

AR03018PU-L**Recombinant Human Heat Shock Protein 70 (HSP70) (active)****Alternate names:**

HSP70-1/HSP70-2, HSP70.1, HSPA1, HSPA1A, HSPA1B, Heat shock 70 kDa protein 1A/1B

Quantity:

2x0.1 mg

Concentration:

3 mg/ml (Lot specific)

Background:

Hsp70 genes encode abundant heat-inducible 70-kDa hsps (hsp70s). In most eukaryotes hsp70 genes exist as part of a multigene family. They are found in most cellular compartments of eukaryotes including nuclei, mitochondria, chloroplasts, the endoplasmic reticulum and the cytosol, as well as in bacteria. The genes show a high degree of conservation, having at least 50% identity (2). The N-terminal two thirds of hsp70s are more conserved than the C-terminal third. Hsp70 binds ATP with high affinity and possesses a weak ATPase activity which can be stimulated by binding to unfolded proteins and synthetic peptides (3). When hsc70 (constitutively expressed) present in mammalian cells was truncated, ATP binding activity was found to reside in an N-terminal fragment of 44kDa which lacked peptide binding capacity. Polypeptide binding ability therefore resided within the C-terminal half (4). The structure of this ATP binding domain displays multiple features of nucleotide binding proteins (5). All hsp70s, regardless of location, bind proteins, particularly unfolded ones. The molecular chaperones of the hsp70 family recognize and bind to nascent polypeptide chains as well as partially folded intermediates of proteins preventing their aggregation and misfolding. The binding of ATP triggers a critical conformational change leading to the release of the bound substrate protein (6). The universal ability of hsp70s to undergo cycles of binding to and release from hydrophobic stretches of partially unfolded proteins determines their role in a great variety of vital intracellular functions such as protein synthesis, protein folding and oligomerization and protein transport.

Uniprot ID:[P08107](#)**NCBI:**[NP_005336](#)**GeneID:**[3303](#)**Species:**

Human

Source:

E. coli

Format:**State:** Liquid affinity purified protein.**Purity:** >90% pure as determined by SDS-PAGE analysis.**Buffer System:** Sodium Phosphate, pH 7.5 (20 mM), 150 mM NaCl, 10% Glycerol, 200 mM Imidazole.**Applications:**

ATPase Assay.

Western B Control.

Binding Assays.

ELISA reference standard.

Lipid Interaction Assays.

Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.

Description:

Recombinant Human Hsp70 Protein with ATPase activity, his-tagged, cloned from a Human cDNA library

Biological Activity: The protein has ATPase activity at the time of manufacture of 3.3 μM phosphate liberated/hr/ μg protein in a 200 μl reaction at 37°C (pH7.5) in the presence of 20 μl of 1mM ATP using a Malachite Green assay.

Molecular weight: ~70kDa

Storage:

Upon receipt, store undiluted (in aliquots) at -20°C.

Avoid repeated freezing and thawing.

Shelf life: one year from despatch.

General Readings:

1. Zho, J. (1998). Cell 94: 471-480
2. Boorstein, W. R., Ziegelhoffer, T. & Craig, E. A. (1993), J. Mol. Evol.38 (1) 1-17.
3. Rothman, J. (1989), Cell 59, 591-601.
4. DeLuca-Flaherty et al. (1990), Cell 62, 875-887.
5. Bork, P., Sander, C. & Valencia, A. (1992), Proc. Natl Acad. Sci. USA 89, 7290-7294.
6. Fink, A.L. (1999) Physiol. Rev. 79: 425-449.
7. Smith, D.F., et al., (1993) Mol. Cell. Biol. 13(2):869-876.
8. Prapapanich, V., et al., (1996) Mol. Cell. Biol. 16(11):6200-6207.
9. Fernandez-Funez et al., (2000) Nature 408(6808):101-106