

Datasheet for ABIN3133894

**FMR1 Protein (AA 1-614) (His tag)****1** Image[Go to Product page](#)

## Overview

Quantity:	1 mg
Target:	FMR1
Protein Characteristics:	AA 1-614
Origin:	Mouse
Source:	Insect Cells
Protein Type:	Recombinant
Purification tag / Conjugate:	This FMR1 protein is labelled with His tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA, Crystallization (Crys)

## Product Details

Sequence:	MEELVVEVRG SNGAFYKAFV KDVHEDSITV AFENNWQPER QIPFHDVRFPPVGYNKDIN ESDEVEVYSR ANEKEPCCWW LAKVRMIKGE FYVIEYAACD ATYNEIVTIE RLRSVNPKNP ATKDTFHKIK LEVPEDLRQM CAKESAHKDF KKA VGAFSVT YDPENYQLVI LSINEVTSKR AHMLIDMHFR SLRTKLSLIL RNEEASKQLE SSRQLASRFH EQFIVREDLM GLAIGTHGAN IQQARKVPGV TAIDLDEDTCTFHIYGEDQD AVKKARSFLE FAEDVIQVPR NLVGKVGIGN GKLIQIVDK SGVVRVRIE ENEKSVPQEE EIMPPSSLPS NNSRVGPNS EKKHLDTKE NTHFSQPNST KVQRVLVSS IVAGGPQKPE PKAWQGMVPF VFGTKDSIA NATVLLDYHL NYLKEVDQLR LERLQIDEQL RQIGASSRPP PNRTDKEKGY VTDDGQGMGR GSRPYRNRGH GRRGPGYTSG TNSEASNASE TESDHRDELS DWSLAPTEEE RESFLRRGDG RRRRGGGRGQ GGRGRGGGFK GNDDHSRTDN RPRNPREAKG RTADGSLQSA SSEGSRLRTG KDRNQKKEKP DSVDGLQPLV NGVP
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**Sequence without tag. Tag location is at the discretion of the manufacturer. If you have a**

### **special request, please contact us.**

#### Characteristics:

- Made in Germany - from design to production - by highly experienced protein experts.
- Mouse Fmr1 Protein (raised in Insect Cells) purified by multi-step, protein-specific process to ensure crystallization grade.
- State-of-the-art algorithm used for plasmid design (Gene synthesis).

This protein is a made to order protein and will be made for the first time for your order. Our experts in the lab will ensure that you receive a correctly folded protein.

The big advantage of ordering our made-to-order proteins in comparison to ordering custom made proteins from other companies is that there is no financial obligation in case the protein cannot be expressed or purified.

In the unlikely event that the protein cannot be expressed or purified we do not charge anything (other companies might charge you for any performed steps in the expression process for custom-made proteins, e.g. fees might apply for the expression plasmid, the first expression experiments or purification optimization).

When you order this made-to-order protein you will only pay upon receipt of the correctly folded protein. With no financial risk on your end you can rest assured that our experienced protein experts will do everything to make sure that you receive the protein you ordered.

The concentration of our recombinant proteins is measured using the absorbance at 280nm.

The protein's absorbance will be measured in several dilutions and is measured against its specific reference buffer.

The concentration of the protein is calculated using its specific absorption coefficient. We use the ExPASy's ProtParam tool to determine the absorption coefficient of each protein.

#### Purification:

Two step purification of proteins expressed in baculovirus infected SF9 insect cells:

1. In a first purification step, the protein is purified from the cleared cell lysate using three different His-tag capture materials: high yield, EDTA resistant, or DTT resistant. Eluate fractions are analyzed by SDS-PAGE.
2. Protein containing fractions of the best purification are subjected to second purification step through size exclusion chromatography. Eluate fractions are analyzed by SDS-PAGE and Western blot.

#### Purity:

>95 % as determined by SDS PAGE, Size Exclusion Chromatography and Western Blot.

#### Sterility:

0.22 µm filtered

#### Endotoxin Level:

Protein is endotoxin free.

