

# CYTOKINES, CHEMOKINES, AND GROWTH FACTORS

For Immunology and Stem Cell Research



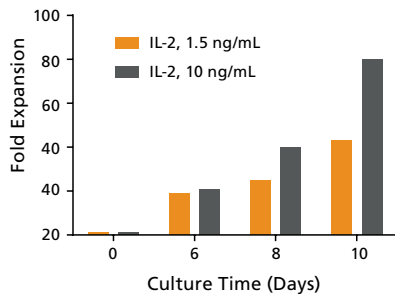
Cytokines, chemokines, and growth factors are small, secreted proteins that affect signaling in a variety of cell types. Scientists around the world depend on these reagents for important applications in the activation, expansion, and differentiation of immune and stem cells. Recombinant cytokines from STEMCELL Technologies are produced under the most stringent criteria and have a guaranteed purity of  $\geq 95\%$ . Endotoxin levels of  $\leq 0.2$  EU/ $\mu\text{g}$  protein ensure consistency and reproducibility across multiple applications. STEMCELL offers a range of human, mouse, and rat cytokines, as well as recombinant animal component-free (ACF) cytokines, in a variety of sizes for immunology and stem cell research. For a complete listing of available cytokines, as well as chemokines and growth factors, visit [www.stemcell.com/cytokines](http://www.stemcell.com/cytokines).

“Who took the last aliquot?!”

**IT'S TIME TO STOCK UP.** Choose a vial that fits your needs, with over two hundred cytokines in both large and small sizes.

## Popular Cytokines for Immunology and Stem Cell Research

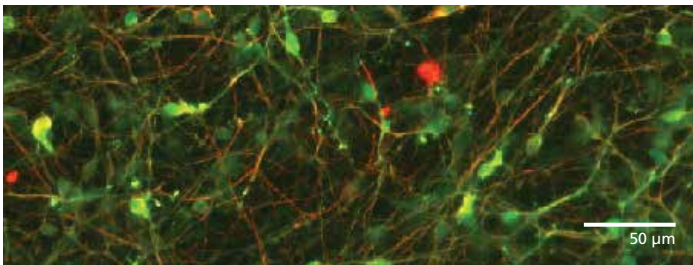
### Immunology Research



**Figure 1. Use IL-2 to Promote Robust T Cell Expansion**

Human Recombinant IL-2 (CHO-expressed) (Catalog #78036) was added to ImmunoCult™-XF T Cell Expansion Medium (Catalog #10981) with ImmunoCult™ Human CD3/CD28/CD2 T Cell Activator (Catalog #10970) for T cell culture.

Product	Species	Catalog #
G-CSF	Human <sup>1</sup>	78012
	Mouse	78014
GM-CSF	Human <sup>1</sup>	78015
	Mouse	78017
	Rat	78018
IFN- $\gamma$	Human <sup>1</sup>	78020
	Mouse	78021
IL-1 $\alpha$	Human <sup>1</sup>	78115
	Mouse	78129
IL-1 $\beta$	Human <sup>1</sup>	78034
	Mouse	78035
IL-2	Human <sup>1</sup>	78036
	Mouse	78081
IL-3	Human <sup>1</sup>	78040
	Mouse	78042
IL-4	Human <sup>1</sup>	78045
	Mouse	78047
IL-6	Human <sup>1</sup>	78050
	Mouse	78052
IL-7	Human <sup>1</sup>	78053
	Mouse	78054
IL-11	Human <sup>1</sup>	78025
	Mouse	78026
IL-12	Human	78027
	Mouse	78028
IL-31	Human <sup>1</sup>	78216
	RANKL	Human <sup>1</sup>
TGF- $\beta$ 1 (Cell Culture Ready)	Human	100-0856
	TNF- $\alpha$	Human <sup>1</sup>
Mouse		78069
Rat		78124



**Figure 2. Use BDNF and GDNF to Generate Mature Neurons**

Human Recombinant BDNF (Catalog #78005) and Human Recombinant GDNF (Catalog #78058) were added to BrainPhys™ Neuronal Medium (Catalog #05790), with NeuroCult™ SM1 Neuronal Supplement (Catalog #05711), N2 Supplement-A (Catalog #07152), and other factors, to differentiate neural progenitor cells (NPCs) into mature neurons. Cells were immunostained with GABA (green) and  $\beta$ -Tubulin III -Tubulin III (red).

