

## Cell-Vive™ GMP Recombinant Human FGF-4 (carrier-free)

<b>Catalog# / Size</b>	592224 / 50 µg 592226 / 500 µg
<b>Other Names</b>	Fibroblast Growth Factor 4 (FGF-4), Heparin-Binding Growth Factor 4 (HBGF-4), HST-1, K-FGF, KS3, Kaposi Sarcoma Oncogene, Heparin Secretory Transforming Protein 1 (HSTF-1)
<b>Description</b>	<p>FGF-4 was first identified as HST-1 gene by a NIH3T3 transforming assay. It belongs to the FGF family that includes 22 members FGF1-FGF23. FGF-15 has not been identified in humans. FGF-4 exhibits strong effects on many different cell types and tissues, and plays important roles in both embryogenesis and adult tissue stem cell development in a variety of organisms. FGF-4 can stimulate limb mesenchyme proliferation and can provide all the signals required for normal outgrowth and patterning of the limb. FGF-4 mRNA has been detected in the apical ectodermal ridge of the limb bud in Days 11 and 12 embryos. FGF-4 is also involved in early heart development by supporting the proliferation and differentiation of precardiac myoblasts. In adults, FGF-4 is expressed in the testis and its overexpression results in enhanced spermatogenesis. FGF-4 is also a potent inducer of platelet production from megakaryocytes. FGF-4 expression has been detected in the brain at both neonatal and adult stages. FGF-4 can induce neural stem cell proliferation and neuronal differentiation. The diverse functions of FGF-4 are mediated by FGF receptors (FGFR) that contain an extracellular ligand-binding domain with three immunoglobulin-like domains. Like other FGFs, FGF-4 also binds to anionic glycosaminoglycans heparin and heparin sulfate with high affinity. Heparin sulfate availability has been shown to regulate the binding between FGF-4 and its receptors. The role of FGF-4 in cancer has also been extensively investigated. FGF-4 is an angiogenic protein, and amplification of FGF-4 gene has been found in many human tumors. It has been shown that FGF-4 is a potential target for the treatment of human testicular tumors.</p>
<b>Quality Statement</b>	<p>BioLegend Cell-Vive™ GMP Recombinant proteins are manufactured and tested in accordance with USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and Ph. Eur. Chapter 5.2.12 in a dedicated GMP facility compliant with ISO 13485:2016. Specifications and processes include:</p> <ul style="list-style-type: none"><li>• Low endotoxin level (≤ 0.1 EU/µg)</li><li>• Purity (≥ 95% or higher)</li><li>• Bioburden testing</li><li>• Mycoplasma testing</li><li>• Batch-to-batch consistency</li><li>• Vendor qualification</li><li>• Raw material traceability and documentation</li><li>• Documented procedures and employee training</li><li>• Equipment maintenance and monitoring records</li><li>• Lot-specific certificates of analysis</li><li>• Quality audits per ISO 13485:2016</li><li>• QA review of released products</li></ul>

### Product Details

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<b>Source</b>	Human FGF-4, amino acids Ser54-Leu206 (Accession# P08620) was expressed in <i>E. coli</i> .
<b>Molecular Mass</b>	The 153 amino acid recombinant protein has a predicted molecular mass of approximately 19.7 kD. The non-reduced and DTT-reduced protein migrates at approximately 19.7 kD by SDS-PAGE. The predicted N-terminal amino acid is Serine.
<b>N-terminal Sequence Analysis</b>	Ser-Leu-Ala-Arg-Leu-Pro-Val-Ala-Ala-Gln
<b>Purity</b>	≥ 95%, as determined by Coomassie stained SDS-PAGE
<b>Formulation</b>	Protein was lyophilized from 0.1 µm filtered solution containing PBS.
<b>Endotoxin Level</b>	Less than or equal to 0.1 EU per µg of protein as determined by LAL method.
<b>Residual Host Cell</b>	≤ 0.500 ng/µg by ELISA

