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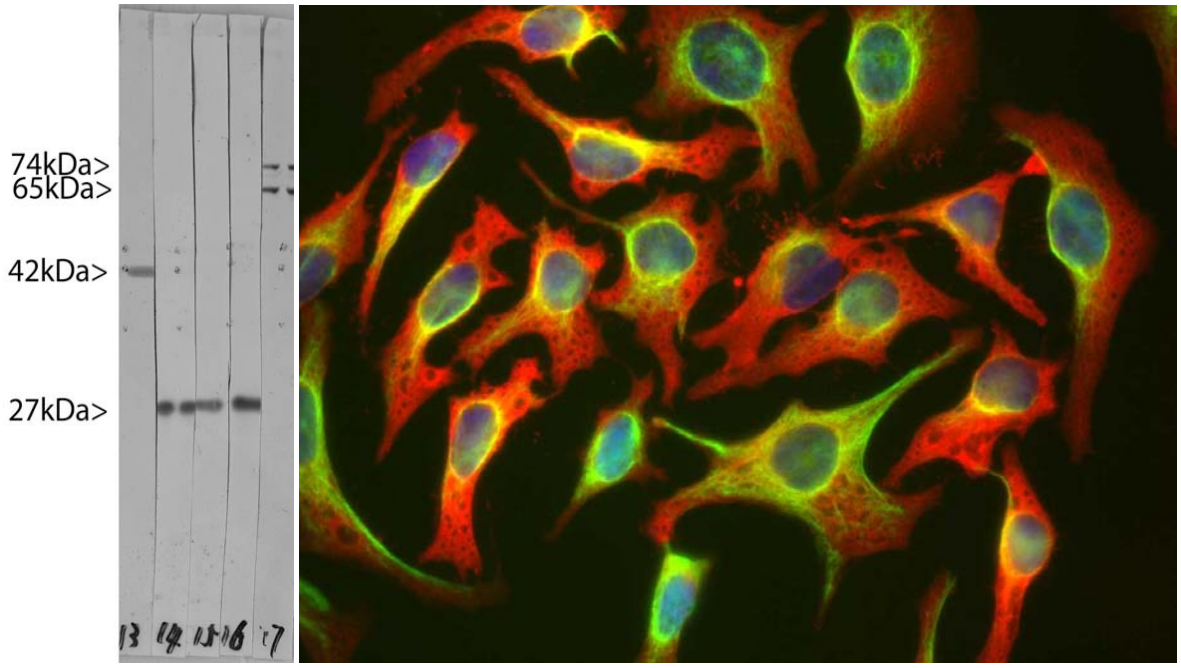
Catalogue# MCA-6H11: Mouse Monoclonal Antibody to HSP27: HSBP1

The Immunogen: The heat shock proteins were discovered, as the name suggests, since they are heavily upregulated when cells are stressed by temperatures above the normal physiological range. They are expressed in unstressed cells also and have a normal function as chaperones, helping other proteins to fold correctly, and are required in much greater amounts if the cell or tissue is stressed by heat. The increased levels are generated transcriptionally under the influence of a powerful transcription factor, the heat shock factor 1 (HSF1).

The different heat shock proteins were originally named based on their SDS-PAGE mobility, so HSP27 has an apparent molecular weight of 27 kDa. It is an abundant protein even under non-stress conditions and frequently shows up as a major spot on 2 dimensional gels of cells or tissues. It is known to associate with a variety of other proteins such as actin, intermediate filament subunits and ubiquitin and is found both in the cytoplasm and the nucleus of cells. HSP27 can become heavily phosphorylated under the influence of multiple protein kinases particularly as a result of activation of the p38/SAPK pathway. Upregulation of this protein is protective against neurodegenerative diseases at least in certain mouse models (1). Point mutations in the HSP27 gene are associated with two neurological diseases, Charcot-Marie-Tooth disease type 2F and distal hereditary motor neuropathy IIB (2). These diseases are associated with axonal loss apparently following defects in the transport of neurofilaments. The HGNC name for this protein is HSBP1.



Left: Western blots of HeLa cell crude extracts. Lane 16 was probed with MCA-6H11, while lanes 14 and 15 were probed with two other monoclonals to HSP27 we generated at the same time. Note the strong clean bands at 27 kDa. Lane 17 was probed with MCA-4C4, our new mouse monoclonal antibody to Lamin A/C, which binds two bands running at 74 kDa and 65 kDa. Lane 13 was probed with MCA-5J11, our monoclonal antibody to all six actin isotypes. Molecular weights of each protein are as indicated, and dots indicate the presence of major HeLa proteins. **Right:** HeLa cells staining with MCA-6H11 (red), and counterstained with EnCor's chicken polyclonal antibody to Vimentin CPCA-Vim (green) and DNA (blue). The MCA-6H11 antibody reveals strong cytoplasmic staining and penetrates into the actin rich ruffled margins, while the Vimentin antibody reveals cytoplasmic intermediate filaments.

Antibody characteristics: MCA-6H11 is a mouse IgG1 class antibody and is known to react with HSP27 from human, cow, pig, mouse, rat and other mammals. Since HSP27 is highly conserved, it is likely that the antibody is effective on other species also.

Suggestions for use: The antibody solution is affinity purified from tissue culture supernatant and is at concentration of 1mg/mL in phosphate buffered saline. The antibody solution can be used at dilutions of at least 1:1,000 in immunofluorescence experiments. In western blotting using chemiluminescence it can be used at dilutions of 1:10,000 or lower. Antibody preparation contains 10 mM sodium azide preservative (Link to http://www.encorbio.com/MSDS/azide.htm for Material Safety Data Sheet). Avoid repeated freezing and thawing, store at 4°C or -20°C.

OMIM Link: http://omim.org/entry/602195

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.

References:

1. Wyttenbach, A et al. Heat shock protein 27 prevents cellular polyglutamine toxicity and suppresses the increase of reactive oxygen species caused by huntingtin. Hum. Molec. Genet. 11:1137-1151 (2002).

2. Evgrafov, OV et al. Mutant small heat-shock protein 27 causes axonal Charcot-Marie-Tooth disease and distal hereditary motor neuropathy. Nature Genet. 36:602-606 (2004).