

#12972 Store at -20C

## HSF1 (D3L8I) Rabbit mAb



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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP, IHC-P, IF-IC, FC-FP, ChIP, ChIP-seq, C&R	H M R Mk B Dg Pg	Endogenous	80	Rabbit IgG	#Q00613	3297

### Product Usage Information

For optimal ChIP and ChIP-seq results, use 10 µl of antibody and 10 µg of chromatin (approximately 4 x 10<sup>6</sup> cells) per IP. This antibody has been validated using SimpleChIP® Enzymatic Chromatin IP Kits.

The CUT&RUN dilution was determined using CUT&RUN Assay Kit #86652.

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunohistochemistry (Paraffin)	1:250 - 1:1000
Immunofluorescence (Immunocytochemistry)	1:200 - 1:400
Flow Cytometry (Fixed/Permeabilized)	1:100 - 1:400
Chromatin IP	1:50
Chromatin IP-seq	1:50
CUT&RUN	1:50

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

For a carrier free (BSA and azide free) version of this product see product #76196.

### Specificity / Sensitivity

HSF1 (D3L8I) Rabbit mAb 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.

### 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).

## Western Blot Buffer

**IMPORTANT:** For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

## Applications Key

**WB:** Western Blotting **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin)  
**IF-IC:** Immunofluorescence (Immunocytochemistry) **FC-FP:** Flow Cytometry (Fixed/Permeabilized)  
**ChIP:** Chromatin IP **ChIP-seq:** Chromatin IP-seq **C&R:** CUT&RUN

## 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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