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KD-Validated Anti-EIF2AK2 Mouse Monoclonal Antibody

Mouse monoclonal antibody
Catalog # AGI1993

Specification

KD-Validated Anti-EIF2AK2 Mouse Monoclonal Antibody - Product Information

Application	**WB, FC, ICC**
Primary Accession	P19525
Reactivity	**Human**
Clonality	**Monoclonal**
Isotype	**Mouse IgG1 kappa**
Calculated MW	**Predicted, 62 kDa, observed, 68 kDa KDa**
Gene Name	**EIF2AK2**
Aliases	**EIF2AK2; Eukaryotic Translation Initiation Factor 2 Alpha Kinase 2; PKR; Protein Kinase R; PPP1R83; PRKR; Protein Kinase, Interferon-Inducible Double Stranded RNA Dependent; Interferon-Induced, Double-Stranded RNA-Activated Protein Kinase; Protein Phosphatase 1, Regulatory Subunit 83; Tyrosine-Protein Kinase EIF2AK2; Protein Kinase RNA-Activated; Protein Kinase RNA-Regulated; P1/EIF-2A Protein Kinase; EIF-2A Protein Kinase 2; P68 Kinase; Eukaryotic Translation Initiation Factor 2-Alpha Kinase 2; Interferon-Inducible RNA-Dependent Protein Kinase; Double Stranded RNA Activated Protein Kinase; Interferon-Inducible EIF2alpha Kinase; EC 2.7.11.1; EC 2.7.10.2; EIF2AK1; LEUDEN; DYT33**
Immunogen	**Recombinant protein of human PKR**

KD-Validated Anti-EIF2AK2 Mouse Monoclonal Antibody - Additional Information

Gene ID	**5610**

Other Names
Interferon-induced, double-stranded RNA-activated protein kinase, 2.7.11.1, Eukaryotic translation initiation factor 2-alpha kinase 2, eIF-2A protein kinase 2, Interferon-inducible RNA-dependent protein kinase, P1/eIF-2A protein kinase, Protein kinase RNA-activated, PKR, Protein kinase R, Tyrosine-protein kinase EIF2AK2, 2.7.10.2, p68 kinase, EIF2AK2, PKR, PRKR

KD-Validated Anti-EIF2AK2 Mouse Monoclonal Antibody - Protein Information

Name EIF2AK2

Synonyms PKR, PRKR

Function

IFN-induced dsRNA-dependent serine/threonine-protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) and plays a key role in the innate immune response to viral infection (PubMed:18835251, PubMed:19189853, PubMed:19507191, PubMed:21072047, PubMed:21123651, PubMed:22381929, PubMed:22948139, PubMed:23229543). Inhibits viral replication via the integrated stress response (ISR): EIF2S1/eIF-2- alpha phosphorylation in response to viral infection converts EIF2S1/eIF-2-alpha in a global protein synthesis inhibitor, resulting to a shutdown of cellular and viral protein synthesis, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activator ATF4 (PubMed:19189853, PubMed:21123651, PubMed:22948139, PubMed:23229543). Exerts its antiviral activity on a wide range of DNA and RNA viruses including hepatitis C virus (HCV), hepatitis B virus (HBV), measles virus (MV) and herpes simplex virus 1 (HHV-1) (PubMed:11836380, PubMed:19189853, PubMed:19840259, PubMed:20171114, PubMed:21710204, PubMed:23115276, PubMed:23399035). Also involved in the regulation of signal transduction, apoptosis, cell proliferation and differentiation: phosphorylates other substrates including p53/TP53, PPP2R5A, DHX9, ILF3, IRS1 and the HHV-1 viral protein US11 (PubMed:11836380, PubMed:19229320, PubMed:22214662). In addition to serine/threonine- protein kinase activity, also has tyrosine-protein kinase activity and phosphorylates CDK1 at 'Tyr-4' upon DNA damage, facilitating its ubiquitination and proteasomal degradation (PubMed:20395957). Either as an adapter protein and/or via its kinase activity, can regulate various signaling pathways (p38 MAP kinase, NF-kappa-B and insulin signaling pathways) and transcription factors (JUN, STAT1, STAT3, IRF1, ATF3) involved in the expression of genes encoding pro-inflammatory cytokines and IFNs (PubMed:22948139, PubMed:23084476, PubMed:23372823). Activates the NF-kappa-B pathway via interaction with IKBKB and TRAF family of proteins and activates the p38 MAP kinase pathway via interaction with MAP2K6 (PubMed:10848580, PubMed:15121867, PubMed:15229216). Can act as both a positive and negative regulator of the insulin signaling pathway (ISP) (PubMed:20685959). Negatively regulates ISP by inducing the inhibitory phosphorylation of insulin receptor substrate 1 (IRS1) at 'Ser-312' and positively regulates ISP via phosphorylation of PPP2R5A which activates FOXO1, which in turn up-regulates the expression of insulin receptor substrate 2 (IRS2) (PubMed:20685959). Can regulate NLRP3 inflammasome assembly and the activation of NLRP3, NLRP1, AIM2 and NLRC4 inflammasomes (PubMed:<a href="http://www.uniprot.org/citations/22801494"

target="_blank">22801494). Plays a role in the regulation of the cytoskeleton by binding to gelsolin (GSN), sequestering the protein in an inactive conformation away from actin (By similarity).

