

Newsletter article for Cytokines

C. Breed

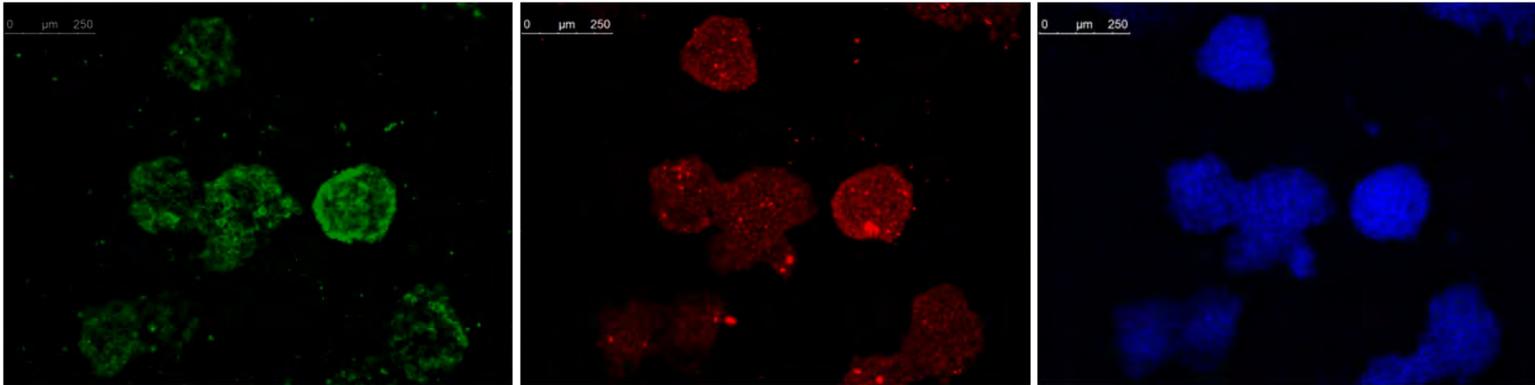
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High-Purity, Stem Cell Relevant Cytokine Collection

Growth factors, including cytokines, are cell signaling molecules that participate in regulating embryonic development, tissue repair, and cellular communication. The timing, localization, and expression level of various cytokines not only dictate cell type specification and maturation, but also establish the essential extracellular environment (the niche) for the maintenance of stem cells *in vivo*, as well as *in vitro*. Over the past few years, stem cell researchers have identified several growth factors crucial for stem cell survival, self-renewal, differentiation, and reprogramming. Current stem cell culture media rely heavily on specific growth factor combinations that modulate signaling pathways to sustain stem cell self-renewal states and/or to induce lineage specific differentiations. Continuing investigation into stem cell biology will undoubtedly uncover new growth factors for cell culture manipulation and possible clinical applications.

At Stemgent™, our stem cell scientists understand that your research requires only the best reagents possible. That's why Stemgent™ offers a growing collection of high purity cytokines able to support your stem cell culture applications. Our recombinant proteins are activity-tested to ensure you achieve the most functionally active biological results possible (Figure 1). In addition to bioactivity, every lot produced is stringently tested for high purity, low endotoxin levels, and structural homogeneity, eliminating the worry that co-purified contaminants will negatively impact your cell culture behavior. Whether for small or large scale projects, Stemgent™ offers high-quality cytokines to meet your stem cell culture needs. We're always adding to our cytokine collection so check back frequently for the most complete offering of high performing cytokines for stem cell culture and research. Use Table 1 to select the stem cell relevant cytokines that are best suited for your culturing needs.

