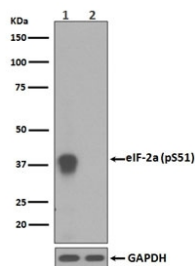


Phospho-EIF2S1 (pS51) Antibody / Translation Control and Stress Response Marker [clone IO-5] (RQ5120)

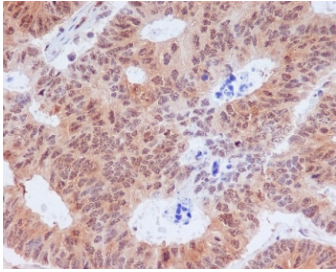
Catalog No.	Formulation	Size
RQ5120	Antibody in PBS with 0.02% sodium azide, 50% glycerol and 0.4-0.5mg/ml BSA	100 ul

[Bulk quote request](#)

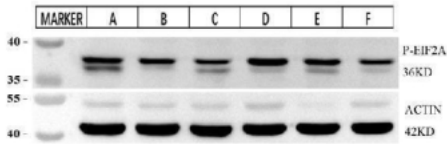
Availability	1-2 weeks
Species Reactivity	Human, Mouse, Rat
Format	Purified
Host	Rabbit
Clonality	Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	IO-5
Purity	Affinity purified
UniProt	P05198
Applications	Western Blot : 1:500-1:2000 Immunohistochemistry (FFPE) : 1:50-1:200
Limitations	This Phospho-EIF2S1 (pS51) Antibody / Translation Control and Stress Response Marker is available for research use only.



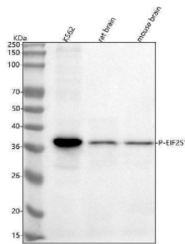
Phospho-EIF2S1 (pS51) Antibody HeLa WB. Western blot analysis of human HeLa cell lysates treated with Calyculin A (lane 1) or untreated (lane 2) using phospho-EIF2S1 antibody detecting EIF2S1 phosphorylated at Ser51, clone IO-5. A band is detected at approximately 36 kDa, consistent with the predicted molecular weight of EIF2S1. Signal intensity is increased in the Calyculin A-treated sample, consistent with enhanced phosphorylation and activation of stress-associated translation control pathways. GAPDH is shown as a loading control.



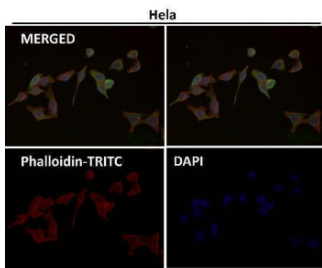
IHC staining of FFPE human colon cancer with Phospho-EIF2S1 (pS51) Antibody. HIER: boil tissue sections in pH6, 10mM citrate buffer, for 10-20 min and allow to cool before testing.



EIF2S1 Antibody Tissue WB. Western blot analysis of porcine intestinal tissue lysates using EIF2S1 antibody detecting eIF2 alpha. Lanes represent different segments of large and small intestine. A band is detected at approximately 36 kDa, consistent with the predicted molecular weight of EIF2S1. Actin is shown as a loading control.



EIF2S1 Antibody Multi-Species WB. Western blot analysis of human and rodent samples using EIF2S1 antibody detecting eIF2 alpha. Lane 1: human K562 whole cell lysate, Lane 2: rat brain tissue lysate, Lane 3: mouse brain tissue lysate. A band is detected at approximately 36 kDa in all samples, consistent with the predicted molecular weight of EIF2S1. Signal intensity is strongest in K562 cells, with lower but detectable expression in brain tissues, consistent with ubiquitous expression of this translation initiation factor across species.



Phospho-EIF2S1 Antibody HeLa IF. Immunofluorescence analysis of human HeLa cells stained with phospho-EIF2S1 antibody detecting EIF2S1 phosphorylated at Ser51, clone IO-5. Predominant cytoplasmic staining is observed with diffuse distribution, consistent with phosphorylation of eIF2 alpha within ribosome-associated translation complexes during stress signaling. Phalloidin-TRITC (red) highlights the actin cytoskeleton, and DAPI (blue) marks nuclei.

Description

Eukaryotic initiation factor 2 subunit 1 (EIF2S1), commonly referred to as eIF2 alpha, is a central regulator of translation initiation and cellular stress responses. Phospho-EIF2S1 (pS51) Antibody, clone IO-5, is designed to detect EIF2S1 phosphorylated at serine 51, a critical regulatory site that controls global protein synthesis and mediates cellular adaptation to stress.

EIF2S1 functions as part of the heterotrimeric eIF2 complex, which delivers initiator methionyl-tRNA to the ribosome during early stages of translation. Under basal conditions, this process supports continuous protein synthesis required for normal cellular function. Phosphorylation of EIF2S1 at Ser51 disrupts this process by inhibiting formation of the active translation initiation complex, leading to a reduction in global protein synthesis.

This phosphorylation event is a key feature of the integrated stress response and is mediated by multiple stress-activated kinases, including PERK, PKR, GCN2, and HRI. These kinases are activated by distinct cellular stressors such as endoplasmic reticulum stress, viral infection, amino acid deprivation, and oxidative stress. Through this regulatory network, EIF2S1 serves as a convergence point for diverse signaling pathways, allowing cells to rapidly modulate protein synthesis in response to environmental conditions.

Unlike total EIF2S1 antibodies, which measure overall protein levels, phospho-specific detection at Ser51 provides insight into dynamic changes in signaling activity and translational control. Basal phosphorylation of EIF2S1 may be present in unstressed cells, while increased phosphorylation is typically observed under stress conditions, reflecting activation of

upstream kinases and engagement of adaptive response pathways. This makes phospho-EIF2S1 a sensitive marker for monitoring cellular stress and translational repression.

Subcellular localization of phosphorylated EIF2S1 is predominantly cytoplasmic, where it associates with ribosomes and translation initiation complexes. During stress, it contributes to the formation of stress granules and other ribonucleoprotein assemblies involved in mRNA regulation. These structures represent a shift from active protein synthesis to selective mRNA handling and are characteristic of cells undergoing stress adaptation.

Dysregulation of EIF2S1 phosphorylation has been implicated in cancer, neurodegenerative disorders, and metabolic disease. Persistent activation of this pathway can support tumor cell survival under adverse conditions, while impaired regulation contributes to disruption of protein homeostasis. Monitoring phosphorylation at Ser51 therefore provides valuable insight into disease-associated signaling and cellular stress responses.

Phospho-EIF2S1 (pS51) Antibody, clone IO-5, enables selective detection of the phosphorylated form of EIF2S1 across a range of experimental conditions. Its sensitivity to both basal and stress-induced phosphorylation makes it a useful tool for investigating translational regulation, stress signaling pathways, and cellular adaptation mechanisms.

For microarray-validated specificity and expanded application data, see our [EIF2S1 Antibody \(PCRP-EIF2S1-1E2\)](#) page.

Application Notes

Optimal dilution of the Phospho-EIF2S1 (pS51) Antibody / Translation Control and Stress Response Marker should be determined by the researcher.

Immunogen

A synthetic peptide specific to human EIF2S1 (surrounding phosphorylated S51) was used as the immunogen for the Phospho-EIF2S1 (pS51) Antibody.

Storage

Store the Phospho-EIF2S1 (pS51) Antibody at -20oC.

Alternate Names

Phospho-EIF2S1 antibody, EIF2S1 pS51 antibody, eIF2 alpha Ser51 antibody, eIF2 alpha phospho antibody, EIF2S1 phospho antibody, Phosphorylated EIF2S1 antibody, clone IO-5 antibody