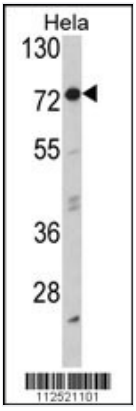
EIF2AK1 Antibody – Rabbit Polyclonal

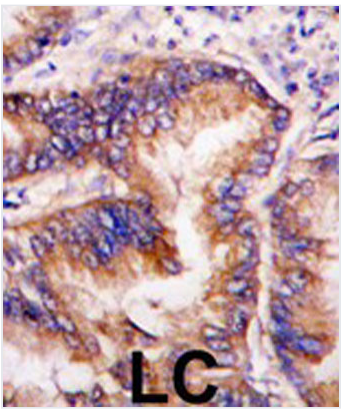
PRODUCT OVERVIEW

Product Name	HRI (EIF2AK1), Polyclonal Antibody
Full Product Name	HRI (EIF2AK1) Antibody (Center)
Product Gene Name	anti-EIF2AK1 antibody
Product Synonym Names	HRI, KIAA1369
Clonality	Polyclonal
Isotype	Rabbit Ig
Host	Rabbit
Species Reactivity	Human
Form/Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Purity/Purification	Purified Rabbit Polyclonal Antibody (Pab)
Specificity	This HRI (EIF2AK1) antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 267-296 amino acids from the Central region of human HRI (EIF2AK1).
Preparation and Storage	Maintain refrigerated at 2-8 degree C for up to 2 weeks. For long term storage store at -20 degree C in small aliquots to prevent freeze-thaw cycles.
Antibody/Peptide Pairs	HRI (EIF2AK1) peptide (MBS9227548) is used for blocking the activity of HRI (EIF2AK1) antibody (MBS9206335)
Molecular Weight	71106
Immunogen Sequence Positions	267-296
3D Structure	ModBase 3D Structure for Q9BQI3
Function	Metabolic-stress sensing protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) in response to various stress conditions (PubMed:32132706, PubMed:32132707). Key activator of the integrated stress response (ISR) required for adaptation to various stress, such as heme deficiency, oxidative stress, osmotic shock, mitochondrial dysfunction and heat shock (PubMed:32132706, PubMed:32132707). EIF2S1/eIF-2-alpha phosphorylation in response to stress converts EIF2S1/eIF-2-alpha in a global protein synthesis inhibitor, leading to a global attenuation of cap-dependent translation, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activator ATF4, and hence allowing ATF4-mediated reprogramming (PubMed:32132706, PubMed:32132707). Acts as a key sensor of heme-deficiency: in normal conditions, binds hemin via a cysteine thiolate and histidine nitrogenous coordination, leading to inhibit the protein kinase activity (By similarity). This binding occurs with moderate affinity, allowing it to sense the heme concentration within the cell: heme depletion relieves inhibition and stimulates kinase activity, activating the ISR (By similarity). Thanks to this unique heme-sensing capacity, plays a crucial role to shut off protein synthesis during acute heme-deficient conditions (By similarity). In red blood cells (RBCs), controls hemoglobin synthesis ensuring a coordinated regulation of the synthesis of its heme and globin moieties (By similarity). It thereby plays an essential protective role for RBC survival in anemias of iron deficiency (By similarity). Similarly, in hepatocytes, involved in heme-mediated translational control of CYP2B and CYP3A and possibly other hepatic P450 cytochromes (By similarity). May also regulate endoplasmic reticulum (ER) stress during acute heme- deficient conditions (By similarity). Also activates the ISR in response to mitochondrial dysfunction: HRI/EIF2AK1 protein kinase activity is activated upon binding to the processed form of DELE1 (S- DELE1), thereby promoting the ATF4-mediated reprogramming (PubMed:32132706, PubMed:32132707).
Cellular Location	Cytoplasm.
Tissue Location	Expressed predominantly in erythroid cells. At much lower levels, expressed in hepatocytes (at protein level)

