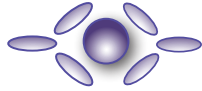


# Human FGF-basic

## ELISA MAX™ Deluxe Set

Cat. No. 434311



BioLegend's ELISA MAX™ Deluxe Set contains the components necessary for the accurate quantification of natural and recombinant human FGF-basic. The set is designed for cost-effective and accurate quantification of human FGF-basic in cell culture supernatant, serum, plasma or other biological fluids. BioLegend's ELISA MAX™ Deluxe Sets are sensitive, accurate, and robust

*It is highly recommended that this instruction sheet be read in its entirety before using this product. Do not use this set beyond the expiration date.*

### Materials Provided

1. Human FGF-basic ELISA MAX™ Capture Antibody (200X)
2. Human FGF-basic ELISA MAX™ Detection Antibody (200X)
3. Human FGF-basic Standard
4. Avidin-HRP (1000X)
5. Substrate Solution F
6. Coating Buffer B (5X)
7. Assay Diluent A (5X)
8. Matrix Diluent A (for serum and plasma samples)

### Introduction

Fibroblast growth factor-basic (FGF-basic) is a heparin-binding growth factor which belongs to a family of Fibroblast Growth Factors (FGFs). FGFs are involved in many physiological and pathological processes including embryonic development, neuronal outgrowth, angiogenesis and malignant transformation. FGF-basic is essential for the development and maintenance of vascular integrity during embryogenesis.

### Principle of the Test

BioLegend ELISA MAX™ Deluxe Set contains pre-optimized essential reagents and additional buffers and solutions for Sandwich ELISA assay. A human FGF-basic specific mouse monoclonal antibody is first coated on a 96-well plate. Standards and samples are added to the wells, and FGF-basic binds to the immobilized capture antibody. Next, a biotinylated mouse monoclonal anti-human FGF-basic detection antibody is added, producing an antibody-antigen-antibody "sandwich". The Avidin-HRP reagent is subsequently added, followed by TMB Substrate, producing a blue color in proportion to the concentration of FGF-basic present in wells. Then Stop Solution should be added to wells to terminate the reaction. This step changes the reaction color from blue to yellow. The absorbance in wells should be read at 450nm using a microplate reader.

*For research purposes only. Not for use in diagnostic or therapeutic procedures.*

### Materials to be Provided by the End-User

- Microwell plates: BioLegend Cat. No. 423501 is recommended
- Wash Buffer: BioLegend Cat. No. 421601 is recommended, or PBS + 0.05% Tween-20
- Stop Solution: BioLegend Cat. No. 423001 is recommended, or acid solution, e.g. 2N H<sub>2</sub>SO<sub>4</sub>
- Plate Sealers: BioLegend Cat. No. 423601 is recommended
- PBS (Phosphate-Buffered Saline): 8.0 g NaCl, 1.16 g Na<sub>2</sub>HPO<sub>4</sub>, 0.2 g KH<sub>2</sub>PO<sub>4</sub>, 0.2 g KCl, add deionized water to 1 L; pH to 7.4, 0.2 μm filtered
- Deionized (DI) water
- A microplate reader capable of measuring absorbance at 450 nm
- Adjustable pipettes to measure volumes ranging from 2 μL to 1 mL
- Wash bottle or automated microplate washer
- Log-Log graph paper or software for data analysis
- Tubes to prepare standard dilutions
- Timer

### Storage Information

- Store kit components between 2°C and 8°C.
- After reconstitution of the lyophilized standard with 1X Assay Diluent A, aliquot into polypropylene vials and store at -70°C for up to one month. Avoid repeated freeze/thaw cycles.
- Prior to use, bring all components to room temperature (18°C-25°C). Upon assay completion return all components to appropriate storage conditions.

### Health Hazard Warnings

1. Reagents that contain preservatives may be harmful if ingested, inhaled or absorbed through the skin. Refer to the MSDS online for details ([www.biolegend.com/msds](http://www.biolegend.com/msds)).
2. Substrate Solution F is harmful if ingested. Additionally, avoid skin, eye or clothing contact.
3. To reduce the likelihood of blood-borne transmission of infectious agents, handle all serum and/or plasma in accordance with NCCLS regulations.

