

Datasheet for ABIN3092634

FMR1 Protein (AA 1-632) (Strep Tag)



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Overview

Quantity:	250 µg
Target:	FMR1
Protein Characteristics:	AA 1-632
Origin:	Human
Source:	Cell-free protein synthesis (CFPS)
Protein Type:	Recombinant
Purification tag / Conjugate:	This FMR1 protein is labelled with Strep Tag.
Application:	Western Blotting (WB), SDS-PAGE (SDS), ELISA

Product Details

Brand:	AliCE®
Sequence:	MEELVVEVRG SNGAFYKAFV KDVHEDSITV AFENNWQPDR QIPFHDVRFPPVGYNKDIN ESDEVEVYSR ANEKEPCCWW LAKVRMIKGE FYVIEYAACD ATYNEIVTIE RLRSVNPKNP ATKDTFHKIK LDVPEDLRQM CAKEAAHKDF KKAVGAFSVT YDPENYQLVI LSINEVTSKR AHMLIDMHFR SLRTKLSLIM RNEEASKQLE SSRQLASRFH EQFIVREDLM GLAIGHTGAN IQQARKVPGV TAIDLDEDTCTFHIYGEDQD AVKKARSFLE FAEDVIQVPR NLVGKVVIGKN GKLIQEIVDK SGVVRVRIEA ENEKNVPQEE EIMPPNSLPS NNSRVGPNAP EEKKHLDIKE NSTHFSQPNS TKVQRVLVAS SVVAGESQKP ELKAWQGMVP FVFGTKDSI ANATVLLDYH LNLYKEVDQL RLRLQIDELRQIGASSRP PPNRTDKEKS YVTDDGQGMG RGSRPYRNRG HGRRGPGYTS GTNSEASNAS ETESDHRDEL SDWSLAPTEE ERESFLRRGD GRRRGGGGRG QGGRRGGGGF KGNDHDSRTD NRPRNPREAK GRITDGLSLQI RVDCNNERSV HTKTLQNTSS EGSRLRTGKD RNQKKEKPDS VDGQQLVNG VP

Sequence without tag. The proposed Strep-Tag is based on experience s with the expression system, a different complexity of the protein could make another tag necessary. In case you have a special request, please contact us.

Characteristics:

Key Benefits:

- Made in Germany - from design to production - by highly experienced protein experts.
- Protein expressed with ALiCE® and purified in one-step affinity chromatography
- These proteins are normally active (enzymatically functional) as our customers have reported (not tested by us and not guaranteed).
- 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 try to ensure that you receive soluble 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.

Expression System:

- ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from *Nicotiana tabacum* c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications.
- During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!

Concentration:

- The concentration of our recombinant proteins is measured using the absorbance at 280nm.
- The protein's absorbance will be measured against its specific reference buffer.
- We use the ExPASy's ProtParam tool to determine the absorption coefficient of each protein.

Purification:

One-step Strep-tag purification of proteins expressed in Almost Living Cell-Free Expression System (ALiCE®).

Purity:

> 70-80 % as determined by SDS PAGE, Western Blot and analytical SEC (HPLC).

Product Details

Grade: custom-made

Target Details

Target: FMR1

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

Background: Fragile X messenger ribonucleoprotein 1 (Fragile X messenger ribonucleoprotein) (FMRP) (Protein FMR-1),FUNCTION: 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 target mRNAs (PubMed:12417522, PubMed:16631377, PubMed:18653529, PubMed:19166269, PubMed:23235829, PubMed:25464849). Acts as an mRNA regulator by mediating formation of some phase-separated membraneless compartment: undergoes liquid-liquid phase separation upon binding to target mRNAs, leading to assemble mRNAs into cytoplasmic ribonucleoprotein granules that concentrate mRNAs with associated regulatory factors (PubMed:12417522, PubMed:30765518, PubMed:31439799). Plays a role in the alternative splicing of its own mRNA (PubMed:18653529). 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 (By similarity). 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 (By similarity). Undergoes liquid-liquid phase separation following phosphorylation and interaction with CAPRIN1, promoting formation of cytoplasmic ribonucleoprotein granules that concentrate mRNAs with factors that inhibit translation and mediate deadenylation of target mRNAs (PubMed:31439799). Acts as a repressor of mRNA translation in synaptic regions by mediating formation of neuronal ribonucleoprotein granules and promoting recruitment of EIF4EBP2 (PubMed:30765518). Plays a role as a repressor of mRNA translation during the transport of dendritic mRNAs to postsynaptic dendritic spines (PubMed:11532944, PubMed:11157796, PubMed:12594214, PubMed:23235829). Component of the CYFIP1-EIF4E-FMR1 complex which blocks cap-dependent mRNA translation initiation (By similarity). Represses mRNA translation by stalling ribosomal translocation during elongation (By similarity). Reports are contradictory with regards to its ability to mediate translation inhibition of MBP mRNA in oligodendrocytes (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:14703574, PubMed:17057366, PubMed:25464849). Facilitates the assembly of

