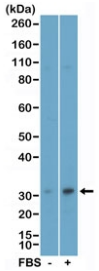
Phospho-EIF4E (pSer209) Antibody / Growth Signaling and Translation Activation Marker [clone RM452] (R20466)

Catalog No.	Formulation	Size
R20466-0.1ML	Antibody in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	100 ul

Recombinant RABBIT MONOCLONAL

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	RM452
Purity	Protein A purified from animal origin-free supernatant
UniProt	P06730
Applications	Western Blot : 1:500-1:1000
Limitations	This Phospho-EIF4E (pSer209) Antibody / Growth Signaling and Translation Activation Marker is available for research use only.



Phospho-EIF4E (pSer209) Antibody MCF-7 WB. Western blot analysis of human MCF-7 cell lysates untreated (-) or treated (+) with fetal bovine serum (FBS) using phospho-EIF4E antibody detecting EIF4E phosphorylated at Ser209, clone RM452. A band is detected at approximately 25-30 kDa, consistent with the predicted molecular weight of EIF4E. Signal intensity is increased in the FBS-treated sample, consistent with growth factor-induced phosphorylation and activation of translation signaling pathways.

Description

Eukaryotic translation initiation factor 4E (EIF4E), also known as eIF4E, is a key mRNA cap-binding protein that regulates translation initiation and controls protein synthesis at the level of ribosome recruitment. Phospho-EIF4E (pSer209) Antibody, clone RM452, is designed to detect EIF4E phosphorylated at serine 209, a critical modification associated with activation of cap-dependent translation and growth factor signaling pathways. This antibody is part of our full phospho antibody collection which can be explored for additional phosphorylation-specific targets and pathway markers.

EIF4E binds to the 7-methylguanosine cap structure located at the 5' end of mRNAs, facilitating recruitment of the eIF4F complex and assembly of the translation initiation machinery. This step is rate-limiting for protein synthesis and is tightly regulated to control cellular growth and proliferation. Phosphorylation of EIF4E at Ser209 enhances its activity and is linked to increased translation of specific mRNAs, particularly those involved in cell cycle progression, survival, and oncogenic signaling.

Phosphorylation at Ser209 is mediated primarily by MAP kinase-interacting kinases MNK1 and MNK2, which are activated downstream of ERK and p38 MAPK signaling pathways. Growth factor stimulation, such as exposure to fetal bovine serum, leads to activation of these pathways and results in increased EIF4E phosphorylation. This modification is therefore widely used as a readout of growth signaling and translational activation in response to extracellular stimuli.

Unlike total EIF4E detection, which reflects overall protein abundance, phospho-specific detection at Ser209 provides direct insight into signaling pathway activation and functional engagement of translation initiation. Increased levels of phospho-EIF4E are associated with enhanced cap-dependent translation and selective synthesis of proteins that drive proliferation and survival. This makes phospho-EIF4E an important marker for studying cellular responses to growth factors, mitogenic stimulation, and oncogenic signaling pathways.

Subcellularly, phosphorylated EIF4E is predominantly localized in the cytoplasm, where it associates with mRNA and translation initiation complexes. Immunofluorescence studies often reveal diffuse cytoplasmic staining with enrichment in regions of active protein synthesis. Its distribution reflects its role in coordinating translational activation and mRNA utilization during periods of increased cellular activity.

Dysregulation of EIF4E phosphorylation has been strongly implicated in cancer, where elevated phospho-EIF4E levels contribute to enhanced translation of oncogenic transcripts and tumor progression. Increased Ser209 phosphorylation has been associated with aggressive tumor behavior, resistance to therapy, and altered cellular signaling networks. As a result, phospho-EIF4E is frequently used as a biomarker for activated translation and growth signaling in cancer research.

Phospho-EIF4E (pSer209) Antibody, clone RM452, enables selective detection of the activated form of EIF4E, supporting analysis of translation initiation, growth factor signaling, and cellular proliferation pathways. Its ability to distinguish phosphorylated EIF4E from total protein levels makes it a valuable tool for studying dynamic regulation of protein synthesis and signaling-driven translational control.

Additional EIF4E antibody formats and validation data are available on our main EIF4E Antibody page.

Application Notes

The stated application concentrations are suggested starting points. Titration of the Phospho-EIF4E (pSer209) Antibody / Growth Signaling and Translation Activation Marker may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

The amino acid sequence surrounding pSer209 of human EIF4E protein was used as the immunogen for the Phospho-EIF4E (pSer209) Antibody.

Storage

Store the Phospho-EIF4E (pSer209) Antibody at -20oC.