

#63371 Store at +4°C

HSF1 (D3L8I) Rabbit mAb (PE Conjugate)



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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications: FC-FP	Reactivity: H M R Mk B Dg Pg	Sensitivity: Endogenous	Source/Isotype: Rabbit IgG	UniProt ID: #Q00613	Entrez-Gene Id: 3297
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Product Usage Information

Application

Flow Cytometry (Fixed/Permeabilized)

Dilution

1:50

Storage

Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. Do not aliquot the antibody. Protect from light. Do not freeze.

Specificity / Sensitivity

HSF1 (D3L8I) Rabbit mAb (PE Conjugate) recognizes endogenous levels of total HSF1 protein. This antibody is not predicted to cross-react with HSF2.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human HSF1 protein.

Product Description

This Cell Signaling Technology antibody is conjugated to phycoerythrin (PE) and tested in-house for direct flow cytometry analysis in human cells. This antibody is expected to exhibit the same species cross-reactivity as the unconjugated HSF1 (D3L8I) Rabbit mAb #12972.

Background

All organisms respond to increased temperatures and other environmental stresses by rapidly inducing the expression of highly conserved heat shock proteins (HSPs) that serve as molecular chaperones to refold denatured proteins and promote the degradation of damaged proteins. Heat shock gene transcription is regulated by a family of heat shock factors (HSFs), transcriptional activators that bind to heat shock response elements (HSEs) located upstream of all heat shock genes (1). HSEs are highly conserved among organisms and contain multiple adjacent and inverse iterations of the pentanucleotide motif 5'-nGAAn-3'. HSFs are less conserved and share only 40% sequence identity. Vertebrate cells contain four HSF proteins: HSF1, 2 and 4 are ubiquitous, while HSF3 has only been characterized in avian species. HSF1 induces heat shock gene transcription in response to heat, heavy metals, and oxidative agents, while HSF2 is involved in spermatogenesis and erythroid cell development. HSF3 and HSF4 show overlapping functions with HSF1 and HSF2. The inactive form of HSF1 exists as a monomer that localizes to both the cytoplasm and nucleus, but does not bind DNA (1,2). In response to stress, HSF1 becomes phosphorylated, forms homotrimers, binds DNA and activates heat shock gene transcription (1,2). HSF1 activity is positively regulated by phosphorylation of Ser419 by PLK1, which enhances nuclear translocation, and phosphorylation of Ser230 by CaMKII, which enhances transactivation (3,4). Alternatively, HSF1 activity is repressed by phosphorylation of serines at 303 and 307 by GSK3 and ERK1, respectively, which leads to binding of 14-3-3 protein and sequestration of HSF1 in the cytoplasm (5,6). In addition, during attenuation from the heat shock response, HSF1 is repressed by direct binding of Hsp70, HSP40/Hdj-1, and HSF binding protein 1 (HSBP1) (7).

Background References

1. Morimoto, R.I. (1998) *Genes Dev* 12, 3788-96.
2. Mercier, P.A. et al. (1999) *J Cell Sci* 112 (Pt 16), 2765-74.
3. Kim, S.A. et al. (2005) *J Biol Chem* 280, 12653-7.
4. Holmberg, C.I. et al. (2001) *EMBO J* 20, 3800-10.
5. Chu, B. et al. (1996) *J Biol Chem* 271, 30847-57.
6. Wang, X. et al. (2003) *Mol Cell Biol* 23, 6013-26.
7. Satyal, S.H. et al. (1998) *Genes Dev* 12, 1962-74.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Applications Key

FC-FP: Flow Cytometry (Fixed/Permeabilized)

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

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