miRNAs on specific target mRNAs (PubMed:17057366). Also plays a role as an activator of mRNA translation of a subset of dendritic mRNAs at synapses (PubMed:19097999, PubMed:19166269). In response to mGluR stimulation, FMR1-target mRNAs are rapidly derepressed, allowing for local translation at synapses (By similarity). Binds to a large subset of dendritic mRNAs that encode a myriad of proteins involved in pre- and postsynaptic functions (PubMed:7692601, PubMed:11719189, PubMed:11157796, PubMed:12594214, PubMed:17417632, PubMed:23235829, PubMed:24448548). 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 (PubMed:23235829). Binds to intramolecular G-quadruplex structures in the 5'- or 3'-UTRs of mRNA targets (PubMed:11719189, PubMed:18579868, PubMed:25464849, PubMed:25692235). Binds to G-quadruplex structures in the 3'-UTR of its own mRNA (PubMed:7692601, PubMed:11532944, PubMed:12594214, PubMed:15282548, PubMed:18653529). Binds also to RNA ligands harboring a kissing complex (kc) structure, this binding may mediate the association of FMR1 with polyribosomes (PubMed:15805463). Binds mRNAs containing U-rich target sequences (PubMed:12927206). 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 (By similarity). Plays a role in mRNA nuclear export (PubMed:31753916). Specifically recognizes and binds a subset of N6-methyladenosine (m6A)-containing mRNAs, promoting their nuclear export in a XPO1/CRM1-dependent manner (PubMed:31753916). Together with export factor NXF2, is involved in the regulation of the NXF1 mRNA stability in neurons (By similarity). Associates with export factor NXF1 mRNA-containing ribonucleoprotein particles (mRNPs) in a NXF2-dependent manner (By similarity). Binds to a subset of miRNAs in the brain (PubMed:14703574, PubMed:17057366). May associate with nascent transcripts in a nuclear protein NXF1-dependent manner (PubMed:18936162). In vitro, binds to RNA homomer, preferentially on poly(G) and to a lesser extent on poly(U), but not on poly(A) or poly(C) (PubMed:7688265, PubMed:7781595, PubMed:12950170, PubMed:15381419, PubMed:8156595). 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 proteasomal degradation (By similarity). Plays a role in regulation of MAP1B-dependent microtubule dynamics during neuronal development (By

similarity). 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 H2AX/H2A.x and BRCA1 phosphorylations (PubMed:24813610).

{ECO:0000250|UniProtKB:P35922, ECO:0000250|UniProtKB:Q80WE1, ECO:0000269|PubMed:11157796, ECO:0000269|PubMed:11532944, ECO:0000269|PubMed:11719189, ECO:0000269|PubMed:12417522, ECO:0000269|PubMed:12594214, ECO:0000269|PubMed:12927206, ECO:0000269|PubMed:12950170, ECO:0000269|PubMed:14703574, ECO:0000269|PubMed:15282548, ECO:0000269|PubMed:15381419, ECO:0000269|PubMed:15805463, ECO:0000269|PubMed:16631377, ECO:0000269|PubMed:17057366, ECO:0000269|PubMed:17417632, ECO:0000269|PubMed:18579868, ECO:0000269|PubMed:18653529, ECO:0000269|PubMed:18936162, ECO:0000269|PubMed:19097999, ECO:0000269|PubMed:19166269, ECO:0000269|PubMed:20512134, ECO:0000269|PubMed:23235829, ECO:0000269|PubMed:23891804, ECO:0000269|PubMed:24448548, ECO:0000269|PubMed:24813610, ECO:0000269|PubMed:25464849, ECO:0000269|PubMed:25561520, ECO:0000269|PubMed:25692235, ECO:0000269|PubMed:30765518, ECO:0000269|PubMed:31439799, ECO:0000269|PubMed:31753916, ECO:0000269|PubMed:7688265, ECO:0000269|PubMed:7692601, ECO:0000269|PubMed:7781595, ECO:0000269|PubMed:8156595}, FUNCTION: [Isoform 10]: Binds to RNA homomer, preferentially on poly(G) and to a lesser extent on poly(U), but not on poly(A) or poly(C) (PubMed:24204304). May bind to RNA in Cajal bodies (PubMed:24204304). {ECO:0000269|PubMed:24204304}, FUNCTION: [Isoform 6]: Binds to RNA homomer, preferentially on poly(G) and to a lesser extent on poly(U), but not on poly(A) or poly(C) (PubMed:24204304). May bind to RNA in Cajal bodies (PubMed:24204304). {ECO:0000269|PubMed:24204304}, FUNCTION: (Microbial infection) Acts as a positive regulator of influenza A virus (IAV) replication. Required for the assembly and nuclear export of the viral ribonucleoprotein (vRNP) components. {ECO:0000269|PubMed:24514761}.

Molecular Weight: 71.2 kDa

UniProt: [Q06787](#)

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.
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Comment:	ALiCE®, our Almost Living Cell-Free Expression System is based on a lysate obtained from <i>Nicotiana tabacum</i> c.v.. This contains all the protein expression machinery needed to produce even the most difficult-to-express proteins, including those that require post-translational modifications. During lysate production, the cell wall and other cellular components that are not required for protein production are removed, leaving only the protein production machinery and the mitochondria to drive the reaction. During our lysate completion steps, the additional components needed for protein production (amino acids, cofactors, etc.) are added to produce something that functions like a cell, but without the constraints of a living system - all that's needed is the DNA that codes for the desired protein!
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Restrictions:	For Research Use only
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Handling

Format:	Liquid
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Buffer:	The buffer composition is at the discretion of the manufacturer. Standard Storage Buffer: PBS pH 7.4, 10 % Glycerol Might differ depending on protein.
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Handling Advice:	Avoid repeated freeze-thaw cycles.
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Storage:	-80 °C
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Storage Comment:	Store at -80°C.
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Expiry Date:	12 months
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