



Product Information

Fibronectin Fragment III₁-C
human, recombinant
expressed in *E. coli*

Product Number **F 3542**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonym: FF III₁-C

Product Description

Fibronectins are made of two subunits linked by disulfide bonds at the C terminal. In the extracellular matrix fibrils, fibronectins are further disulfide bonded into high molecular weight polymers. Fibronectin subunits vary in size between approximately 235 and 270 kDa depending on tissue and species. Each subunit is made of repeating modules of three types: I, II, and III. There are 12 type I repeats, approximately 45 amino acids long, clustered in three groups, two adjacent type II repeats each 60 amino acids long, and 15-17 type III repeats each about 90 amino acids long. Type I and type II each contains two disulfide bonds, while type III lacks disulfide bonds. There are two free sulfhydryl groups per subunit at the type III repeat.^{1,2}

Fibronectin disulfide-bonded multimers are deposited in the fibrillar, pericellular matrix. Several regions in the fibronectin molecule are involved in the matrix assembly including the amino terminal 29 kDa heparin binding region and the RGD containing cell-binding domain of fibronectin. Recently a new region, type III₁ repeat cloned from human placenta cDNA, was reported to participate in matrix formation.

In an experiment employing antibodies for the analysis of fibronectin domains required for matrix assembly, the epitope that inhibited binding and insolubilization of labeled plasma fibronectin by fibroblasts, was identified on the type III₁ and type I₉ modules of fibronectin. This suggested a role for type III₁ and type I₉ in the mediation of fibronectin assembly.³ This finding was further supported by the ability of the 14 kDa fragment from the first two type III repeats of fibronectin to inhibit fibronectin matrix assembly.⁴ Recently recombinant fragment III₁-C, modeled after the C-terminal two-thirds of the III₁ repeat, was found to bind to fibronectin and induce spontaneous disulfide crosslinking of the fibronectin molecules into multimers, which resemble matrix fibrils.⁵

All of this suggests a role for the type III₁ repeat in the intermediate step in matrix assembly involving fibronectin self-association.

This product, the recombinant human fibronectin fragment III₁-C, was modeled after the C-terminal two-thirds of the type III₁ repeat. The protein was expressed in *E. coli*.

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

FF III₁-C can be reconstituted with 0.5 ml of sterile PBS per 0.5 mg vial. The stock solution can be further diluted with sterile PBS or cell culture medium.

Storage/Stability

Lyophilized FF III₁-C should be stored at $-20\text{ }^{\circ}\text{C}$. After reconstitution it can be stored at $2-8\text{ }^{\circ}\text{C}$. Dilute immediately prior to use.

Procedure

FF III₁-C can be used to superactivate different types of fibronectins. With human plasma fibronectin and with human cellular fibronectin, a concentration of 0.5 $\mu\text{g/ml}$ of fibronectin and 0.45 $\mu\text{g/ml}$ of FF III₁-C are recommended. You may add 100 μl of this mix to every well of a 96 well plate, incubate 2 hours at $37\text{ }^{\circ}\text{C}$, and wash twice with 100 μl of PBS. The optimal concentration for specific cell types, fibronectin types, and applications should be determined by the end user. For a formulation with human plasma fibronectin, see SuperFibronectin (Product No. S 5171).

References

1. Hynes, R.O., in Guidebook to the Extracellular Matrix and Adhesion Proteins, Kreis, T., and Vale, R., eds., Oxford University Press (1993) p. 56.
2. Fibronectins, Hynes, R.O., Springer-Verlag (New York, NY: 1990).
3. Chemousov, M.A., et al., J. Biol. Chem., **266**, 10851 (1991).
4. Moria, A., and Rouslahti, E., J. Biol. Chem., **118**, 421 (1992).
5. Moria, A., et al., Nature, **367**, 193 (1994).

MAM 10/02

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.