### Specimen Collection and Handling

**Cell Culture Supernatant:** If necessary, centrifuge to remove debris prior to analysis. Samples can be stored at < -20°C. Avoid repeated freeze/thaw cycles.

**Serum:** Use a serum separator tube and allow clotting for at least 30 minutes, then centrifuge for 10 minutes at 1,000 X g. Remove serum layer and assay immediately or store serum samples at < -20°C. Avoid repeated freeze/thaw cycles. Serum specimens should be clear and non-hemolyzed.

**Plasma:** Collect blood sample in a citrate, heparin or EDTA containing tube. Centrifuge for 10 minutes at 1,000 X g within 30 minutes of collection. Assay immediately or store plasma samples at < -20°C. Avoid repeated freeze/thaw cycles. Plasma specimens should be clear and non-hemolyzed.

### Reagent and Sample Preparation

**Do not mix reagents from different sets or lots. Reagents and/or antibodies from different manufacturers should not be used with this set. All reagents should be diluted immediately prior to use.**

**NOTE: Precipitation of 5X Assay Diluent A and Matrix Diluent A may be observed when stored long term between 2°C and 8°C. The precipitation does not alter the performance of the Buffer. If heavy precipitation is observed after the dilution to 1X Assay Diluent A, it can be filtered to clarify the solution.**

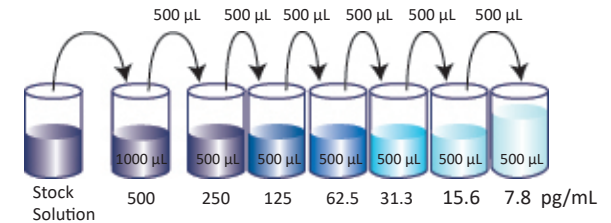
### Preparation of 1X Reagent for 1 Plate

Material	Dilute with
2.4 mL of Coating Buffer B (5X)	9.6 mL of Deionized Water
60 μL of Capture Antibody (200X)	12 mL of 1X Coating Buffer B
12 mL of Assay Diluent A (5X)	48 mL of PBS
60 μL of Detection Antibody (200X)	12 mL of 1X Assay Diluent A
12 μL of Avidin-HRP (1,000X)	12 mL of 1X Assay Diluent A

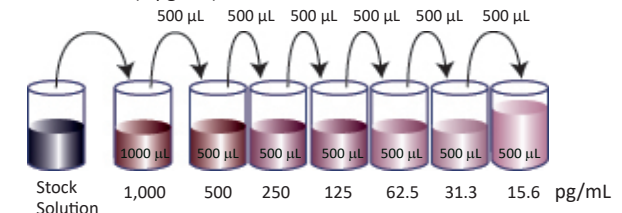
Lyophilized vials are under vacuum pressure. Reconstitute lyophilized standard with 0.2 mL of 1X Assay Diluent A. Allow the reconstituted standard to sit for 15 minutes at room temperature, then mix gently prior to making dilutions.

Prior to use, prepare top standard from the stock solution in 1X Assay Diluent A (refer to Lot-Specific Certificate of Analysis/ELISA MAX™ Deluxe Set Protocol).

- **For measuring cell culture medium sample:** Prepare 1,000 μL of top standard at 500 pg/mL from stock solution in 1X Assay Diluent A (refer to Lot-Specific Certificate of Analysis/ELISA MAX™ Deluxe Set Protocol). Perform six two-fold serial dilutions of the 500 pg/mL top standard with 1X Assay Diluent A in separate tubes. After diluting, the human FGF-basic standard concentrations are 500 pg/mL, 250 pg/mL, 125 pg/mL, 62.5 pg/mL, 31.3 pg/mL, 15.6 pg/mL, and 7.8 pg/mL, respectively. 1X Assay Diluent A serves as the zero standard (0 pg/mL).



