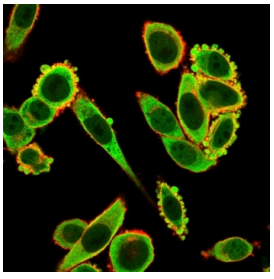
EIF2S1 Antibody / eIF2 Alpha Translation Control and Stress Signaling Marker [clone PCRP-EIF2S1-1E2] (V9190)

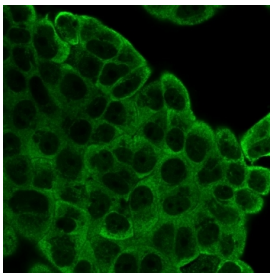
Catalog No.	Formulation	Size
V9190-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced), 0.05% sodium azide	100 ug
V9190-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced), 0.05% sodium azide	20 ug
V9190SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

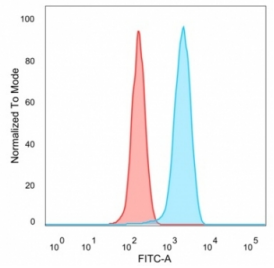
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1
Clone Name	PCRP-EIF2S1-1E2
Purity	Protein A/G affinity
UniProt	P05198
Localization	Cytoplasm
Applications	Flow Cytometry : 1-2ug/million cells Immunofluorescence : 1-2ug/ml Western Blot : 1-2ug/ml
Limitations	This EIF2S1 Antibody / eIF2 Alpha Translation Control and Stress Signaling Marker is available for research use only.



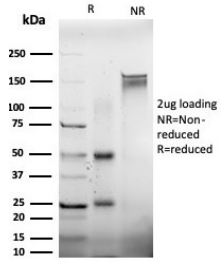
EIF2S1 Antibody HeLa IF. Immunofluorescence analysis of PFA-fixed human HeLa cells stained with EIF2S1 antibody detecting eIF2 alpha (green), clone PCRP-EIF2S1-1E2. Diffuse cytoplasmic staining with perinuclear enrichment is observed, consistent with EIF2S1 localization in ribosome-associated translation initiation complexes and involvement in cellular protein synthesis. Phalloidin counterstain (red) highlights the actin cytoskeleton.



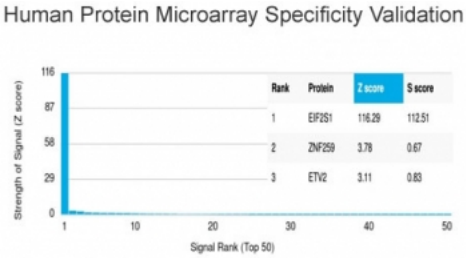
EIF2S1 Antibody MCF-7 IF. Immunofluorescence analysis of PFA-fixed human MCF-7 cells stained with EIF2S1 antibody detecting eIF2 alpha (green), clone PCRP-EIF2S1-1E2. Predominant cytoplasmic staining with fine granular distribution is observed, consistent with EIF2S1 localization in translation machinery and regulation of protein synthesis. The staining outlines epithelial cell morphology with relatively uniform signal across the cell population.



EIF2S1 Antibody HeLa FACS. Flow cytometry analysis of PFA-fixed human HeLa cells stained with EIF2S1 antibody detecting eIF2 alpha, clone PCRP-EIF2S1-1E2. The antibody signal (blue) shows a clear rightward shift compared to the isotype control (red), indicating positive intracellular detection of EIF2S1 following fixation and permeabilization. This pattern is consistent with EIF2S1 as a cytoplasmic translation initiation factor involved in regulation of protein synthesis and stress response signaling.



SDS-PAGE analysis of purified, BSA-free EIF2S1 antibody (PCRP-EIF2S1-1E2) as confirmation of integrity and purity.



