

HRI Antibody (N-term) Blocking Peptide
Synthetic peptide
Catalog # BP8065a**Specification**

HRI Antibody (N-term) Blocking Peptide - Product InformationPrimary Accession [O9BQI3](#)**HRI Antibody (N-term) Blocking Peptide - Additional Information****Gene ID** 27102**Other Names**

Eukaryotic translation initiation factor 2-alpha kinase 1, Heme-controlled repressor, HCR, Heme-regulated eukaryotic initiation factor eIF-2-alpha kinase, Heme-regulated inhibitor, Hemin-sensitive initiation factor 2-alpha kinase, EIF2AK1, HRI, KIAA1369

Target/Specificity

The synthetic peptide sequence used to generate the antibody [AP8065a](/product/products/AP8065a) was selected from the N-term region of human HRI. A 10 to 100 fold molar excess to antibody is recommended. Precise conditions should be optimized for a particular assay.

Format

Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions

This product is for research use only. Not for use in diagnostic or therapeutic procedures.

HRI Antibody (N-term) Blocking Peptide - Protein Information**Name** EIF2AK1 ([HGNC:24921](#))**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](http://www.uniprot.org/citations/32132706), PubMed: [32132707](http://www.uniprot.org/citations/32132707), PubMed: [37327776](http://www.uniprot.org/citations/37327776)). 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](http://www.uniprot.org/citations/32132706), PubMed: [32132707](http://www.uniprot.org/citations/32132707), PubMed: [37327776](http://www.uniprot.org/citations/37327776)).

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, PubMed:37327776). Acts as a key sensor of heme-deficiency: in normal conditions, binds heme 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). Iron deficiency also triggers activation by full-length DELE1 (PubMed:37327776). 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).

HRI Antibody (N-term) Blocking Peptide - Protocols

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

- [Blocking Peptides](#)

HRI Antibody (N-term) Blocking Peptide - Images

HRI Antibody (N-term) Blocking Peptide - Background

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.

HRI Antibody (N-term) Blocking Peptide - References

Rafie-Kolpin, M., et al., Biochemistry 42(21):6536-6544 (2003). Chen, J.J., et al., Trends Biochem. Sci. 20(3):105-108 (1995).