



# FGF-2 TOP<sup>®</sup> GMP

(Thermostability Optimized)

FGF-2 TOP<sup>®</sup> GMP is a novel thermostabilized growth factor manufactured in a novel plant-based expression system that provides a cost-effective, GMP-quality solution for the growth of stem cells and adherent HEK cells.



# Recombinant FGF-2 TOP® GMP

## Grow FGF-2-Dependent Cell Cultures More Efficiently With Fewer Media Changes

FGF-2 TOP GMP protein is derived from a proprietary, plant-based production system that ensures high purity and sustainability. Completely animal component-free, it is a safer and more ethically sourced choice for cell and gene therapy applications. Our unique bioproduction process delivers significant cost savings. Additionally, by eliminating the need for repeated supplementation and daily medium changes, expenses can be further reduced and convenience enhanced, streamlining workflows for greater efficiency. With our ultra-scalable manufacturing method and ability for proteins to be stored as seeds, supply chain bottlenecks are eliminated, ensuring a reliable source of GMP-grade proteins.

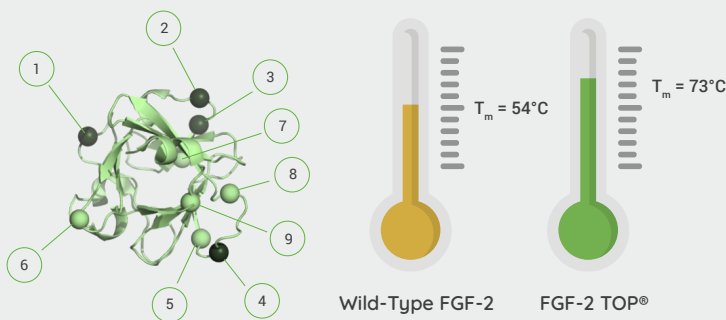
### Why Choose FGF-2 TOP® GMP?

- ✓ Significant cost advantages per vial
- ✓ Ultra-scalable
- ✓ 100% preservation of bioactivity
- ✓ Sustainable
- ✓ Thermostability saves time and money

## A Convenient Alternative With Cost Advantages

In order to maintain pluripotency and avoid spontaneous differentiation of stem cells, scientists traditionally had to maintain a strict daily feeding schedule due to the short half-life (approximately 9 hours at 37°C) and temperature sensitivity of wild-type FGF-2.

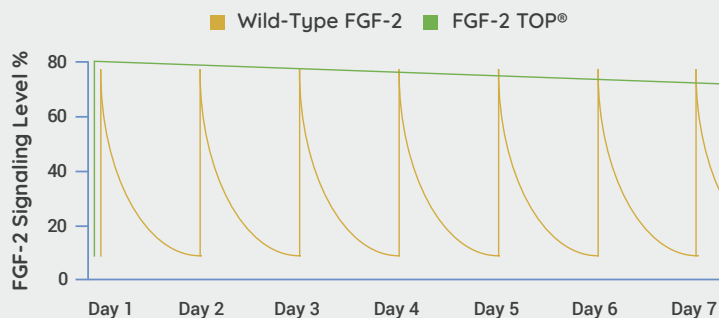
### 10-Fold Improvements in Half-Life at 37°C



To improve stability, a novel nine amino acid substitution of the wild-type FGF-2 was performed, improving the heat stability of FGF-2 TOP resulting in an increase in half-life under cell culture conditions to 37°C.