EIF2S1 Antibody HuProt Microarray. Analysis of a HuProt(TM) microarray containing more than 19,000 full-length human proteins using EIF2S1 antibody detecting eIF2 alpha, clone PCRP-EIF2S1-1E2. The antibody shows a strong and highly specific signal for EIF2S1 with a markedly elevated Z-score and clear separation from lower-ranked proteins, resulting in a high S-score consistent with target specificity. Z-score represents signal intensity in standard deviations above the array mean, while S-score reflects the difference between the top-ranked target and subsequent signals, indicating relative binding specificity of the monoclonal antibody.

Description

Eukaryotic initiation factor 2 subunit 1 (EIF2S1), commonly known as eIF2 alpha, is a central regulator of translation initiation and cellular stress responses. EIF2S1 Antibody, clone PCRP-EIF2S1-1E2, is designed to detect this critical component of the heterotrimeric eIF2 complex, which delivers initiator methionyl-tRNA to the ribosome during the early stages of protein synthesis. EIF2S1 plays a key role in controlling global protein translation rates and serves as a major regulatory node linking environmental stress signals to translational control.

Under normal conditions, EIF2S1 forms a ternary complex with GTP and initiator tRNA, enabling efficient translation initiation at AUG start codons. However, in response to stress signals such as endoplasmic reticulum stress, oxidative stress, nutrient deprivation, or viral infection, EIF2S1 is phosphorylated at regulatory residues including Ser51. This phosphorylation inhibits the activity of the eIF2 complex, leading to a reduction in global protein synthesis while allowing selective translation of stress-response genes. This adaptive mechanism helps cells conserve resources and prioritize survival pathways.

EIF2S1 integrates signals from multiple upstream kinases, including PERK, PKR, GCN2, and HRI, each activated by distinct stress conditions. Through this network, EIF2S1 functions as a convergence point for diverse cellular stress pathways, coordinating translational repression and selective gene expression. Its regulation is essential for maintaining

cellular homeostasis and responding to environmental challenges.

Subcellularly, EIF2S1 is predominantly localized in the cytoplasm, where it associates with ribosomes and translation initiation complexes. Immunofluorescence analysis typically reveals diffuse cytoplasmic staining with potential enrichment in perinuclear regions and ribonucleoprotein assemblies. Under stress conditions, EIF2S1 may be associated with stress granules and other dynamic structures involved in mRNA storage and translational control, reflecting shifts in protein synthesis activity.

In contrast to EIF2A, which supports alternative translation initiation pathways independent of the canonical eIF2 complex, EIF2S1 is a core component of the primary translation machinery and directly regulates global protein synthesis. Detection of EIF2S1 provides insight into baseline translational capacity, while changes in its phosphorylation state reflect activation of stress signaling pathways and translational repression mechanisms.

Dysregulation of EIF2S1 signaling has been implicated in cancer, neurodegenerative disorders, and metabolic diseases. Persistent activation of eIF2 alpha phosphorylation pathways can alter cell survival, apoptosis, and adaptive responses to stress. In tumor biology, modulation of EIF2S1 activity may support cancer cell survival under hypoxic or nutrient-limited conditions. These features support the use of an EIF2S1 Antibody in studies of translation control, stress signaling, and disease-associated changes in protein synthesis.

Microarray-based specificity validation demonstrates strong and selective binding of clone PCRP-EIF2S1-1E2 to EIF2S1, with a high Z-score and clear separation from non-target proteins. This supports reliable detection of eIF2 alpha in complex protein environments and reinforces its utility in applications such as immunofluorescence and flow cytometry for analysis of translational regulation and stress response pathways.

This antibody is part of a broader antibody panel offered by NSJ Bioreagents.

Application Notes

Optimal dilution of the EIF2S1 Antibody / eIF2 Alpha Translation Control and Stress Signaling Marker should be determined by the researcher.

Immunogen

Recombinant full-length human EIF2S1 protein was used as the immunogen for the EIF2S1 antibody.

Storage

Aliquot the EIF2S1 antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

Alternate Names

EIF2S1 antibody, eIF2 alpha antibody, Eukaryotic initiation factor 2 subunit 1 antibody, eIF2Î± antibody, EIF2A antibody, EIF2 alpha protein antibody, clone PCRP-EIF2S1-1E2 antibody