Figure 1 – BMP-4 supports mouse ES cell self-renewal. Mouse R1 ES cells were cultured under feeder-free conditions without serum on Matrigel™-coated plates and supplemented with 1,000 units/ml LIF and 10 ng/ml Stemfactor™ BMP-4, Human Recombinant cytokine from Stemgent™. Expression of the pluripotency markers Oct4 and SSEA-1 was examined using a 1:100 dilution of Stemgent™ Purified Rabbit anti-Mouse/Human Oct4 Antibody (Cat. No. 09-0023) and Stemgent™ Purified Mouse anti-Mouse/Human SSEA-1 Antibody (Cat. No. 09-0005) followed by either Cy2 or Cy3 conjugated anti-rabbit IgG antibody. DAPI staining was performed to visualize nuclei.

SSEA-1**Oct4****DAPI****Table 1 –Stemgent’s Stemfactor™ Stem Cell Relevant Cytokine Collection**

Cat. No.	Cytokine	Use in stem cell culture	Signaling pathway	Purity level	Stemgent’s assay to measure biological activity	Qty.	Price
03-0001	Stemfactor™ Activin A, Human Recombinant	Together with bFGF, maintains self-renewal and pluripotency of human ES cells at low concentrations ¹ and promotes hES cell differentiation to endodermal cell types at high concentrations ² .	TGF-β	>98% by SDS-PAGE	Inhibition of proliferation of mouse MPC-11 cells	5 µg	\$179
03-0002	Stemfactor™ Fibroblast Growth Factor-basic, Human Recombinant	Critical growth factor supporting self renewal of human ES cells ³ . Together with EGF, maintains neural stem cell self-renewal in culture.	FGF	>98% by SDS-PAGE	Dose-dependent proliferation of NIH 3T3 cells	50 µg	\$99
03-0003	Stemfactor™ Epidermal Growth Factor, Human Recombinant	Promotes proliferation and differentiation of mouse embryonic primordial cells into neurons and astrocytes ^{4,5} . Maintains neural stem cell self-renewal.	EGF	>98% by SDS-PAGE	Dose-dependent proliferation of BALB/c NIH 3T3 cells	100 µg	\$79

03-0004	Stemfactor™ TGF-β1, Human Recombinant	Together with bFGF, supports human ES cell self-renewal ⁶ .	TGF-β	>98% by SDS-PAGE	Inhibition of Mouse IL-4-dependent proliferation of mouse HT-2 cells	5 µg	\$189
03-0006	Stemfactor™ Noggin, Human Recombinant	Together with basic FGF in feeder-free medium, inhibits BMP activity allowing human ES cells to maintain their undifferentiated, pluripotent state ^{7,8,9} .	TGF-β	>98% by SDS-PAGE	Inhibition of BMP-4 induced alkaline phosphatase production in ATDC-5 chondrogenic cells	10 µg	\$119
03-0007	Stemfactor™ BMP-4, Human Recombinant	Critical embryonic signaling molecule required for early differentiation of the ectodermal tissue and neural plate formation. Supports LIF in mouse ES cell self-renewal in the absence of serum. Induces trophoblast differentiation in human ES cells ^{10,11,12} .	TGF-β	>95% by SDS-PAGE	Induction of alkaline phosphatase production by mouse chondrogenic ATDC-5 cells	10 µg	\$199
03-0008	Stemfactor™ Sonic Hedgehog (C2411), Human Recombinant	Instrumental in early embryonic patterning of the ventral neural tube, limb axis, and ventral somites. Controls cell division of adult stem cells and implicated in development of some cancers ^{13,14} .	Shh	>98% by SDS-PAGE	Induction of alkaline phosphatase production by C3H/10T1/2 fibroblasts	25 µg	\$249

Get the highest purity cytokines for your stem cell research. Stemgent's Stemfactor™ cytokines allow you to achieve biologically relevant and reproducible results in all your stem cell experiments with less protein and with no interference from other proteins or contaminants. Along with Stemgent's small molecules and reagents, our cytokines allow optimal growth, expansion, and storage of embryonic stem cells. Visit Stemgent™, the experts in stem cell reagents, at www.stemgent.com for your stem cell related, one-stop shopping experience today.

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