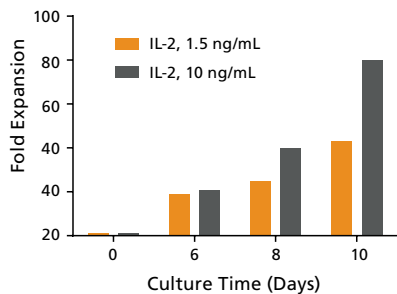


# CYTOKINES, CHEMOKINES, AND GROWTH FACTORS

For Immunology and Stem Cell Research

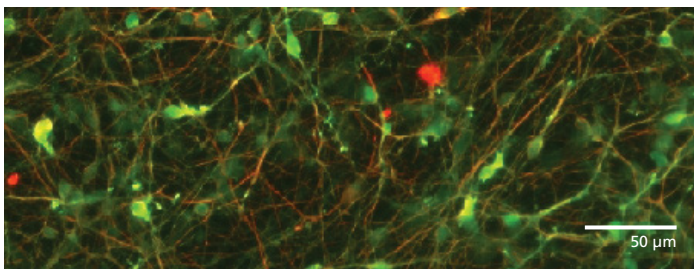


Cytokines, chemokines, and growth factors are small, secreted proteins that affect signaling in a variety of cell types. Scientists around the world depend on these reagents for important applications in the activation, expansion, and differentiation of immune and stem cells. Recombinant cytokines from 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).



**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.



**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).

**“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

Product	Species	Catalog #
G-CSF <sup>1</sup>	Human	78012
	Mouse	78014
GM-CSF <sup>1</sup>	Human	78015
	Mouse	78017
	Rat	78018
IFN- $\gamma$ <sup>1</sup>	Human	78020
	Mouse	78021
	Rat	78114
IL-1 $\alpha$ <sup>1</sup>	Human	78115
	Mouse	78129
IL-1 $\beta$ <sup>1</sup>	Human	78034
	Mouse	78035
IL-2 <sup>1</sup>	Human	78036
	Mouse	78081
IL-3 <sup>1</sup>	Human	78040
	Mouse	78042
IL-4 <sup>1</sup>	Human	78045
	Mouse	78047
IL-6 <sup>1</sup>	Human	78050
	Mouse	78052
IL-7 <sup>1</sup>	Human	78053
	Mouse	78054
IL-11 <sup>1</sup>	Human	78025
	Mouse	78026
IL-12	Human	78027
	Mouse	78028
IL-31 <sup>1</sup>	Human	78216
RANKL <sup>1</sup>	Human	78214
TNF- $\alpha$ <sup>1</sup>	Human	78068
	Mouse	78069
	Rat	78124

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

### Hematopoietic Stem and Progenitor Cell Research

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

### Endothelial Cell Research

Product	Species	Catalog #
IFN- $\gamma$ <sup>1</sup>	Human	78020
	Mouse	78021
	Rat	78114
IL-1 $\alpha$ <sup>1</sup>	Human	78115
	Mouse	78129
IL-1 $\beta$ <sup>1</sup>	Human	78034
	Mouse	78035
IL-4 <sup>1</sup>	Human	78045
	Mouse	78047
TNF- $\alpha$ <sup>1</sup>	Human	78068
	Mouse	78069
	Rat	78124
VEGFR2/KDR	Human	78130

### Pluripotent Stem Cell Research

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

### Mesenchymal Stem Cell Research

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

### Neuroscience Research

Product	Species	Catalog #
BDNF <sup>1</sup>	Human	78005
bFGF <sup>1</sup>	Human	78003
BMP-2 <sup>1</sup>	Human	78004
CNTF <sup>1</sup>	Human	78010
EGF <sup>1</sup>	Human	78006
	Mouse	78016
	Rat	78107
FGF-8A	Human	78128
GDNF <sup>1</sup>	Human	78058
IGF-II	Mouse	78221
Noggin	Human	78060
	Mouse	78061
NT-3	Human	78074
NT-4	Human	78093
SHH (C24II)	Human	78065
	Mouse	78066
TGF- $\beta$ 1	Human	78067

## Complete Cytokine, Chemokine, and Growth Factor Index

Product	Species	Catalog #
Activin A <sup>1</sup>	Human	78001
Amphiregulin	Human	78104
B18R Protein	Vaccinia Virus	78075
BAFF	Human	78002
BDNF <sup>1</sup>	Human	78005
βcellulin	Human	78105
	Mouse	78106
bFGF <sup>1</sup>	Human	78003
BMP-2 <sup>1</sup>	Human	78004
BMP-4	Human	78211
BMPR-1A Fc	Human	78212
Cardiotrophin-1	Human	78160
CD40 <sup>1</sup> Ligand	Human	78162
	Mouse	78205
CNTF <sup>1</sup>	Human	78010
DKK-1	Human	78013
EGF <sup>1</sup>	Human	78006
	Mouse	78016
	Rat	78107
EGFR	-	78171
Epigen	Human	78120
EPO	Human	78007
FGF-4	Human	78103
FGF-5 <sup>1</sup>	-	78182
FGF-6 <sup>1</sup>	-	78184
FGF-7 (KGF) <sup>1</sup>	Human	78046
FGF-8A	Human	78128
FGF-8B <sup>1</sup>	Human	78008
FGF-9	Human	78161
	Mouse	78176
FGF-10 (KGF-2) <sup>1</sup>	Human	78037
FGF-16	-	78175
FGF-17	-	78179
FGF-18	Human	78041
FGF-21	Mouse	78108
Flt3/Flk-2 <sup>1</sup> Ligand	Human	78009
	Mouse	78011
Follistatin	Human	78109
Fractalkine (CX3CL1)	Human	78051
GM-CSF (E. coli-expressed)	Human	78012
	Mouse	78014
GDF-5	Human	78111
GDF-11 <sup>1</sup>	-	78110
GDNF <sup>1</sup>	Human	78058
GM-CSF <sup>1</sup>	Human	78015
	Mouse	78017
	Rat	78018
GRO-α (CXCL1)	Human	78063
GRO-β (CXCL2)	Human	78112
HBEGF <sup>1</sup>	-	78163
Heregulin-β 1	Human	78071
HGF	Human	78019