## Protein Content

**Concentration** 50 µg and 500 µg sizes are lyophilized

**Storage & Handling** Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C or colder until the expiration date. Reconstitute lyophilized protein in sterile PBS. Before reconstitution, make sure sterile PBS and product are at room temperature. Quickly spin the vial or gently tap down on the vial to make sure the lyophilized product is at the bottom of the vial before opening. Use aseptic techniques to add the required volume of reconstitution buffer (sterile PBS) to the vial, to obtain the recommended stock concentration 250 µg/mL. Close the vial and leave at ambient temperature for 15-20 minutes. Then gently invert the vial several times or until all of the lyophilized product dissolves. Leave the vial at room temperature for another 15 minutes. If small particulates are still observed after 15 minutes, incubate at room temperature for an additional 30 minutes and leave the vial at 2°C - 8°C overnight. Next day, invert the vial several times or gently pipette the solution up and down before use. If needed, transfer the reconstituted stock solution to a sterile container for additional dilution to no less than 100 µg/mL. Small working aliquots in polypropylene tubes can be made after reconstitution and store the vials at -20°C or lower. Avoid freeze/thaw cycles. Carrier protein such as 0.2 - 1% endotoxin-free BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to two weeks or stored at -20°C or colder for up to 3 months.

**Activity** The ED<sub>50</sub> is 0.2-1 ng/mL as determined by a dose-dependent stimulation of NIH3T3 cell proliferation.

**Application** [Bioassay](#)

**Application Notes** Our lyophilized proteins are validated in-house to maintain activity after shipping at ambient temperature and are backed by our [100% satisfaction guarantee](#). If you have any concerns, contact us at [tech@biolegend.com](mailto:tech@biolegend.com).

**Application References** 1. Qi S, *et al.* 2019. *Small*. 15:e1804332. [PubMed](#)

(PubMed link indicates BioLegend citation)

**Disclaimer** BioLegend Cell-Vive™ GMP Recombinant proteins are for research use only. Suitable for *ex vivo* cell processing. Not for injection or diagnostic or therapeutic use. Not for resale. BioLegend will not be held responsible for patent infringement or other violations that may occur with the use of our products.

## Antigen Details

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**Structure** Growth factor

**Distribution** Expression of FGF-4 is highly restricted to undifferentiated stem cells.

**Function** FGF-4 is a mitogenic, angiogenic, and survival factor. It is involved in cell proliferation and differentiation in embryonic development processes. N-glycosylation may negatively regulate FGF-4 activity.

**Interaction** Precardiac myoblasts, megacariocytes, neural stem cells.

**Ligand/Receptor** FGFR-1, IIIc; FGFR-2, IIIc; FGFR-3, IIIc, FGFR-4.

**Bioactivity** Human FGF-4 induces the proliferation of NIH3T3 cells.

**Antigen References**

1. Konishi H, *et al.* 1996. *Oncogene*. 13:9.
2. Sun X, *et al.* 2000. *Nat Genet*. 25:83-6.
3. Yamamoto H, *et al.* 2002. *Oncogene*. 21:899-908.
4. Kosaka N, *et al.* 2006. *FASEB J*. 20:1484-5.
5. Kosaka N, *et al.* 2009. *Dev. Dyn*. 238:265-76.
6. Arao T, *et al.* 2013. *Hepatology*. 57:1407-15.
7. Itoh N and Ohta H. 2013. *Front. Physiol*. 4:247.

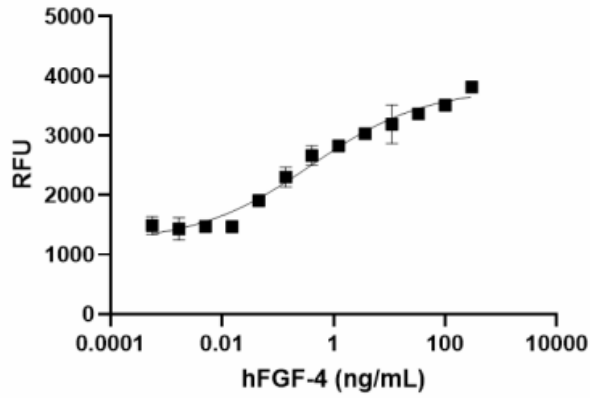
**Gene ID** [2249](#)

## Product Data

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## Human FGF-4 Induces NIH3T3 Cell Proliferation

NIH3T3 proliferation induced by human FGF-4.



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