## Popular Cytokines for Immunology and Stem Cell Research (Continued)

### Hematopoietic Stem and Progenitor Cell Research

Product	Species	Catalog #
EPO	Human	78007
Flt3/Flk-2 Ligand	Human <sup>1</sup>	78009
	Mouse	70011
G-CSF	Human <sup>1</sup>	78012
	Mouse	78014
GM-CSF	Human <sup>1</sup>	78015
	Mouse	78017
	Rat	78018
IGF-II	Human	78023
	Mouse	78221
IL-3	Human <sup>1</sup>	78040
	Mouse	78042
IL-6	Human <sup>1</sup>	78050
	Mouse	78052
IL-31	Human <sup>1</sup>	78216
	Human <sup>1</sup>	78057
M-CSF	Mouse	78059
	Rat	78117
R-Spondin 1	Human	78213
SCF	Human <sup>1</sup>	78062
	Mouse	78064
TNF- $\alpha$	Human <sup>1</sup>	78068
	Mouse	78069
	Rat	78124
TPO	Human	78210
	Mouse	78072

### Endothelial Cell Research

Product	Species	Catalog #
IFN- $\gamma$	Human <sup>1</sup>	78020
	Mouse	78021
IL-1 $\alpha$	Human <sup>1</sup>	78115
	Mouse	78129
IL-1 $\beta$	Human <sup>1</sup>	78034
	Mouse	78035
IL-4	Human <sup>1</sup>	78045
	Mouse	78047
TNF- $\alpha$	Human <sup>1</sup>	78068
	Mouse	78069
	Rat	78124

### Pluripotent Stem Cell Research

Product	Species	Catalog #
Activin A	Human/Mouse <sup>1</sup>	78001
B18R Protein	Vaccinia Virus	78075
bFGF	Human <sup>1</sup>	78003
BMP-2	Human <sup>1</sup>	78004
BMP-4	Human	78211
FGF-7 (KGF)	Human <sup>1</sup>	78046
FGF-8A	Human	78128
LIF	Human <sup>1</sup>	78055
	Mouse	78056
Noggin	Human	78060
	Mouse	78061
RANKL	Human <sup>1</sup>	78214
R-Spondin 1	Human	78213
SCF	Human <sup>1</sup>	78062
	Mouse	78064
TGF- $\beta$ 1 (Cell Culture Ready)	Human	100-0856
TGF- $\beta$ 1	Human	78067
TPO	Human	78210
	Mouse	78072
VEGF-165	Human <sup>1</sup>	78073

### Mesenchymal Stem Cell Research

Product	Species	Catalog #
bFGF	Human <sup>1</sup>	78003
BMP-2	Human <sup>1</sup>	78004
BMP-4	Human	78211
FGF-4	Human	78103
FGF-8B	Human <sup>1</sup>	78008
IGF-I	Human <sup>1</sup>	78022
	Mouse	78078
PDGF-BB	Human <sup>1</sup>	78097
	Mouse	78178
TGF- $\beta$ 1	Human	78067
TGF- $\beta$ 1 (Cell Culture Ready)	Human	100-0856
TGF- $\beta$ 3	Human/Mouse <sup>1</sup>	78131

### Neuroscience Research

Product	Species	Catalog #
BDNF	Human <sup>1</sup>	78005
bFGF	Human <sup>1</sup>	78003
BMP-2	Human <sup>1</sup>	78004
CNTF	Human <sup>1</sup>	78010
EGF	Human <sup>1</sup>	78006
	Mouse	78016
FGF-8A	Human	78128
GDNF	Human <sup>1</sup>	78058
IGF-II	Human	78023
	Mouse	78221
Noggin	Human	78060
	Mouse	78061
NT-3	Human/Mouse	78074
NT-4	Human	78093
SHH (C24II)	Human	78065
	Mouse	78066
TGF- $\beta$ 1	Human	78067
TGF- $\beta$ 1 (Cell Culture Ready)	Human	100-0856