Product	Species	Catalog #
ICAM-1/CD54	Mouse	02203
IFN-α 2A	Human	78076
IFN-α 2B	Human	78077
IFN-β	Human	78113
IFN-γ <sup>1</sup>	Human	78020
	Mouse	78021
	Rat	78114
IGF-I <sup>1</sup>	Human	78022
	Mouse	78078
IGF-II	Human	78023
	Mouse	78221
IGFBP-4	-	78164
IHH	-	78197
IL-1α <sup>1</sup>	Human	78115
	Mouse	78129
IL-1β <sup>1</sup>	Human	78034
	Mouse	78035
IL-2 <sup>1</sup>	Human	78036
	Mouse	78081
IL-2 (E.Coli-expressed)	Human	78220
IL-3 <sup>1</sup>	Human	78040
	Mouse	78042
IL-3 (CHO-expressed)	Human	78194
IL-3β	Rat	78181
IL-4 <sup>1</sup>	Human	78045
	Mouse	78047
IL-5 <sup>1</sup>	Human	78048
	Mouse	78049
IL-6 <sup>1</sup>	Human	78050
	Mouse	78052
IL-6Ra	Human	78083
IL-7 <sup>1</sup>	Human	78053
	Mouse	78054
IL-8 (CXCL8)	Human	78084
IL-9	Human	78085
IL-10 <sup>1</sup>	Human	78024
	Mouse	78079
IL-11 <sup>1</sup>	Human	78025
	Mouse	78026
IL-12	Human	78027
	Mouse	78028
IL-13	Human	78029
	Mouse	78030
IL-15 <sup>1</sup>	Human	78031
	Mouse	78080
IL-17A	Human	78032
	Mouse	78033
IL-18 BPa	Human	78029
IL19	Mouse	78207
IL-21 <sup>1</sup>	Human	78082
	Mouse	78116

## Complete Cytokine, Chemokine and Growth Factor Index (Continued)

Product	Species	Catalog #
IL-22	Human	78038
	Mouse	78039
IL-31 <sup>1</sup>	Human	78216
IL-33	Human	78043
	Mouse	78044
IP-10 (CXCL10)	-	78165
LIF <sup>1</sup>	Human	78055
	Mouse	78056
MCP-1 (CCL2)	Human	78087
MCP-2 (CCL8)	-	78166
M-CSF <sup>1</sup>	Human	78057
	Mouse	78059
	Rat	78117
MIG (CXCL9)	Mouse	78177
MIP-1 $\alpha$ (CCL3)	Human	78088
	Mouse	78089
MIP-1 $\beta$ (CCL4)	Human	78090
	Mouse	78091
MIP-3 $\alpha$ (CCL20)	Human	78118
Myostatin	Human	78119
NGF- $\beta$ <sup>1</sup>	Human	78092
Noggin	Human	78060
	Mouse	78061
NOV	-	78198
NT-3	Human	78074
NT-4	Human	78093
Oncostatin M <sup>1</sup>	Human	78094
PDGF-AA <sup>1</sup>	Human	78095
PDGF-AB <sup>1</sup>	Human	78096
PDGF-BB <sup>1</sup>	Human	78097
	Mouse	78178
PGDF-CC	-	78168
PDGF-DD	Human	78222
Persephin <sup>1</sup>	-	78200
PF-4 (CXCL4)	-	78169
Prolactin	Human	78098
RANKL <sup>1</sup>	Human	78214
RANTES (CCL5)	Human	78099
	Mouse	78100
R-Spondin 1	Human	78213
SCF <sup>1</sup>	Human	78062
	Mouse	78064
SDF-1 $\alpha$ (CXCL12)	Mouse	78121
SDF-1 $\beta$ (CXCL12)	Mouse	78101
Shh (C24II)	Human	78065
	Mouse	78066

Product	Species	Catalog #
TECK (CCL25)	Mouse	78180
TGF- $\alpha$	Human	78123
TGF- $\beta$	Human	78067
TGF-B 2	-	78174
TGF- $\beta$ 3 <sup>1</sup>	Human	78131
TNF- $\alpha$ <sup>1</sup>	Human	78068
	Mouse	78069
	Rat	78124
TNF- $\beta$	Human	78125
TNF-receptor 1	Human	78126
TPO	Human	78210
	Mouse	78072
TRAIL	Mouse	78122
VEGF-121 <sup>1</sup>	Human	78127
VEGF-164	Mouse	78102
VEGF-165 <sup>1</sup>	Human	78073
VEGFR2/KDR FC	Human	78130
VEGF-C	-	78202
VEGF-D	-	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-acific, 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
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

Product	Catalog #
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 COMPOTENT-FREE.** ACF recombinant proteins are produced in *E. coli* and have no trace of animal or human components, guaranteed.

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