PRODUCT INFORMATION

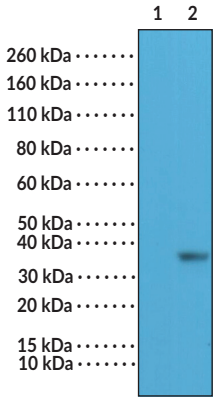
eIF2α (Phospho-Ser^{51}) Rabbit Monoclonal Antibody (Clone RM298)

Item No. 32244

Overview and Properties

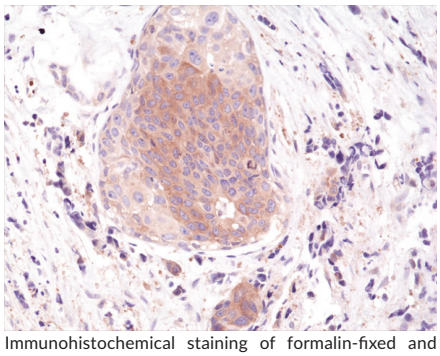
Contents:	This vial contains 100 µl of protein A-affinity purified monoclonal antibody.
Synonyms:	Eukaryotic Translation Initiation Factor 2 Subunit 1
Immunogen:	Phosphopeptide corresponding to human eIF2α (phospho-Ser^{51})
Cross Reactivity:	(+) eIF2α; (-) eIF2α without phosphorylation at serine 51
Species Reactivity:	(+) Human
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥1 year
Storage Buffer:	PBS with 50% glycerol, 1% BSA, and 0.09% sodium azide
Clone:	RM298
Host:	Rabbit
Isotype:	IgG
Applications:	Immunohistochemistry (IHC) and Western blot (WB); the recommended starting dilution is 1:100-1:200 for IHC and WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images

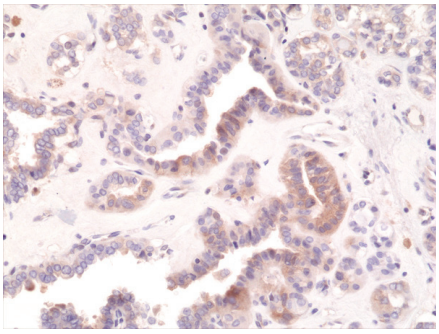


Lane 1: HeLa cell lysates untreated
Lane 2: HeLa cell lysates treated

WB of HeLa cell lysates untreated or treated with calyculin A (Item No. 19246) using eIF2α (Phospho-Ser^{51}) Rabbit Monoclonal Antibody (Clone RM298) at a dilution of 1:200.



Immunohistochemical staining of formalin-fixed and paraffin-embedded human breast cancer tissue using eIF2α (Phospho-Ser^{51}) Rabbit Monoclonal Antibody (Clone RM298) at a 1:200 dilution.



Immunohistochemical staining of formalin-fixed and paraffin-embedded human thyroid cancer tissue using eIF2α (Phospho-Ser^{51}) Rabbit Monoclonal Antibody (Clone RM298) at a 1:200 dilution.

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Description

eIF2α is the α subunit of eukaryotic inhibition factor 2, which also includes eIF2β and eIF2γ subunits and is involved in the initiation of translation.[1] eIF2α is composed of a globular N-terminal domain, which contains an S1 domain and an α-helical domain, and a globular C-terminal domain.[2] eIF2α can be phosphorylated at serine 51 by the eIF2α kinases HRI/EIF2AK1, PKR/EIF2AK2, PERK/EIF2AK3, and GCN2/EIF2AK4 following various cell and ER stressors, viral invasion, or nutrient deprivation, among other factors.[3-5] Phosphorylation of eIF2α at serine 51 promotes the interaction between eIF2α and the guanine nucleotide exchange factor eIF2B, which inhibits eIF2B activity and prevents the initiation of translation, reducing global protein synthesis in the cell.[1] The transcription of specific factors involved in the integrated stress response (ISR), such as ATF4, is upregulated by eIF2α phosphorylation.[3] Dephosphorylation of eIF2α by the protein phosphatase 1 (PP1) complex, which includes GADD34 and CReP, terminates the ISR and returns protein synthesis back to basal levels. Cayman's eIF2α (Phospho-Ser^{51}) Rabbit Monoclonal Antibody (Clone RM298) can be used for immunohistochemistry (IHC) and Western blot (WB) applications.

References

1. Sudhakar, A., Ramachandran, A., Ghosh, S., *et al.* Phosphorylation of serine 51 in initiation factor 2α (eIF2α) promotes complex formation between eIF2α(P) and eIF2B and causes inhibition in the guanine nucleotide exchange activity of eIF2B. *Biochemistry* **39(42)**, 12929-12938 (2000).
2. Ito, T., Marintchev, A., and Wagner, G. Solution structure of human initiation factor eIF2α reveals homology to the elongation factor eEF1B. *Structure* **12(9)**, 1693-1704 (2004).
3. Pakos-Zebrucka, K., Koryga, I., Mnich, K., *et al.* The integrated stress response. *EMBO Rep.* **17(10)**, 1374-1395 (2016).
4. Humeau, J., Leduc, M., Cerrato, G., *et al.* Phosphorylation of eukaryotic initiation factor-2α (eIF2α) in autophagy. *Cell Death Dis.* **11(6)**, 433 (2020).
5. Muaddi, H., Majumder, M., Peidis, P., *et al.* Phosphorylation of eIF2α at serine 51 is an important determinant of cell survival and adaptation to glucose deficiency. *Mol. Biol. Cell* **21(18)**, 3220-3231 (2010).

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