#### Grade:

Crystallography grade

## Target Details

Target: FMR1

Alternative Name: Fmr1 ([FMR1 Products](#))

Background: Multifunctional polyribosome-associated RNA-binding protein that plays a central role in neuronal development and synaptic plasticity through the regulation of alternative mRNA splicing, mRNA stability, mRNA dendritic transport and postsynaptic local protein synthesis of a subset of mRNAs (PubMed:11438589, PubMed:12032354, PubMed:15475576, PubMed:16631377, PubMed:16790844, PubMed:17417632, PubMed:17548835, PubMed:18539120, PubMed:18653529, PubMed:19640847, PubMed:19166269, PubMed:20159450, PubMed:21784246, PubMed:23235829, PubMed:24813610). Plays a role in the alternative splicing of its own mRNA (PubMed:18653529). Plays a role in mRNA nuclear export (PubMed:16790844). Together with export factor NXF2, is involved in the regulation of the NXF1 mRNA stability in neurons (PubMed:17548835). Stabilizes the scaffolding postsynaptic density protein DLG4/PSD-95 and the myelin basic protein MBP mRNAs in hippocampal neurons and glial cells, respectively, this stabilization is further increased in response to metabotropic glutamate receptor (mGluR) stimulation (PubMed:17417632). Plays a role in selective delivery of a subset of dendritic mRNAs to synaptic sites in response to mGluR activation in a kinesin-dependent manner (PubMed:18539120). Plays a role as a repressor of mRNA translation during the transport of dendritic mRNAs to postsynaptic dendritic spines (PubMed:11376146, PubMed:12581522, PubMed:14570712, PubMed:12927206, PubMed:15475576, PubMed:16908410, PubMed:18805096, PubMed:19640847, PubMed:21784246, PubMed:23235829). Component of the CYFIP1-EIF4E-FMR1 complex which blocks cap-dependent mRNA translation initiation (PubMed:18805096). Represses mRNA translation by stalling ribosomal translocation during elongation (PubMed:21784246). Reports are contradictory with regards to its ability to mediate translation inhibition of (MBP) mRNA in oligodendrocytes (PubMed:14613971, PubMed:23891804). Also involved in the recruitment of the RNA helicase MOV10 to a subset of mRNAs and hence regulates microRNA (miRNA)-mediated translational repression by AGO2 (PubMed:20159450, PubMed:25464849). Facilitates the assembly of miRNAs on specific target mRNAs (By similarity). Plays also a role as an activator of mRNA translation of a subset of dendritic mRNAs at synapses (PubMed:14614133, PubMed:14613971, PubMed:15548614, PubMed:19640847, PubMed:19166269, PubMed:21490210). In response to mGluR stimulation, FMR1-target mRNAs are rapidly derepressed, allowing for local translation at synapses (PubMed:16908410, PubMed:17507556, PubMed:19640847). Binds to a large subset of dendritic mRNAs that encode a myriad of proteins involved in pre- and postsynaptic functions (PubMed:11719188, PubMed:11376146, PubMed:14613971, PubMed:17507556, PubMed:21784246,

