

## Cytokines

### Human Recombinant BMP-2, ACF

Bone morphogenetic protein 2,  
animal component-free



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TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

[INFO@STEMCELL.COM](mailto:INFO@STEMCELL.COM) • [TECHSUPPORT@STEMCELL.COM](mailto:TECHSUPPORT@STEMCELL.COM)

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Catalog #	78135	10 µg
	78135.1	100 µg
	78135.2	1000 µg

## Product Description

Bone morphogenetic protein 2 (BMP-2) is a member of the transforming growth factor beta (TGF-β) superfamily. BMP-2 is a disulfide-linked homodimer, acts as a ligand for complexes of type I and II BMP receptors, and primarily activates SMAD1/5/8 signaling (Nohe et al.). BMP-2 is a potent differentiation factor and directs human pluripotent stem cells (hPSCs) towards various cell types including extra-embryonic endoderm, mesenchymal cells, and chondrocytes (Pera et al.). Although BMP-2 expression is low in healthy cartilage, its expression is upregulated at the site of cartilage damage (Blaney Davidson et al.). BMP-2 induces bone and cartilage formation in vitro and is able to induce chondrogenesis in human mesenchymal stem cells (Schmitt et al.). This product is animal component-free.

## Product Information

Alternative Names:	BDA2, BMP-2A, BMP2, Bone morphogenetic protein 2A
Accession Number:	P12643
Amino Acid Sequence:	MQAKHKQRKR LKSSCKRHPL YVDFSDVGWN DWIVAPPGYH AFYCHGECPF PLADHLNSTN HAIVQTLVNS VNSKIPKACC VPTELSAISM LYLDENEKVV LKNYQDMVVE GCGCR
Predicted Molecular Mass:	13 kDa monomer; 26.1 kDa dimer
Species:	Human
Cross Reactivity:	Mouse, Rat, Monkey
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid
Source:	E. coli

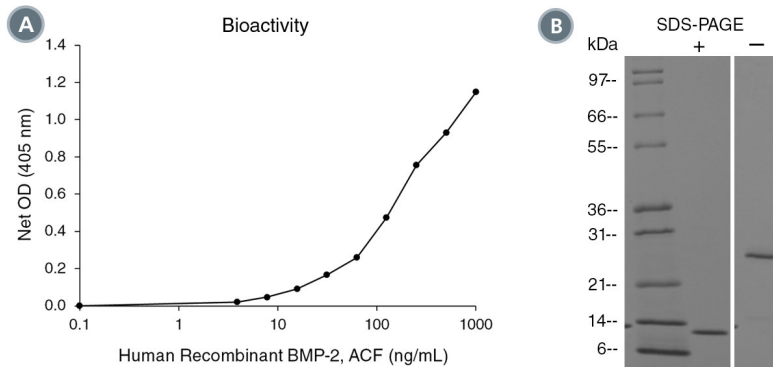
## Specifications

Activity:	The specific activity is $\geq 4.0 \times 10^3$ units/mg ( $EC_{50} \leq 250$ ng/mL) as determined by alkaline phosphatase activity induced in ATDC-5 cells.
Purity:	$\geq 95\%$
Endotoxin Level:	Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is $\leq 1$ EU/µg protein.

## Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Resuspend the product in sterile water containing 0.1% bovine serum albumin (BSA) to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. Store at 2 - 8°C for up to 1 month or at -20°C to -80°C for up to 3 months. Avoid repeated freeze-thaw cycles. NOTE: If reconstituted product will be used immediately, BSA is not required.

## Data



(A) The biological activity of Human Recombinant BMP-2, ACF was tested by its ability to induce alkaline phosphatase activity in ATDC-5 cells. Cell proliferation was measured after 67 hours of culture using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which alkaline phosphatase production is at 50% of maximum. The EC50 in the example above is 161 ng/mL.

(B) 1 µg of Human Recombinant BMP-2, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining.

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## References

- Blaney Davidson EN et al. (2007) Elevated extracellular matrix production and degradation upon bone morphogenetic protein-2 (BMP-2) stimulation point toward a role for BMP-2 in cartilage repair and remodeling. *Arthritis Res Ther* 9(5): R102.
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- Pera MF et al. (2004) Regulation of human embryonic stem cell differentiation by BMP-2 and its antagonist noggin. *J Cell Sci* 117(Pt 7): 1269–80.
- Schmitt B et al. (2003) BMP2 initiates chondrogenic lineage development of adult human mesenchymal stem cells in high-density culture. *Differentiation* 71(9-10): 567–77.

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