- **For measuring serum or plasma samples:** Prepare 1,000 μL of top standard at 1,000 pg/mL from stock solution in 1X Assay Diluent A (refer to Lot-Specific Certificate of Analysis/ELISA MAX™ Deluxe Set Protocol). Perform six two-fold serial dilutions of the 1,000 pg/mL top standard with 1X Assay Diluent A in separate tubes. After diluting, the human FGF-basic standard concentrations are 1,000 pg/mL, 500 pg/mL, 250 pg/mL, 125 pg/mL, 62.5 pg/mL, 31.3 pg/mL, and 15.6 pg/mL, respectively. Assay Diluent A serves as the zero standard (0 pg/mL)



Samples: For cell culture supernatant samples, the end user may need to determine the dilution factors in a preliminary experiment. If dilution is required, samples should be diluted in 1X Assay Diluent A before adding to the wells.

Serum or plasma samples should be tested initially without any dilution. If dilution is required, samples should be diluted in Matrix Diluent A before adding to the wells.

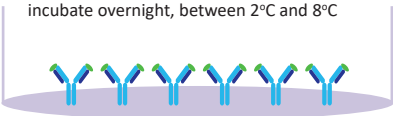
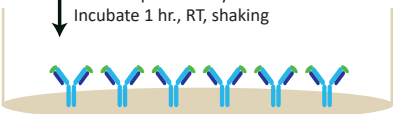
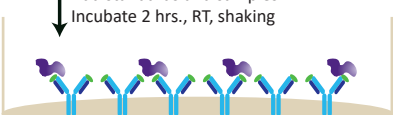
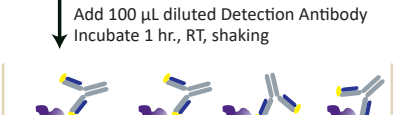
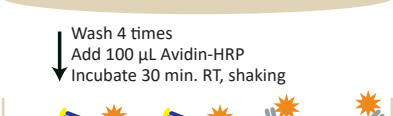
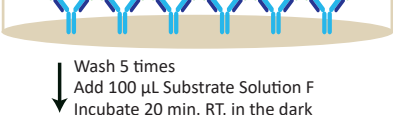

## Assay Procedure

**Do not use sodium azide in any solutions as it inhibits the activity of the horseradish-peroxidase enzyme.**

1. One day prior to running the ELISA, dilute Capture Antibody in 1X Coating Buffer B as described in Reagent Preparation. Add 100  $\mu$ L of this Capture Antibody solution to all wells of a 96-well plate. Seal plate and incubate overnight (16-18 hrs.) between 2°C and 8°C.
2. Bring all reagents to room temperature (RT) prior to use. It is strongly recommended that all standards and samples be run in duplicate or triplicate. A standard curve is required for each assay.
3. Wash plate 4 times with at least 300  $\mu$ L Wash Buffer per well and blot residual buffer by firmly tapping plate upside down on absorbent paper. **All subsequent washes should be performed similarly.**
4. To block non-specific binding and reduce background, add 200  $\mu$ L 1X Assay Diluent A per well.
5. Seal plate and incubate at RT for 1 hour with shaking on a plate shaker (e.g. 500 rpm with a 0.3 cm circular orbit). All subsequent incubation with shaking should be performed similarly.
6. While plate is being blocked, prepare the appropriate sample dilutions (if necessary) and standards.
7. **For measuring cell culture medium sample:**
  - Wash plate 4 times with Wash Buffer.
  - Add 100  $\mu$ L/well of standards and cell culture medium samples to the appropriate wells. If needed, samples can be further diluted with 1X Assay Diluent A before adding 100  $\mu$ L/well diluted samples.**For measuring serum or plasma samples:**
  - Wash plate 4 times with Wash Buffer.
  - Add 50  $\mu$ L/well of Matrix Diluent A provided to the standard wells. Add 50  $\mu$ L/well of 1X Assay Diluent A to the sample wells.
  - Add 50  $\mu$ L/well of standards prepared above to the standard wells. Add 50  $\mu$ L/well of serum or plasma samples to the sample wells. If needed, samples can be further diluted with Matrix Diluent A provided before adding 50  $\mu$ L/well diluted samples.
8. Seal plate and incubate at RT for 2 hours with shaking.
9. Wash plate 4 times with Wash Buffer.
10. Add 100  $\mu$ L of diluted Detection Antibody solution to each well, seal plate and incubate at RT for 1 hour with shaking.
11. Wash plate 4 times with Wash Buffer.
12. Add 100  $\mu$ L of diluted Avidin-HRP solution to each well, seal plate and incubate at RT for 30 minutes with shaking.
13. Wash plate 5 times with Wash Buffer. For this final wash, soak wells in Wash Buffer for 30 seconds to 1 minute for each wash. This will help minimize background.
14. Add 100  $\mu$ L of Substrate Solution F and incubate **in the dark** for 20 minutes\*. Positive wells should turn blue in color. It is not necessary to seal the plate during this step.
15. Stop reaction by adding 100  $\mu$ L of Stop Solution to each well. Positive wells should turn from blue to yellow.
16. Read absorbance at 450 nm within 10 minutes. If the reader can read at 570 nm, the absorbance at 570 nm can be subtracted from the absorbance at 450 nm.