PubMed:21490210, PubMed:24349419). Binds to 5'-ACU[GU]-3' and/or 5'-[AU]GGA-3' RNA consensus sequences within mRNA targets, mainly at coding sequence (CDS) and 3'-untranslated region (UTR) and less frequently at 5'-UTR (By similarity). Binds to intramolecular G-quadruplex structures in the 5'- or 3'-UTRs of mRNA targets (PubMed:25692235). Binds to G-quadruplex structures in the 3'-UTR of its own mRNA (By similarity). Binds also to RNA ligands harboring a kissing complex (kc) structure, this binding may mediate the association of FMR1 with polyribosomes (By similarity). Binds mRNAs containing U-rich target sequences (By similarity). Binds to a triple stem-loop RNA structure, called Sod1 stem loop interacting with FMRP (SoSLIP), in the 5'-UTR region of superoxide dismutase SOD1 mRNA (PubMed:19166269). Binds to the dendritic, small non-coding brain cytoplasmic RNA 1 (BC1), which may increase the association of the CYFIP1-EIF4E-FMR1 complex to FMR1 target mRNAs at synapses (PubMed:12581522, PubMed:18805096). Associates with export factor NXF1 mRNA-containing ribonucleoprotein particles (mRNPs) in a NXF2-dependent manner (PubMed:17548835). Binds to a subset of miRNAs in the brain (PubMed:20159450). May associate with nascent transcripts in a nuclear protein NXF1-dependent manner (By similarity). In vitro, binds to RNA homopolymer, preferentially on poly(G) and to a lesser extent on poly(U), but not on poly(A) or poly(C) (By similarity). Moreover, plays a role in the modulation of the sodium-activated potassium channel KCNT1 gating activity (PubMed:20512134). Negatively regulates the voltage-dependent calcium channel current density in soma and presynaptic terminals of dorsal root ganglion (DRG) neurons, and hence regulates synaptic vesicle exocytosis (By similarity). Modulates the voltage-dependent calcium channel CACNA1B expression at the plasma membrane by targeting the channels for proteosomal degradation (PubMed:24709664). Plays a role in regulation of MAP1B-dependent microtubule dynamics during neuronal development (PubMed:15475576). Recently, has been shown to play a translation-independent role in the modulation of presynaptic action potential (AP) duration and neurotransmitter release via large-conductance calcium-activated potassium (BK) channels in hippocampal and cortical excitatory neurons (PubMed:25561520). Finally, FMR1 may be involved in the control of DNA damage response (DDR) mechanisms through the regulation of ATR-dependent signaling pathways such as histone H2AFX/H2A.x and BRCA1 phosphorylations (PubMed:24813610). {ECO:0000250|UniProtKB:Q06787, ECO:0000250|UniProtKB:Q80WE1, ECO:0000269|PubMed:11376146, ECO:0000269|PubMed:11438589, ECO:0000269|PubMed:11719188, ECO:0000269|PubMed:12032354, ECO:0000269|PubMed:12581522, ECO:0000269|PubMed:12927206, ECO:0000269|PubMed:14570712, ECO:0000269|PubMed:14613971, ECO:0000269|PubMed:14614133, ECO:0000269|PubMed:15475576, ECO:0000269|PubMed:15548614,

## Target Details

ECO:0000269|PubMed:16631377, ECO:0000269|PubMed:16790844,  
ECO:0000269|PubMed:16908410, ECO:0000269|PubMed:17417632,  
ECO:0000269|PubMed:17507556, ECO:0000269|PubMed:17548835,  
ECO:0000269|PubMed:18539120, ECO:0000269|PubMed:18653529,  
ECO:0000269|PubMed:18805096, ECO:0000269|PubMed:19166269,  
ECO:0000269|PubMed:19640847, ECO:0000269|PubMed:20159450,  
ECO:0000269|PubMed:20512134, ECO:0000269|PubMed:21490210,  
ECO:0000269|PubMed:21784246, ECO:0000269|PubMed:23235829,  
ECO:0000269|PubMed:23891804, ECO:0000269|PubMed:24349419,  
ECO:0000269|PubMed:24709664, ECO:0000269|PubMed:24813610,  
ECO:0000269|PubMed:25561520, ECO:0000269|PubMed:25692235}.

Molecular Weight: 69.9 kDa Including tag.

UniProt: [P35922](#)

Pathways: [Regulation of Muscle Cell Differentiation, Skeletal Muscle Fiber Development](#)

## Application Details

Application Notes: In addition to the applications listed above we expect the protein to work for functional studies as well. As the protein has not been tested for functional studies yet we cannot offer a guarantee though.

Comment: Protein has not been tested for activity yet. In cases in which it is highly likely that the recombinant protein with the default tag will be insoluble our protein lab may suggest a higher molecular weight tag (e.g. GST-tag) instead to increase solubility. We will discuss all possible options with you in detail to assure that you receive your protein of interest.

Restrictions: For Research Use only

## Handling

Format: Liquid

Buffer: 100 mM NaCl, 20 mM Hepes, 10% glycerol. pH value is at the discretion of the manufacturer.

Handling Advice: Avoid repeated freeze-thaw cycles.

Storage: -80 °C

Storage Comment: Store at -80°C.

## Handling

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Expiry Date: Unlimited (if stored properly)

## Images

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**Image 1.** „Crystallography Grade“ protein due to multi-step, protein-specific purification process