## Complete Cytokine, Chemokine, and Growth Factor Index

Product	Species	Catalog #
Activin A	Human/Mouse <sup>1</sup>	78001
Amphiregulin	Human	78104
B18R Protein	Vaccinia Virus	78075
BAFF	Human	78002
BDNF	Human <sup>1</sup>	78005
βcellulin	Human	78105
bFGF	Human <sup>1</sup>	78003
BMP-2	Human <sup>1</sup>	78004
BMP-4	Human	78211
BMPR-1A Fc	Human	78212
CD40 Ligand	Human <sup>1</sup>	78162
	Mouse	78205
CNTF	Human <sup>1</sup>	78010
DKK-1	Human	78013
EGF	Human <sup>1</sup>	78006
	Mouse	78016
EGFR	Human	78171
Epigen	Human	78120
EPO	Human	78007
FGF-4	Human	78103
FGF-5	Human <sup>1</sup>	78182
FGF-6	Human <sup>1</sup>	78184
FGF-7 (KGF)	Human <sup>1</sup>	78046
FGF-8A	Human	78128
FGF-8B	Human <sup>1</sup>	78008
FGF-9	Human	78161
FGF-10 (KGF-2)	Human <sup>1</sup>	78037
FGF-16	Human	78175
FGF-17	Human	78179
FGF-18	Human	78041
FGF-21	Mouse	78108
Flt3/Flk-2 Ligand	Human <sup>1</sup>	78009
	Mouse	78011
Follistatin	Human	78109
Fractalkine (CX3CL1)	Human	78051
G-CSF	Human <sup>1</sup>	78012
	Mouse	78014
GDF-5	Human	78111
GDF-11	Human/Mouse <sup>1</sup>	78110
GDNF	Human <sup>1</sup>	78058
	Human <sup>1</sup>	78015
GM-CSF	Mouse	78017
	Rat	78018
GRO-β (CXCL2)	Human	78112
HBEGF	Human <sup>1</sup>	78163
Heregulin-β 1	Human	78071
HGF	Human	78019
IFN-α 2A	Human	78076
IFN-α 2B	Human	78077
IFN-β	Human	78113
IFN-γ	Human <sup>1</sup>	78020
	Mouse	78021
IGF-I	Human <sup>1</sup>	78022
	Mouse	78078
IGF-II	Human	78023
	Mouse	78221
IGFBP-4	Human	78164
IHH	Human	78197
IL-1α	Human <sup>1</sup>	78115
	Mouse	78129

Product	Species	Catalog #
IL-1β	Human <sup>1</sup>	78034
	Mouse	78035
IL-2	Human <sup>1</sup>	78036
	Mouse	78081
IL-2 (E.Coli-expressed)	Human	78220
IL-3	Human <sup>1</sup>	78040
	Mouse	78042
IL-3 (CHO-expressed)	Human	78194
IL-4	Human <sup>1</sup>	78045
	Mouse	78047
IL-5	Human <sup>1</sup>	78048
	Mouse	78049
IL-6	Human <sup>1</sup>	78050
	Mouse	78052
IL-6Ra	Human	78083
IL-7	Human <sup>1</sup>	78053
	Mouse	78054
IL-8 (CXCL8)	Human	78084
IL-9	Human	78085
IL-10	Human <sup>1</sup>	78024
	Mouse	78079
IL-11	Human <sup>1</sup>	78025
	Mouse	78026
IL-12	Human	78027
	Mouse	78028
IL-13	Human	78029
	Mouse	78030
IL-15	Human <sup>1</sup>	78031
IL-17A	Human	78032
	Mouse	78033
IL19	Mouse	78207
IL-21	Human <sup>1</sup>	78082
	Mouse	78116
IL-22	Human	78038
	Mouse	78039
IL-31	Human <sup>1</sup>	78216
IL-33	Human	78043
	Mouse	78044
IP-10 (CXCL10)	Human	78165.1
LIF	Human <sup>1</sup>	78055
	Mouse	78056
MCP-1 (CCL2)	Human	78087
MCP-2 (CCL8)	Human	78166
	Human <sup>1</sup>	78057
M-CSF	Mouse	78059
	Rat	78117
MIG (CXCL9)	Mouse	78177
MIP-1α (CCL3)	Mouse	78089
MIP-1β (CCL4)	Human	78090
	Mouse	78091
Myostatin	Human	78119
NGF-β	Human <sup>1</sup>	78092
Noggin	Human	78060
	Mouse	78061
NT-3	Human/Mouse	78074
NT-4	Human	78093
Oncostatin M	Human <sup>1</sup>	78094
PDGF-AA	Human <sup>1</sup>	78095
PDGF-AB	Human <sup>1</sup>	78096