Cellular Location
Cytoplasm. Nucleus. Cytoplasm, perinuclear region. Note=Nuclear localization is elevated in acute leukemia, myelodysplastic syndrome (MDS), melanoma, breast, colon, prostate and lung cancer patient samples or cell lines as well as neurocytes from advanced Creutzfeldt- Jakob disease patients.

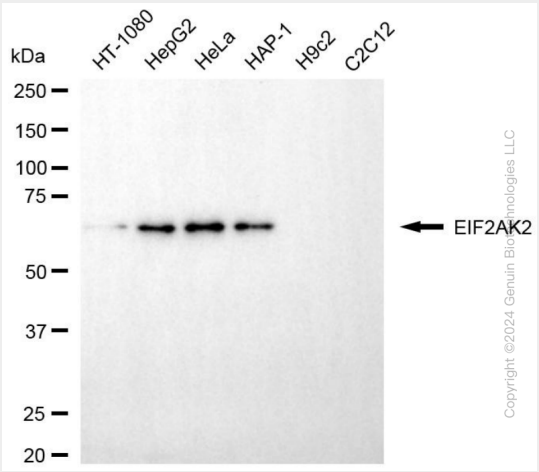
Tissue Location
Highly expressed in thymus, spleen and bone marrow compared to non-hematopoietic tissues such as small intestine, liver, or kidney tissues. Colocalizes with GSK3B and TAU in the Alzheimer disease (AD) brain. Elevated levels seen in breast and colon carcinomas, and which correlates with tumor progression and invasiveness or risk of progression.

KD-Validated Anti-EIF2AK2 Mouse Monoclonal 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

KD-Validated Anti-EIF2AK2 Mouse Monoclonal Antibody - Images



Western blotting analysis using anti-EIF2AK2 antibody (Cat#AGI1993). Total cell lysates (30 µg) from various cell lines were loaded and separated by SDS-PAGE. The blot was incubated with anti-EIF2AK2 antibody (Cat#AGI1993, 1:5,000) and HRP-conjugated goat anti-mouse secondary antibody respectively.

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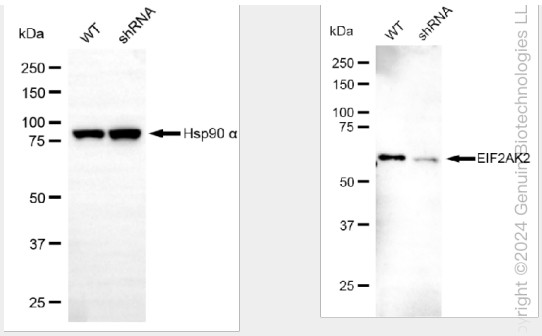
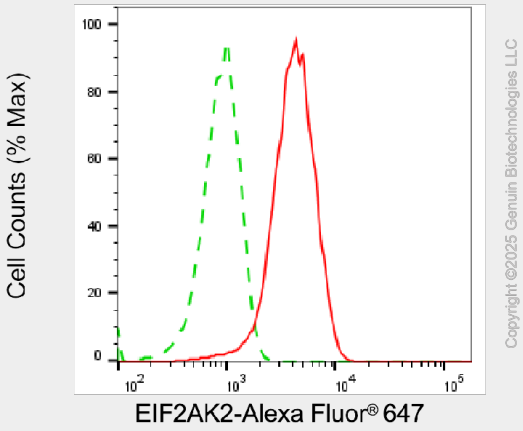
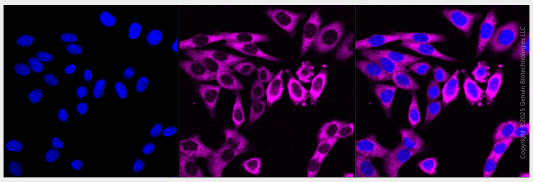


Western blotting analysis using anti-EIF2AK2 antibody (Cat#AGI1993). EIF2AK2 expression in wild-type (WT) and EIF2AK2 shRNA knockdown (KD) HeLa cells with 20 µg of total cell lysates. Hsp90 α serves as a loading control. The blot was incubated with anti-EIF2AK2 antibody (Cat#AGI1993, 1:5,000) and HRP-conjugated goat anti-mouse secondary antibody respectively.



Flow cytometric analysis of EIF2AK2 expression in HepG2 cells using anti-EIF2AK2 antibody (Cat#AGI1993, 1:2,000). Green, isotype control; red, EIF2AK2.



Immunocytochemical staining of HepG2 cells with anti-EIF2AK2 antibody(Cat#AGI1993, 1:1,000). Nuclei were stained blue with DAPI; EIF2AK2 was stained magenta with Alexa Fluor® 647. Images were taken using Leica stellaris 5. Protein abundance based on laser Intensity and smart gain: Medium. Scale bar, 20 µm.