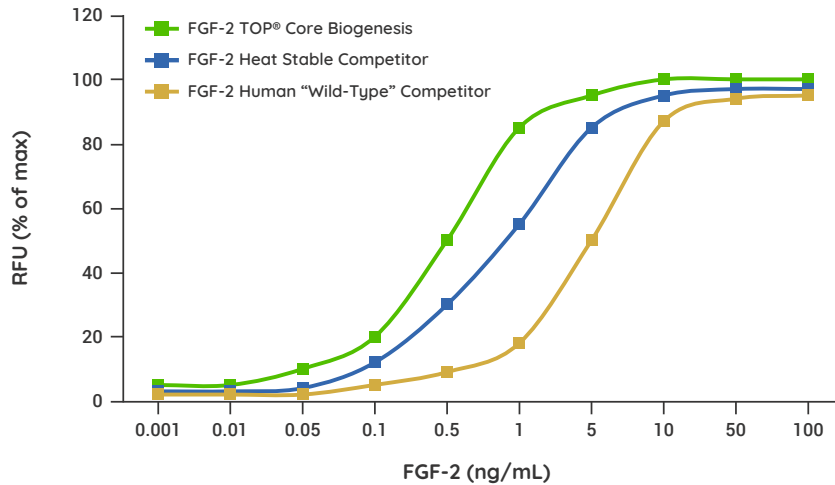
## Supplement Less and Achieve More Consistency

By nature of its increased half-life and stability, FGF-2 TOP presents a constant exposure of growth factor (green line) in contrast to the short half-life and signaling of the wild-type protein that must be replenished daily (yellow line). Thus, feeding schedules are more streamlined and cell culture phenotype is more homogenous.



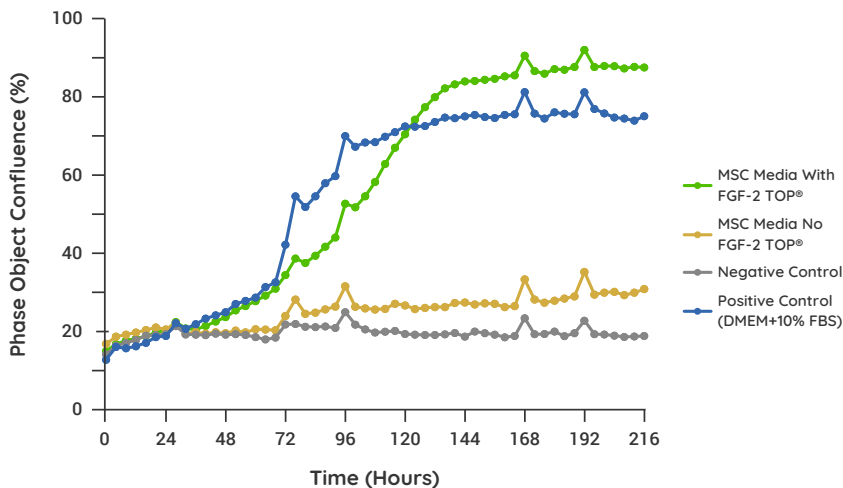
# The Stability to Support Your Development and Scale-Up

## Bioactivity Preserved, Improved Cell Response



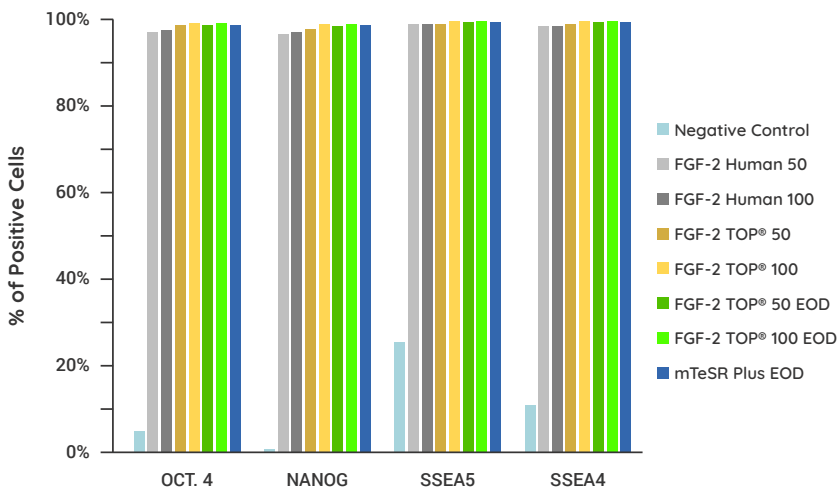
Comparison of FGF-2 TOP with a FGF-2 heat stable competitor and human FGF-2 wild-type in a 3T3 cell proliferation assay using varying concentrations of each protein after a 48-hour incubation at 37°C. FGF-2 TOP demonstrates maintenance of full bioactivity and with a 5-fold lower EC50, FGF-2 TOP demonstrates a greater capacity to promote 3T3 cell proliferation and at lower concentrations than competing heat stable alternatives and wild-type FGF-2 in this model.

