10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

Anti-GCN2 Antibody
Catalog # ABO11335

Specification

Anti-GCN2 Antibody - Product Information

Application	**WB**
Primary Accession	Q9QZ05
Host	**Rabbit**
Reactivity	**Mouse, Rat**
Clonality	**Polyclonal**
Format	**Lyophilized**

Description
Rabbit IgG polyclonal antibody for eIF-2-alpha kinase GCN2(EIF2AK4) detection. Tested with WB in Mouse;Rat.

Reconstitution
Add 0.2ml of distilled water will yield a concentration of 500ug/ml.

Anti-GCN2 Antibody - Additional Information

Gene ID 27103

Other Names
eIF-2-alpha kinase GCN2, Eukaryotic translation initiation factor 2-alpha kinase 4 {ECO:0000312|MGI:MGI:1353427}, 2.7.11.1, GCN2-like protein, mGCN2, Eif2ak4 {ECO:0000312|MGI:MGI:1353427}, Gcn2, Kiaa1338

Calculated MW
186487 MW KDa

Application Details
Western blot, 0.1-0.5 µg/ml, Mouse, Rat

Tissue Specificity
Expressed in liver (at protein level). Widely expressed, with the highest levels in the liver and the brain. Isoform 4 is expressed in brain followed by testis and liver and isoform 3 is expressed only in brain. .

Protein Name
eIF-2-alpha kinase GCN2

Contents
Each vial contains 5mg BSA, 0.9mg NaCl, 0.2mg Na2HPO4, 0.05mg Thimerosal, 0.05mg NaN3.

Immunogen
A synthetic peptide corresponding to a sequence in the middle region of mouse GCN2(868-886aa ATDHLAFTAEGKQDDQAGD), different from the related rat sequence by one amino acid.

Purification

Immunogen affinity purified.

Cross Reactivity
No cross reactivity with other proteins

Storage

At -20˚C for one year. After r˚Constitution, at 4˚C for one month. It˚Can also be aliquotted and stored frozen at -20˚C for a longer time.Avoid repeated freezing and thawing.

Sequence Similarities
Belongs to the protein kinase superfamily. Ser/Thr protein kinase family. GCN2 subfamily.

Anti-GCN2 Antibody - Protein Information

Name Eif2ak4 {ECO:0000312|MGI:MGI:1353427}

Synonyms Gcn2, Kiaa1338

Function
Metabolic-stress sensing protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) in response to low amino acid availability (PubMed:10504407, PubMed:10655230, PubMed:12176355, PubMed:12215525, PubMed:15213227, PubMed:15774759, PubMed:16054071, PubMed:16121183, PubMed:16176978, PubMed:16601681, PubMed:26102367). Plays a role as an activator of the integrated stress response (ISR) required for adaptation to amino acid starvation (PubMed:10655230, PubMed:11106749, PubMed:12176355, PubMed:15213227, PubMed:16176978, PubMed:26102367). EIF2S1/eIF-2-alpha phosphorylation in response to stress converts EIF2S1/eIF-2-alpha into a global protein synthesis inhibitor, leading to a global attenuation of cap-dependent translation, and thus to a reduced overall utilization of amino acids, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activator ATF4, and hence allowing ATF4-mediated reprogramming of amino acid biosynthetic gene expression to alleviate nutrient depletion (PubMed:10655230, PubMed:11106749, PubMed:12176355, PubMed:15213227, PubMed:16176978, PubMed:26102367). Required for the translational induction of protein kinase PRKCH following amino acid starvation (PubMed:19797084). Binds uncharged tRNAs (By similarity). Involved in cell cycle arrest by promoting cyclin D1 mRNA

translation repression after the unfolded protein response pathway (UPR) activation or cell cycle inhibitor CDKN1A/p21 mRNA translation activation in response to amino acid deprivation (PubMed:16176978, PubMed:26102367). Plays a role in the consolidation of synaptic plasticity, learning as well as formation of long-term memory (PubMed:16121183). Plays a role in neurite outgrowth inhibition (PubMed:23447528). Plays a role in feeding behavior to maintain amino acid homeostasis; contributes to the innate aversion toward diets of imbalanced amino acid composition (PubMed:15774759, PubMed:16054071). Plays a proapoptotic role in response to glucose deprivation (PubMed:20660158). Promotes global cellular protein synthesis repression in response to UV irradiation independently of the stress-activated protein kinase/c-Jun N-terminal kinase (SAPK/JNK) and p38 MAPK signaling pathways (PubMed:12176355).

Cellular Location
Cytoplasm.

Tissue Location
Expressed in liver (PubMed:10504407). Expressed predominantly in the hippocampal CA1 region and the dentate gyrus, and to a lesser degree in CA3 (at protein level) (PubMed:16121183) Expressed in liver, lung, brain, kidney, skeletal muscle and testis (PubMed:10504407, PubMed:10655230). Expressed weakly in heart and spleen (PubMed:10655230). Expressed in the hippocampal CA1 and CA3 regions, the dentate gyrus and cerebellum (PubMed:16121183). Isoform 1 is widely expressed (PubMed:12215525). Isoform 1 is expressed in brain, liver, skeletal muscle and testis (PubMed:10655230). Isoform 3 is expressed in lung, brain, testis, prostate and choroid plexus (PubMed:12215525). Isoform 4 is expressed in muscle, lung, kidney, brain, testis and prostate (PubMed:10655230, PubMed:12215525)

Anti-GCN2 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

Anti-GCN2 Antibody - Images

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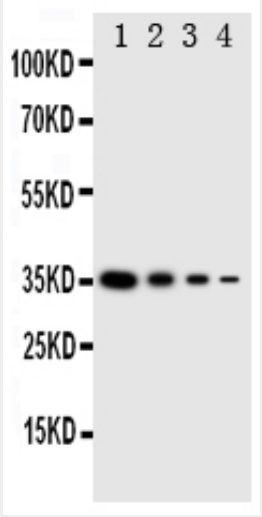

Anti-GCN2 antibody, ABO11335, Western blottingRecombinant Protein Detection Source: E.coli derived -recombinant Mouse EIF2AK4, 35.3KD(162aa tag+ E801-R954)Lane 1: Recombinant Mouse EIF2AK4 Protein 10ngLane 2: Recombinant Mouse EIF2AK4 Protein 5ngLane 3: Recombinant Mouse EIF2AK4 Protein 2.5ngLane 4: Recombinant Mouse EIF2AK4 Protein 1.25ng

Anti-GCN2 Antibody - Background

EIF2AK4(Eukaryotic Translation Initiation Factor 2-Alpha Kinase 4), also called GCN2, is an enzyme that in humans is encoded by the EIF2AK4 gene. EIF2AK4 belongs to a family of kinases that phosphorylate the alpha subunit of eukaryotic translation initiation factor-2 to downregulate protein synthesis in response to varied cellular stresses. Hartz(2005) mapped the EIF2AK4 gene to chromosome 15q15.1 based on an alignment of the EIF2AK4 sequence with the genomic sequence. Berlanga et al.(1999) demonstrated that Gcn2 immunopurified from mouse liver extracts could phosphorylate rabbit Eif2 in vitro. Serum starvation increased the level of phosphorylated EIF2-alpha more than 2-fold in human embryonic kidney cells transfected with mouse Eif2ak4. Costa-Mattioli et al.(2005) reported a unique feature of hippocampal slices from Gcn2-null mice: in CA1, a single 100-Hz train induced a strong and sustained long-term potentiation(late LTP or L-LTP), which was dependent on transcription and translation.