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Fmr1 antibody - C-terminal region

Rabbit Polyclonal Antibody
Catalog # AI11737

Product Information

Application	WB
Primary Accession	Q80WE1
Other Accession	NM_052804, NP_434691
Reactivity	Human, Mouse, Rat, Rabbit, Pig, Dog, Bovine
Predicted	Mouse, Rat, Rabbit, Pig, Chicken, Bovine
Host	Rabbit
Clonality	Polyclonal
Calculated MW	66780

Additional Information

Gene ID	24948
Alias Symbol	FMRP, Fmr1
Other Names	Fragile X mental retardation protein 1 homolog, FMRP, Protein FMR-1, Fmr1
Format	Liquid. Purified antibody supplied in 1x PBS buffer with 0.09% (w/v) sodium azide and 2% sucrose.
Reconstitution & Storage	Add 50 ul of distilled water. Final anti-Fmr1 antibody concentration is 1 mg/ml in PBS buffer with 2% sucrose. For longer periods of storage, store at 20°C. Avoid repeat freeze-thaw cycles.
Precautions	Fmr1 antibody - C-terminal region is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	Fmr1 {ECO:0000312|RGD:2623}
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:9144248). 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 (By similarity). Plays a role in the alternative splicing of its own mRNA (By similarity). 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. Acts as a repressor of mRNA translation in synaptic regions by mediating formation of neuronal ribonucleoprotein granules and promoting recruitmtent of EIF4EBP2. Plays a role as a repressor of mRNA translation during the transport of dendritic mRNAs to postsynaptic dendritic spines (PubMed:9144248). 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. 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. Also plays a role as an activator of mRNA translation of a subset of dendritic mRNAs at synapses (By similarity). 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. 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. Also binds 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 (By similarity). 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. Specifically recognizes and binds a subset of N6-methyladenosine (m6A)-containing mRNAs, promoting their nuclear export in a XPO1/CRM1-dependent manner (By similarity). 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. May associate with nascent transcripts in a nuclear protein NXF1-dependent manner. 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). Moreover, plays a role in the modulation of the sodium-activated potassium channel KCNT1 gating activity (By similarity). 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 proteasomal degradation (By similarity). Plays a role in regulation of MAP1B-dependent microtubule dynamics during neuronal development (By similarity). 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. 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 (By similarity). Forms a cytoplasmic messenger ribonucleoprotein (mRNP) network by packaging long mRNAs, serving as a scaffold that recruits proteins and signaling molecules. This network facilitates signaling reactions by maintaining proximity between kinases and substrates (By similarity).

Cellular Location

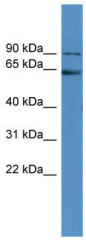
Nucleus. Nucleus, nucleolus {ECO:0000250|UniProtKB:Q06787}. Chromosome, centromere {ECO:0000250|UniProtKB:P35922}. Chromosome {ECO:0000250|UniProtKB:P35922}. Cytoplasm, perinuclear region {ECO:0000250|UniProtKB:P35922}. Perikaryon. Cytoplasm, Cytoplasmic ribonucleoprotein granule. Cytoplasm, Stress granule {ECO:0000250|UniProtKB:Q06787}. Cell projection, neuron projection. Cell projection, dendrite. Cell projection, dendritic spine. Cell projection, growth cone. Cell projection, filopodium. Cell projection, filopodium tip {ECO:0000250|UniProtKB:P35922}. Cell projection, axon. Synapse Synapse, synaptosome. Postsynaptic density. Presynaptic cell membrane {ECO:0000250|UniProtKB:P35922}. Cell membrane {ECO:0000250|UniProtKB:P35922}. Note=Colocalizes with H2AX/H2A.x in pericentromeric heterochromatin in response to DNA damaging agents (By similarity). Localizes on meiotic pachytene-stage chromosomes (By similarity). Forms nuclear foci representing sites of ongoing DNA replication in response to DNA damaging agents (By similarity) Shuttles between nucleus and cytoplasm in a XPO1/CRM1-dependent manner (By similarity). Localizes to cytoplasmic granules, also referred to as messenger ribonucleoprotein particles or mRNPs, along dendrites and dendritic spines (PubMed:15028757, PubMed:23891804). FMR1-containing cytoplasmic granules colocalize to F-actin-rich structures, including filopodium, spines and growth cone during the development of hippocampal neurons (PubMed:16098134). FMR1-containing cytoplasmic granules are transported out of the soma along axon and dendrite to synaptic contacts in a microtubule- and kinesin-dependent manner (PubMed:16098134). Colocalizes with CACNA1B in the cytoplasm and at the cell membrane of neurons (By similarity). Colocalizes with CYFIP1, CYFIP2, NXF2 and ribosomes in the perinuclear region (By similarity) Colocalizes with CYFIP1 and EIF4E in dendrites and probably at synapses (By similarity). Colocalizes with FXR1, kinesin, 60S acidic ribosomal protein RPLP0 and SMN in cytoplasmic granules in the soma and neurite cell processes (By similarity). Colocalizes with FXR1 and FXR2 in discrete granules, called fragile X granules (FXGs), along axon and presynaptic compartments (By similarity). Colocalizes with TDRD3 in cytoplasmic stress granules (SGs) in response to various cellular stress (By similarity). {ECO:0000250|UniProtKB:P35922, ECO:0000250|UniProtKB:Q06787, ECO:0000269|PubMed:15028757, ECO:0000269|PubMed:16098134, ECO:0000269|PubMed:23891804}

Tissue Location

Expressed in brain (PubMed:9030614). Expressed in neurons (PubMed:9030614). Expressed in mature oligodendrocytes (OLGs) (PubMed:23891804). Expressed in oligodendroglia progenitor cells (OPCs) and immature oligodendrocytes (OLGs) in the neonatal brain (at protein level) (PubMed:14613971).

Images

WB Suggested Anti-Fmr1 Antibody Titration: 0.2-1 µg/ml
ELISA Titer: 1:312500
Positive Control: Rat Lung



Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.