






Product datasheet

Anti-4E-BP2 antibody ab111309

1 Image

Overview

Product name	Anti-4E-BP2 antibody
Description	Rabbit polyclonal to 4E-BP2
Host species	Rabbit
Specificity	Detects 17 and 20 kD proteins, corresponding to the apparent molecular mass of PHAS II and its phosphorylated state on SDS-PAGE immunoblots.
Tested applications	Suitable for: IHC-P
Species reactivity	Reacts with: Human Predicted to work with: Mouse, Rat, Cow, Dog, Pig 
Immunogen	Synthetic peptide corresponding to Human 4E-BP2 aa 50-150 (C terminal) conjugated to keyhole limpet haemocyanin.  Run BLAST with   Run BLAST with 
Positive control	Human Pancreas tissue.
General notes	<p>The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing.</p> <p>If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As</p>

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C long term.
Storage buffer	pH: 8.40 Constituents: 0.44% Sodium chloride, 0.15% EDTA In addition, the buffer contains: 25mM sodium borate; 100 mM boric acid
Purity	Immunogen affinity purified
Clonality	Polyclonal

Isotype

IgG

Applications

The Abpromise guarantee

Our **Abpromise guarantee** covers the use of ab111309 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
IHC-P		Use a concentration of 10 µg/ml. Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Target

Function

Repressor of translation initiation involved in synaptic plasticity, learning and memory formation (By similarity). Regulates EIF4E activity by preventing its assembly into the eIF4F complex: hypophosphorylated form of EIF4EBP2 competes with EIF4G1/EIF4G3 and strongly binds to EIF4E, leading to repress translation. In contrast, hyperphosphorylated form dissociates from EIF4E, allowing interaction between EIF4G1/EIF4G3 and EIF4E, leading to initiation of translation (PubMed:25533957). EIF4EBP2 is enriched in brain and acts as a regulator of synapse activity and neuronal stem cell renewal via its ability to repress translation initiation (By similarity). Mediates the regulation of protein translation by hormones, growth factors and other stimuli that signal through the MAP kinase and mTORC1 pathways.

Sequence similarities

Belongs to the eIF4E-binding protein family.

Domain

The TOS motif mediates interaction with RPTOR, leading to promote phosphorylation by mTORC1 complex.
Intrinsically disordered protein that undergoes folding upon phosphorylation (PubMed:25533957). Hypophosphorylated form interacts strongly with EIF4E using (1) the YXXXXLPhi motif, that undergoes a disorder-to-helix transition upon binding and (2) the secondary EIF4E binding sites (residues 78-82) (PubMed:24207126, PubMed:25533957). Phosphorylation at Thr-37 and Thr-46 induces folding of region encompassing residues from Pro-18 to Arg-62 of into a four-stranded beta-domain that sequesters the helical YXXXXLPhi motif into a buried beta-strand, blocking accessibility to EIF4E. Protein phosphorylated at Thr-37 and Thr-46 is however unstable and subsequent phosphorylation at Ser-65, Thr-70 and Ser-83 is required to stabilize the fold, decreasing affinity for EIF4E by a factor of 4000 (PubMed:24207126, PubMed:25533957).

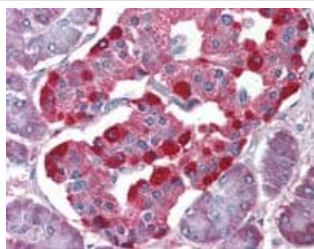
Post-translational modifications

Phosphorylation at Thr-37, Thr-46, Ser-65, Thr-70 and Ser-83 is mediated by MTOR and corresponds to the hyperphosphorylated form: it abolishes binding to EIF4E by inducing folding of intrinsically disordered regions (PubMed:24207126, PubMed:25533957). First phosphorylated at Thr-37 and Thr-46 by MTOR, inducing folding of region encompassing residues from Pro-18 to Arg-62 of into a four-stranded beta-domain that sequesters the helical YXXXXLPhi motif into a partly buried beta-strand, blocking accessibility to EIF4E. Protein phosphorylated at Thr-37 and Thr-46 is however unstable and subsequent phosphorylation at Ser-65, Thr-70 and Ser-83 is required to stabilize the fold, decreasing affinity for EIF4E by a factor of 4000 (PubMed:24207126, PubMed:25533957). Phosphorylated in response to insulin, EGF and PDGF.

Deamidated at Asn-99 and Asn-102 to aspartate (Asp) in brain. Deamidation promotes interaction with RPTOR, subsequent phosphorylation by mTORC1 and increased translation,

leading to impair kinetics of excitatory synaptic transmission. Deamidation takes place during postnatal development, when the PI3K-Akt-mTOR signaling is reduced, suggesting it acts as a compensatory mechanism to promote translation despite attenuated PI3K-Akt-mTOR signaling in neuron development. Deamidation converts Asn residues into a mixture of Asp and isoaspartate; interactions with PCMT1 is required to prevent isoaspartate accumulation and convert isoaspartate to Asp.

Images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-4E-BP2 antibody (ab111309)

Immunohistochemistry Image of Human Pancreas Formalin Fixed and Paraffin Embedded (FFPE) and stained with ab111309 at 10µg/ml. After incubation with the primary antibody, slides were incubated with biotinylated Goat anti Rabbit secondary antibody, followed by alkaline phosphatase streptavidin and chromogen. The stained slides were evaluated by a pathologist to confirm staining specificity.

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