

Monoclonal Antibody to HSP60 - Purified

Alternate names: 60 kDa chaperonin, 60 kDa heat shock protein mitochondrial, CPN60, Chaperonin 60, GROEL, GroEL Homolog, HSP-60, HSPD1, Heat shock protein 60, HuCHA60, Mitochondrial matrix protein P1, P60 lymphocyte protein

Catalog No.: SM7117P

Quantity: 0.1 ml

Background: The human Hsp60 is a member of a highly conserved family which includes molecular chaperones from several species such as plant Hsp60 (known as Rubisco binding protein), GroEL, the E.coli Hsp60 and 65 kDa major antigen of mycobacteria. In eukaryotes, Hsp60 is localized in the mitochondrial matrix and the plant Hsp60 is localized in the chloroplast. Mitochondria, chloroplasts and bacteria have a common ancestry (>1 billion years) and this fact together with the high degree of homology between the divergent Hsp60s would indicate that these proteins carry out a primitive but important function which is similar to all of these different species. The common characteristics of the Hsp60s from the divergent species are i) high abundance, ii) induction with environmental stress such as heat shock, iii) homo-oligomeric structures of either 7 or 14 subunits which reversibly dissociate in the presence of Mg²⁺ and ATP, iv) ATPase activity and v) a role in folding and assembly of oligomeric protein structures (1). These similarities are supported by recent studies where the single-ring human mitochondrial homolog, Hsp60 with its co-chaperonin, Hsp10 were expressed in a E. coli strain, engineered so that the groE operon is under strict regulatory control. This study has demonstrated that expression of Hsp60-Hsp10 was able to carry out all essential in vivo functions of GroEL and its co-chaperonin, GroES (2). Consistent with their functions as chaperones, Hsp60 and Hsp10 have been suggested to act as docking molecules with a passive role in the maturation of caspase processing. Data demonstrates that recombinant Hsp60 and Hsp10 have been shown to accelerate the activation of procaspase-3 by cytochrome C and dATP in an ATP-dependent manner (3). Hsps are intracellular proteins which are thought to serve protective functions against infection and cellular stress, however several recent studies indicate that members of the Hsp60 family are linked to a number of autoimmune diseases, atherosclerosis and chlamydial disease. Although overexpression of self Hsp60 in the synovial tissue of rheumatoid artheritic (RA) patients and cellular as well as humoral reactivities against Hsp60 molecules in RA have been demonstrated, a role for these activities remains to be elucidated (4). The chlamydial heat shock protein, Hsp60, a homolog of E. coli, GroEL, has been identified as capable of eliciting macrophage activation and several studies have revealed a correlation between Hsp60 responses and the immunopathologic manifestations of human chlamydial disease. Another prime candidate is the chlamydial GroES homolog, Hsp10 which is genetically and physiologically linked to Hsp60. Recent data indicates that immune reactivity to Hsp10 is significantly associate with tubal infertility in a chlamydiae-exposed population (5).

Uniprot ID: [P10809](#)

NCBI:	NP_002147.2
GeneID:	3329
Host / Isotype:	Mouse / IgG2a
Recommended Isotype Controls:	AM03096PU-N
Clone:	Mab11-13
Immunogen:	Recombinant human Hsp60 protein, amino acids 31-547 (6)
Format:	State: Liquid Ig fraction Purification: Protein G chromatography Buffer System: PBS, pH 7.2, with 50 % glycerol and 0.09 % sodium azide
Applications:	Western blot analysis: 1/10000. Immunoprecipitation: please see references (7,8) for details. Immunofluorescence/Immunocytochemistry: please see references (6,10) for details. Flow (Intracellular): please see references (8,10) for details. Electron microscopy studies (7,9). Neutralization: please see reference (8) for details. Recommended positive control: HeLa heat shock cell lysate. Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.
Specificity:	This antibody is specific for Hsp60. It detects an ~60 kDa protein, corresponding to the apparent molecular mass of Hsp60 on SDS-PAGE immunoblots. The antibody recognizes a surface epitope of Hsp60 in the region of amino acids 288-366 (10). Species: Human, mouse, rat, bovine, dog, dolphin, Drosophila, fish (rainbow trout), guinea pig, hamster, insect (mosquito), monkey, pig, rabbit and snake. Does not work in bacteria or yeast. Other species not tested.
Storage:	Store the antibody (in aliquots) at -20 °C. Can be shipped at 2 - 8 °C. Avoid repeated freezing and thawing. Centrifuge vial before opening. Shelf life: One year from despatch.
General Readings:	1. Jindal, S., Dudani, A.K., Singh, B., Harley, C.B. and Gupta, R.S. (1989) Molecular and Cellular Biology 9: 2279-2283. 2. Nielsen, KL., Mclennan, N., Masters, M and Cowan, NJ. (1999) J. Bacteriol. 181: 5871-5875. 3. Samali, A., Cia, JY., Zhivotovsky, B., Jones, DP., and Orrenius, S. (1999) EMBO J. 18:2040-2048. 4. Van Roon, J.A-G., van Eden, W., van Roy, J.L.A.M., Lafeber, F.J.P.G. and Bijlisma, J.W.J. (1997) J Clin. Invest 100: 459-463. 5. La Verda, D., Kalayoglu, MV. and Byrne, GI. (1999) Infect Dis. Obstet. Gynecol. 7: 64-71. 6. Singh, B., Gupta, R.S. (1992) DNA Cell Biol 11(6):489-96. 7. Soltys, B.J., Gupta, R.S. (1996) Exp Cell Res 222(1): 16-27. 8. Kaur I, Voss SD, Gupta RS, Schell K, Fisch P, Sondel PM. (1993) J Immunol 150(5):2046-55. 9. Soltys, B.J., Gupta, R.S. (1997) Cell Biol Int 21(5):315-20. 10. Xu, Q., Schett, G., Seitz, C.S., Hu, Y., Gupta, R.S., Wick, G. (1994) Circ Res 75(6):1078-85.

Pictures:

Western blot analysis of purified human Hsp60 protein (1), HeLa (2) and mouse L929 (3) cell lysates probed with SM7117P.

