



Product Specification Sheet

Product Name	Stemfactor™ BMP-4, Human Recombinant
Description	Bone Morphogenetic Protein 4 (BMP-4) is a polypeptide belonging to the TGF- β protein super-family. BMP-4 is involved in bone and cartilage development; more specifically, in tooth and limb development fracture repair ¹ . In human embryonic development, BMP-4 is a critical signaling molecule required for the early differentiation of the embryo and establishment of a dorsal-ventral axis ^{2,3} . BMP-4 plays an important role in differentiation of overlying ectodermal tissue. Inhibition of the BMP-4 signal causes the ectoderm to differentiate into the neural plate. In cultured stem cells, BMP-4 plays a distinct role in mouse and human embryonic stem (ES) cells. BMP-4 supports LIF as a positive factor for mouse ES cell self-renewal ⁴ . In contrast, BMP-4 induces extra-embryonic trophoblast differentiation in human ES cells ⁵ . Stemfactor BMP-4 is a recombinant protein expressed and purified from human 293 cells as a glycosylated homodimer with a molecular mass of 34 kDa.
Catalog Number	03-0007
Quantity	10 μ g
Source	Stemfactor BMP-4 was expressed in and purified from human 293 cells.
Formulation	Lyophilized from sterile filtered 50 mM NaOAc, pH 4.5 and 1 M NaCl.
Amino Acid Sequence	SPKHHSQRAR KKNKNCRRHS LYVDFSDVGW NDWIVAPPGY QAFYCHGDPC FPLADHLNST NHAIVQTLVN SVNSSIPKAC CVPELSAIS MLYLDEYDKV VLKNYQEMVV EGCGR
Uniprot Accession No.	P12644, residues 293-408.
Purity	Greater than 95% by SDS-PAGE analysis.
Endotoxin Level	Less than 1.0 EU/ μ g of BMP-4 as determined by the LAL method.
Biologic Activity	The ED ₅₀ is less than 30 ng/ml as determined by its ability to induce alkaline phosphatase production by mouse chondrogenic ATDC-5 cells.
Sterility	Tested to be negative for <i>Mycoplasma</i> sp. by PCR and microbial contamination by a sterility test.
Storage and Stability	Stemfactor BMP-4 is shipped at room temperature. Lyophilized BMP-4 is stable for up to 6 months from date of receipt when stored at -20°C to -80°C. Reconstituted BMP-4, at concentrations greater than or equal to 0.1 mg/ml, is stable for up to 3 months when stored at -20°C and up to 6 months when stored at -80°C.
Reconstitution	Centrifuge briefly and then reconstitute BMP-4 in 4 mM HCl to yield a stock solution of no less than 0.1 mg/ml. Avoid freeze-thaw cycles as it can result in loss of activity.

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References

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4. Ying, Q.L., Nichols, J., Chambers, I., and Smith, A. (2003) BMP induction of Id proteins suppresses differentiation and sustains embryonic stem cell self-renewal in collaboration with STAT3. *Cell* 115: 281-292.
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