Product	Species	Catalog #
PDGF-BB	Human <sup>1</sup>	78097
	Mouse	78178
PDGF-CC	Human	78168
PDGF-DD	Human	78222
Persephin	Human <sup>1</sup>	78200
Prolactin	Human	78098
RANKL	Human <sup>1</sup>	78214
RANTES (CCL5)	Human	78099
	Mouse/Rat	78100
R-Spondin 1	Human	78213
SCF	Human <sup>1</sup>	78062
	Mouse	78064
SDF-1 $\alpha$ (CXCL12)	Mouse	78121
SHH (C24II)	Human	78065
	Mouse	78066
TECK (CCL25)	Mouse	78180
TGF- $\alpha$	Human	78123
TGF- $\beta$ 1	Human	78067
TGF- $\beta$ 1 (Cell Culture Ready)	Human	100-0856
TGF-B2	Human	78174
TGF- $\beta$ 3	Human/Mouse <sup>1</sup>	78131
	Human <sup>1</sup>	78068
TNF- $\alpha$	Mouse	78069
	Rat	78124
	Human	78125
TNF- $\beta$	Human	78126
TNF-receptor 1	Human	78210
	Human	78210
TPO	Human	78210
	Mouse	78072
TRAIL	Mouse	78122
VEGF-121	Human <sup>1</sup>	78127
VEGF-164	Mouse	78102
VEGF-165	Human <sup>1</sup>	78073
VEGF-C	Human	78202
VEGF-D	Human	78203

## Animal Component-Free Cytokines<sup>2</sup>

Product	Catalog #
Activin A, ACF	78132
BDNF, ACF	78133
bFGF, ACF	78134
BMP-2, ACF	78135
CD40 Ligand, ACF	78167
CNTF, ACF	78170
EGF, ACF	78136
FGF-5, ACF	78183
FGF-6, ACF	78185
FGF-7, ACF	78186
FGF-8B, ACF	78204
FGF-10 (KGF-2), ACF	78173
FGF-acidic, ACF	78188
Flt3/Flk-2, ACF	78137
G-CSF, ACF	78138
GDF-11, ACF	78189
GDNF, ACF	78139
GM-CSF, ACF	78140
HBEGF, ACF	78191
IFN- $\gamma$ , ACF	78141
IGF-I, ACF	78142
IL-1 $\alpha$ , ACF	78219

Product	Catalog #
IL-1Ra, ACF	100-0939
IL-1 $\beta$ , ACF	78143
IL-2, ACF	78145
IL-3, ACF	78146
IL-4, ACF	78147
IL-5, ACF	78195
IL-6, ACF	78148
IL-7, ACF	78196
IL-10, ACF	78144
IL-11, ACF	78192
IL-15, ACF	78218
IL-21, ACF	78193
IL-31, ACF	78217
LIF, ACF	78149
M-CSF, ACF	78150
NGF- $\beta$ , ACF	78151
Oncostatin M, ACF	78199
PDGF-AA, ACF	78152
PDGF-AB, ACF	78153
PDGF-BB, ACF	78154
Persephin, ACF	78201
RANKL, ACF	78215
SCF, ACF	78155
TGF- $\beta$ 3, ACF	78156
TNF- $\alpha$ , ACF	78157
VEGF-121, ACF	78158
VEGF-165, ACF	78159

1. Animal Component-Free version available
2. All ACF cytokines are human recombinant proteins produced in E. coli, and are guaranteed free of animal or human components

## Why Use STEMCELL's Cytokines?

**CONSISTENCY.** Endotoxin levels of  $\leq 0.2$  EU/ $\mu$ g ensure consistency and reproducibility across multiple applications.

**VARIETY.** Choose from a wide range of human, mouse, and rat cytokines in a variety of sizes, from 10  $\mu$ g to 1 mg.

**ANIMAL COMPONENT-FREE.** ACF recombinant proteins are produced in E. coli and have no trace of animal or human components, guaranteed.

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