium	Monocytes-macrophages	Regulates monocyte-macrophage production and function
LIF	LIFr- α ; gp130	Activated T cells, bone marrow stromal cells, thymic epithelium	Megakaryocytes, monocytes, hepatocytes, possibly lymphocyte subpopulations	Induces hepatic acute-phase protein production; stimulates macrophage differentiation; promotes growth of myeloma cells and hematopoietic progenitors; stimulates thrombopoiesis
OSM	OSMr; LIFr; gp130	Activated monocytes-macrophages and T cells, bone marrow stromal cells, some breast carcinoma cell lines, myeloma cells	Neurons, hepatocytes, monocytes-macrophages, adipocytes, alveolar epithelial cells, embryonic stem cells, melanocytes, endothelial cells, fibroblasts, myeloma cells	Induces hepatic acute-phase protein production; stimulates macrophage differentiation; promotes growth of myeloma cells and hematopoietic progenitors; stimulates thrombopoiesis; stimulates growth of Kaposi's sarcoma cells
SCF	SCFr (<i>c-kit</i> protooncogene)	Bone marrow stromal cells and fibroblasts	Embryonic stem cells, myeloid and lymphoid precursors, mast cells	Stimulates hematopoietic progenitor cell growth, mast cell growth; promotes embryonic stem cell migration
TGF- β (3 isoforms)	Type I, II, III TGF- β receptor	Most cell types	Most cell types	Downregulates T cell, macrophage, and granulocyte responses; stimulates synthesis of matrix proteins; stimulates angiogenesis
Lymphotoxin/SCM-1	XCR1	NK cells, mast cells, double-negative thymocytes, activated CD8+ T cells	T cells, NK cells	Chemoattractant for lymphocytes; only known chemokine of C class
MCP-1	CCR2	Fibroblasts, smooth-muscle cells, activated PBMCs	Monocytes-macrophages, NK cells, memory T cells, basophils	Chemoattractant for monocytes, activated memory T cells, and NK cells; induces granule release from CD8+ T cells and NK cells; potent histamine-releasing factor for basophils; suppresses proliferation of hematopoietic precursors; regulates monocyte protease production
MCP-2	CCR1, CCR2	Fibroblasts, activated PBMCs	Monocytes-macrophages, T cells, eosinophils, basophils, NK cells	Chemoattractant for monocytes, memory and naïve T cells, eosinophils, ?NK cells; activates basophils and eosinophils; regulates monocyte protease production

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