

**EIF2AK2 Antibody**  
**Purified Mouse Monoclonal Antibody (Mab)**  
**Catalog # AM8450b****Specification**

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**EIF2AK2 Antibody - Product Information**

Application	WB, IF, E
Primary Accession	<a href="#">P19525</a>
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	IgG1, k
Calculated MW	62094
Antigen Region	1-250

**EIF2AK2 Antibody - Additional Information****Gene ID** 5610**Other Names**

Interferon-induced, double-stranded RNA-activated protein kinase, 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, p68 kinase, EIF2AK2, PKR, PRKR

**Target/Specificity**

This EIF2AK2 antibody is generated from mice immunized with a recombinant protein.

**Dilution**

WB~~1:1000-1:2000

IF~~1:25

E~~Use at an assay dependent concentration.

**Format**

Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, followed by dialysis against PBS.

**Storage**

Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

**Precautions**

EIF2AK2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

**EIF2AK2 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:[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.

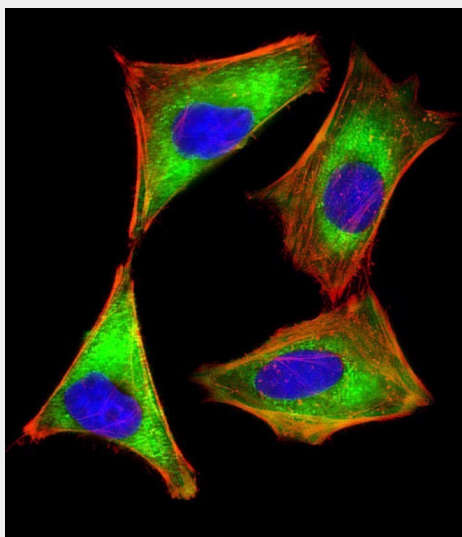
## EIF2AK2 Antibody - Protocols

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

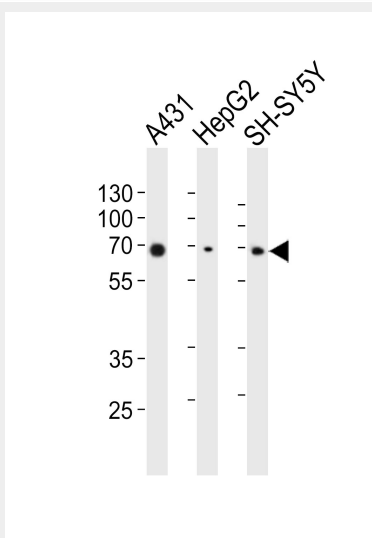
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)

- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

## EIF2AK2 Antibody - Images



Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (human cervical epithelial adenocarcinoma cell line) cells labeling EIF2AK2 with AM8450b at 1/25 dilution, followed by Dylight® 488-conjugated goat anti-mouse IgG (NA166821) secondary antibody at 1/200 dilution (green). Immunofluorescence image showing cytoplasm staining on HeLa cell line. Cytoplasmic actin is detected with Dylight® 554 Phalloidin (PD18466410) at 1/100 dilution (red). The nuclear counter stain is DAPI (blue).



Western blot analysis of lysates from A431, HepG2, SH-SY5Y cell line (from left to right), using EIF2AK2 Antibody (Cat. #AM8450b). AM8450b was diluted at 1:1000 at each lane. A goat anti-mouse IgG H&L (HRP) at 1:3000 dilution was used as the secondary antibody. Lysates at 20 µg per lane.

## EIF2AK2 Antibody - Background

IFN-induced dsRNA-dependent serine/threonine-protein kinase which plays a key role in the innate immune response to viral infection and is also involved in the regulation of signal transduction, apoptosis, cell proliferation and differentiation. 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). Inhibits viral replication via phosphorylation of the alpha subunit of eukaryotic initiation factor 2 (EIF2S1), this phosphorylation impairs the recycling of EIF2S1 between successive rounds of initiation leading to inhibition of translation which eventually results in shutdown of cellular and viral protein synthesis. Also phosphorylates other substrates including p53/TP53, PPP2R5A, DHX9, ILF3, IRS1 and the HHV-1 viral protein US11. 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 proteosomal degradation. 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 proinflammatory cytokines and IFNs. 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. Can act as both a positive and negative regulator of the insulin signaling pathway (ISP). 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). Can regulate NLRP3 inflammasome assembly and the activation of NLRP3, NLRP1, AIM2 and NLRC4 inflammasomes. Can trigger apoptosis via FADD-mediated activation of CASP8. Plays a role in the regulation of the cytoskeleton by binding to gelsolin (GSN), sequestering the protein in an inactive conformation away from actin.

#### **EIF2AK2 Antibody - References**

- Meurs E.,et al.Cell 62:379-390(1990).  
Meurs E.,et al.Submitted (AUG-1990) to the EMBL/GenBank/DDBJ databases.  
Thomis D.C.,et al.Virology 188:33-46(1992).  
Kuhlen K.L.,et al.Gene 178:191-193(1996).  
Kuhlen K.L.,et al.Genomics 36:197-201(1996).