## Supporting Proliferation of Adherent Cell Culture



In an internal MSC model analyzing confluence over 9 days, the addition of FGF-2 TOP to an internal MSC formulation resulted in an equivalent cell confluence and expansion (as assessed through cell attachment) compared to the positive control containing 10% FBS. Similar results have been observed in both iPSC and adherent HEK-293 models (assessed but not shown).

## Maintains Pluripotency and Stemness



FGF-2 TOP maintains high-quality iPSC cultures under various concentrations and media feeding regimes as assessed by flow cytometry. Cells were treated with wild-type "human" FGF-2 or FGF-2 TOP at 50 or 100 ng/mL either daily if not indicated or every other day (EOD). The negative control contained no FGF-2 supplementation. All tested conditions resulted in high expression of pluripotency markers. Most notably, EOD feeding with FGF-2 TOP showed equivalent levels as well as provided further proof of bioactivity maintenance after stability changes.

## Recombinant FGF-2 TOP® Ordering Information

Catalog Number	Product Name	Size	Price
2009	FGF-2 TOP® RUO	50 µg	\$300
2040	FGF-2 TOP® RUO	1 mg	\$900
TBD (Arriving early 2025)	FGF-2 TOP® GMP	50 µg	TBD
TBD (Arriving early 2025)	FGF-2 TOP® GMP	1 mg	TBD

## FGF-2 TOP® Specifications

	FGF-2 TOP® RUO	FGF-2 TOP® GMP
<b>Amino Acid Sequence</b>	154 amino acids with 9 aa point mutations from the wild-type FGF-2. Tag-free. Original reference sequence accession number: <a href="#">P09038</a>	154 amino acids with 9 aa point mutations from the wild-type FGF-2. Tag-free. Original reference sequence accession number: <a href="#">P09038</a>
<b>Origin</b>	Plant-derived ( <i>Camelina sativa</i> )	Plant-derived ( <i>Camelina sativa</i> )
<b>Identity</b>	Molecular weight via SDS-PAGE	Molecular weight via SDS-PAGE
<b>Bioactivity</b>	EC50	EC50
<b>Purity</b>	≥ 95%	≥ 95%
<b>Concentration</b>	50 µg/mL and 1 mg/mL	50 µg/mL and 1 mg/mL
<b>Mycoplasma</b>	No	PCR
<b>Bioburden</b>	< 10 CFU/mL	USP <61>
<b>Endotoxin</b>	< 100 EU/mL	USP <85> ≤ 50 EU/mL
<b>Shelf Life</b>	Stability study in progress	Stability study in progress
<b>Release</b>	COT	COA
<b>Shipping Conditions</b>	≤ -10°C	≤ -10°C
<b>Storage Temperature</b>	-80°C	-80°C
<b>Typical Application</b>	iPSCs, organoids production, MSCs, HEK adherent	iPSCs, organoids production, MSCs, HEK adherent

### About Core Biogenesis

Core Biogenesis employs a novel green bioproduction platform to express recombinant proteins from plants. Their animal-free growth factors and cytokines contribute to more cost-effective and commercially-viable cell expansion applications including 3D cell culture, organoids production, cell therapy, and cellular agriculture.