\*Optimal substrate incubation time depends on laboratory conditions and the optical linear ranges of ELISA plate readers.

## Assay Procedure Summary

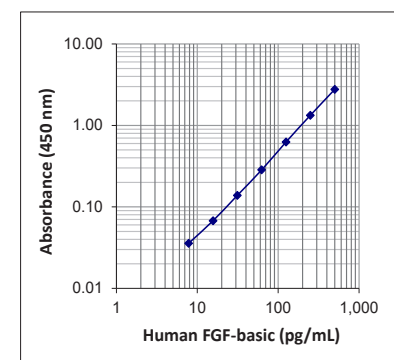
1. Coat plate with 100  $\mu$ L diluted Capture Antibody incubate overnight, between 2°C and 8°C  

2. Wash 4 times  
Add 200  $\mu$ L 1X Assay Diluent A  
Incubate 1 hr., RT, shaking  

3. Wash 4 times  
Add standards and samples  
Incubate 2 hrs., RT, shaking  

4. Wash 4 times  
Add 100  $\mu$ L diluted Detection Antibody  
Incubate 1 hr., RT, shaking  

5. Wash 4 times  
Add 100  $\mu$ L Avidin-HRP  
Incubate 30 min. RT, shaking  

6. Wash 5 times  
Add 100  $\mu$ L Substrate Solution F  
Incubate 20 min. RT, in the dark  

7. Add 100  $\mu$ L Stop Solution  

8. Read absorbance at 450nm and 570nm

## Calculation of Results

Plot the standard curve on log-log axis graph paper with analyte concentration on the x-axis and absorbance on the y-axis. Draw a best fit line through the standard points. To determine the unknown analyte concentrations in the samples, find the absorbance value of the unknown on the y-axis and draw a horizontal line to the standard curve. At the point of intersection, draw a vertical line to the x-axis and read the corresponding analyte concentration. If the samples were diluted, multiply by the appropriate dilution factor. The data is best calculated with computer-based curve-fitting software using a 5- or 4-parameter logistics curve-fitting algorithm. If a test sample's absorbance value falls outside the standard curve ranges, that test sample needs to be reanalyzed at a higher or lower dilution as appropriate.

## Typical Data

**Standard Curve:** This standard curve was generated at BioLegend for demonstration purposes only. A standard curve must be run with each assay.



## Performance Characteristics

**Sensitivity:** The expected minimum detectable concentration of FGF-basic for this set is less than 7.8 pg/ml.

**Specificity:** No cross reactivity was observed when this kit was used to analyze human FGF-acid, human FGF-BP, mouse FGF-basic, or other fifty-one human and mouse recombinant proteins.

## Troubleshooting

Refer to the troubleshooting guidelines at BioLegend's website for details ([http://www.biolegend.com/elisa\\_troubleshooting](http://www.biolegend.com/elisa_troubleshooting)).

## BioLegend, Inc.

BioLegend is ISO 13485 certified.

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