

β-Actin Blocking Peptide

100 µg



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Description: This peptide is used to specifically block β-Actin (13E5) Rabbit mAb #4970 by peptide dot blot.

Background: Actin, a ubiquitous eukaryotic protein, is the major component of the cytoskeleton. At least six isoforms are known in mammals. Nonmuscle β- and γ-actin, also known as cytoplasmic actin, are ubiquitously expressed, controlling cell structure and motility (1). While all actin isoforms are highly homologous, cytoplasmic β- and γ-actin protein sequences differ by only four biochemically similar amino acids (2). For this reason, antibodies raised to β-actin may cross-react with γ-actin, and vice versa. α-cardiac and α-skeletal actin are expressed in striated cardiac and skeletal muscles, respectively; two smooth muscle actins, α- and γ-actin, are found primarily in vascular smooth muscle and enteric smooth muscle, respectively. These actin isoforms regulate the contractile potential of muscle cells (1). Actin exists mainly as a fibrous polymer, F-actin. In response to cytoskeletal reorganizing signals during processes such as cytokinesis, endocytosis, or stress, cofilin promotes fragmentation and depolymerization of F-actin, resulting in an increase in the monomeric globular form, G-actin (3). The ARP2/3 complex stabilizes F-actin fragments and promotes formation of new actin filaments (3). Research studies have shown that actin is hyperphosphorylated in primary breast tumors (4). Cleavage of actin under apoptotic conditions has been observed in vitro and in cardiac and skeletal muscle, as shown in research studies (5-7). Actin cleavage by caspase-3 may accelerate ubiquitin/proteasome-dependent muscle proteolysis (7).

Quality Control: The quality of the peptide was evaluated by reversed-phase HPLC and by mass spectrometry. The peptide blocks beta-Actin (13E5) Rabbit mAb #4970 by peptide dot blot.

Directions for Use: Use as a blocking reagent to evaluate the specificity of antibody reactivity in peptide dot blot protocols. Recommended antibody dilutions can be found on the product data sheet.

Background References:

- (1) Herman, I.M. (1993) *Curr. Opin. Cell Biol.* 67, 630-4.
- (2) Perrin, B.J. and Ervasti, J.M. (2010) *Cytoskeleton (Hoboken)* 11, 288-293.
- (3) Condeelis, J. (2001) *Trends Cell Biol.* 11, 288-293.
- (4) Lim, Y.P. et al. (2004) *Clin. Cancer Res.* 10, 3980-3987.
- (5) Kayalar, C. et al. (1996) *Proc. Natl. Acad. Sci. USA.* 93, 2234-2238.
- (6) Communal, C. et al. (2002) *Proc. Natl. Acad. Sci. USA.* 99, 6252-6256.
- (7) Du, J. et al. (2004) *J. Clin. Invest.* 113, 115-123.

Entrez-Gene ID #60
UniProt ID #P60709

Storage: Supplied in 20 mM potassium phosphate (pH 7.0), 50 mM NaCl, 0.1 mM EDTA, 1 mg/ml BSA, 5% glycerol, and 1% DMSO. Store at -20°C.

For application specific protocols please see the web page for this product at www.cellsignal.com.

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