Product Categories/Family for anti-EIF2AK1 antibody	Signal Transduction
Applications Tested/Suitable for anti-EIF2AK1 antibody	Western Blot (WB), ELISA (EIA), Immunohistochemistry - Paraffin (IHC-P)
Application Notes for anti-EIF2AK1 antibody	WB~~1:1000 IHC-P~~1:10~50
Related Product Information for anti-EIF2AK1 antibody	The HRI gene is localized to 7p22 where its 3' end slightly overlaps the 3' end of the gene JTV1. The two genes are transcribed from opposite strands. Studies in rat and rabbit suggest that the HRI gene product phosphorylates the alpha subunit of eukaryotic initiation factor 2. Its kinase activity is induced by low levels of heme and inhibited by the presence of heme.
Product References and Citations for anti-EIF2AK1 antibody	Hwang S.-Y., Mol. Cells 10:584-591(2000). Omasa T., DNA Seq. 13:133-137(2002).
Other Notes	Small volumes of anti-EIF2AK1 antibody vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for EIF2AK1 purchase	MBS9206335 is an antibody targeting EIF2AK1. Also known as HRI (EIF2AK1) Antibody (Center). Reactive in Human. Host: Rabbit.



Western Blot (WB) of anti-EIF2AK1 antibody
Western blot analysis of EIF2AK1 Antibody (Center) in Hela cell line lysates (35ug/lane). EIF2AK1 (arrow) was detected using the purified Pab.



Immunohistochemistry (IHC) of anti-EIF2AK1 antibody
Formalin-fixed and paraffin-embedded human lung carcinoma tissue reacted with EIF2AK1 antibody (Center), which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for EIF2AK1. It may not necessarily be applicable to this product.

NCBI GI #	197245437
NCBI GeneID	27102
NCBI Accession #	NP_001127807.1
NCBI Related Accession #	NP_055228.2
UniProt Primary Accession #	Q9BQI3
UniProt Secondary Accession #	Q549K6; Q8NBW3; Q9HC02; Q9NYE0; Q9P0V6; Q9P1J5; Q9P2H8; Q9UHG4; A8K2R2
UniProt Related Accession #	Q9BQI3
GenBank Nucleotide #	NM_001134335.1
NCBI Official Full Name	eukaryotic translation initiation factor 2-alpha kinase 1 isoform b
NCBI Official Synonym Full Names	eukaryotic translation initiation factor 2-alpha kinase 1

NCBI Official Symbol	EIF2AK1
NCBI Official Synonym Symbols	HCR; HRI
UniProt Protein Name	Eukaryotic translation initiation factor 2-alpha kinase 1
UniProt Synonym Protein Names	Heme-controlled repressor; HCR; Heme-regulated eukaryotic initiation factor eIF-2-alpha kinase; Heme-regulated inhibitor; Hemin-sensitive initiation factor 2-alpha kinase
Protein Family	Eukaryotic translation initiation factor 2-alpha kinase
UniProt Gene Name	EIF2AK1
UniProt Synonym Gene Names	HRI; KIAA1369; HCR
UniProt Entry Name	E2AK1_HUMAN
NCBI Protein Information	eukaryotic translation initiation factor 2-alpha kinase 1
NCBI Summary for EIF2AK1	The protein encoded by this gene acts at the level of translation initiation to downregulate protein synthesis in response to stress. The encoded protein is a kinase that can be inactivated by hemin. Two transcript variants encoding different isoforms have been found for this gene. [provided by RefSeq, Aug 2008]
UniProt Comments for EIF2AK1	HRI: a protein kinase of the PEK family. Phosphorylates the alpha subunit of eukaryotic initiation factor 2 in response to various stress conditions, inhibiting protein synthesis at the level of initiation. Its kinase activity is induced by low levels of heme and inhibited by the presence of heme. Binding of nitric oxide (NO) to the heme iron in the N-terminal heme-binding domain activates the kinase activity, while binding of carbon monoxide (CO) suppresses kinase activity. Requires association with a multiprotein complex containing Hsp90, CDC37 and PPP5C for maturation and activation by autophosporylation. Two alternatively spliced isoforms have been described. Protein type: Kinase, protein; Protein kinase, Other; Translation; Protein kinase, Ser/Thr (non-receptor); EC 2.7.11.1; Other group; PEK family Chromosomal Location of Human Ortholog: 7p22 Cellular Component: cytoplasm Molecular Function: protein homodimerization activity; heme binding; ATP binding; eukaryotic translation initiation factor 2alpha kinase activity Biological Process: response to external stimulus; negative regulation of cell proliferation; negative regulation of translational initiation by iron; protoporphyrinogen IX metabolic process; protein amino acid autophosphorylation; response to stress; negative regulation of hemoglobin biosynthetic process
Research Articles on EIF2AK1	**1.** Infection-associated functions of HRI (an eIF2alpha kinase) are independent of its activity as a regulator of protein synthesis.
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