Fragile X Mental Retardation Protein 1 Homolog (FMR1) Rat Recombinant Protein

PRODUCT OVERVIEW

Product Name	Fragile X mental retardation protein 1 homolog (Fmr1), Recombinant Protein
Full Product Name	Recombinant Rat Fragile X mental retardation protein 1 homolog (Fmr1)
Product Gene Name	Fmr1 recombinant protein
Product Synonym Gene Name	Fmr1
Sequence	MEELVVEVRG SNGAFYKAFV KDVHEDSITV AFENNWQPER QIPFHDVRFP PPVGYNKDIN ESDEVEVYSR ANEKEPCCWW LAKVRMIKGE FYVIEYAACD ATYNEIVTIE RLRSVNPNKP ATKDTFHKIK LEVPEDLRQM CAKESAHKDF KKAVGAFSVT YDPENYQLVI LSINEVTSKR AHMLIDMHFR SLRTKLSLIL RNEEASKQLE SSRQLASRFH EQFIVREDLM GLAIGTHGAN IQQARKVPGV TAIDLDEDTC TFHIYGEDQD AVKKARSFLE FAEDVIQVPR NLVGKVIGKN GKLIQEIVDK SGVVRVRIEA ENEKSVPQEE ENLPPSSLPS NNSRVGSNSS EEKKHLDTKE NTHFSQPNST KVQRGMVPFV FVGTKDSIAN ATVLLDYHLN YLKEVDQLRL ERLQIDEQLR QIGASSRPPP NRTDKEKGYV TDDGQGMGRG SRPYRNRGHG RRGPGYTSGT NSEASNASET ESDHRDELSD WSLAPTEEER ESFLRRGDGR RRGGGGRGQG GRGRGGGFKG NDDHSRTDNR PRNPRETKGR TTDGSLQSTS SEGSRLRTGK DRNQKKEKPD SVDGLQPLVN GVP
Host	E Coli or Yeast or Baculovirus or Mammalian Cell
Form/Format	Lyophilized or liquid (Format to be determined during the manufacturing process)
Purity/Purification	Greater or equal to 85% purity as determined by SDS-PAGE. (lot specific)
Preparation and Storage	Store at -20 degrees C. For long-term storage, store at -20 degrees C or -80 degrees C. Store working aliquots at 4 degrees C for up to one week. Repeated freezing and thawing is not recommended.
Molecular Weight	65,631 Da
Sequence Positions	1-593, full length protein
Tag Information	This protein contains an N-terminal tag and may also contain a C-terminal tag. Tag types are determined by various factors including tag-protein stability, please inquire for tag information.
Sterility	Sterile filter available upon request.
Endotoxin	Low endotoxin available upon request.
3D Structure	ModBase 3D Structure for Q80WE1
Species	Rat
ISO Certification	Manufactured in an ISO 9001:2015 Certified Laboratory.
Related Product Information for Fmr1 recombinant protein	This protein binds RNA and is associated with polysomes. The encoded protein may be involved in mRNA trafficking from the nucleus to the cytoplasm. A trinucleotide repeat (CGG) in the 5 UTR is normally found at 6-53 copies, but an expansion to 55-230 repeats is the cause of fragile X syndrome. Expansion of the trinucleotide repeat may also cause one form of premature ovarian failure (POF1).
Other Notes	Small volumes of Fmr1 recombinant protein vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for Fmr1 purchase	MBS1377936 is a recombinant protein targeting Fmr1. Also known as Recombinant Rat Fragile X mental retardation protein 1 homolog (Fmr1). Host: E Coli or Yeast or Baculovirus or Mammalian Cell.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for Fmr1. It may not necessarily be applicable to this product.

NCBI GI #	30794228
NCBI GeneID	24948
NCBI Accession #	NP_434691.1
UniProt Primary Accession #	Q80WE1
UniProt Secondary Accession #	P70568
UniProt Related Accession #	Q80WE1
GenBank Nucleotide #	NM_052804.1
NCBI Official Full Name	synaptic functional regulator FMR1
NCBI Official Synonym Full Names	fragile X mental retardation 1
NCBI Official Symbol	Fmr1
NCBI Official Synonym Symbols	FMRP
UniProt Protein Name	Synaptic functional regulator FMR1
UniProt Synonym Protein Names	Fragile X mental retardation protein 1 homolog
Protein Family	Mat- sexual cell fertilization-promoting factor
UniProt Gene Name	Fmr1
UniProt Synonym Gene Names	Protein FMR-1
NCBI Protein Information	synaptic functional regulator FMR1
NCBI Summary for Fmr1	may play a role in mRNA trafficking and localization [RGD, Feb 2006]

UniProt Comments for Fmr1	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:9144248). Plays a role in the alternative splicing of its own mRNA (). Plays a role in mRNA nuclear export (). Together with export factor NXF2, is involved in the regulation of the NXF1 mRNA stability in neurons (). 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 (). 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 (). Plays a role as a repressor of mRNA translation during the transport of dendritic mRNAs to postnyaptic dendritic spines (PubMed:9144248). Component of the CYFIP1-EIF4E-FMR1 complex which blocks cap-dependent mRNA translation initiation (). Represses mRNA translation by stalling ribosomal translocation during elongation (). Reports are contradictory with regards to its ability to mediate translation inhibition of (MBP) mRNA in oligodendrocytes (). 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 (). Facilitates the assembly of miRNAs on specific target mRNAs (). Plays also a role as an activator of mRNA translation of a subset of dendritic mRNAs at synapses (). In response to mGluR stimulation, FMR1-target mRNAs are rapidly derepressed, allowing for local translation at synapses (). Binds to a large subset of dendritic mRNAs that encode a myriad of proteins involved in pre- and postsynaptic functions (). 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 (). Binds to intramolecular G-quadruplex structures in the 5'- or 3'-UTRs of mRNA targets (). Binds to G-quadruplex structures in the 3'-UTR of its own mRNA (). Binds also to RNA ligands harboring a kissing complex (kc) structure; this binding may mediate the association of FMR1 with polyribosomes (). Binds mRNAs containing U-rich target sequences (). 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 (). 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 (). Associates with export factor NXF1 mRNA-containing ribonucleoprotein particles (mRNPs) in a NXF2-dependent manner (). Binds to a subset of miRNAs in the brain (). May associate with nascent transcripts in a nuclear protein NXF1-dependent manner (). 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) (). Moreover, plays a role in the modulation of the sodium-activated potassium channel KCNT1 gating activity (). 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 (PubMed:24709664). Modulates the voltage-dependent calcium channel CACNA1B expression at the plasma membrane by targeting the channels for proteosomal degradation (). Plays a role in regulation of MAP1B-dependent microtubule dynamics during neuronal development (). 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 (). 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 ().
Research Articles on Fmr1	**1.** Suggest that FMRP is associated with the activation of oogenesis and oocyte function. Expression of FMRP varies with age.
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