

#8046 Store at +4C

 **$\beta$ -Actin (13E5) Rabbit mAb (Alexa Fluor<sup>®</sup> 555 Conjugate)**

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**For Research Use Only. Not for Use in Diagnostic Procedures.**

Applications:	Reactivity:	Sensitivity:	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
IF-IC	H M R Mk B Pg	Endogenous	Rabbit IgG	#P60709	60

**Product Usage Information****Application**

Immunofluorescence (Immunocytochemistry)

**Dilution**

1:100

**Storage**

Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. Do not aliquot the antibody. Protect from light. Do not freeze.

**Specificity/Sensitivity**

$\beta$ -Actin (13E5) Rabbit mAb (Alexa Fluor<sup>®</sup> 555 Conjugate) detects endogenous levels of total  $\beta$ -actin protein. Despite the high sequence identity between the cytoplasmic actin isoforms,  $\beta$ -actin and cytoplasmic  $\gamma$ -actin,  $\beta$ -Actin (13E5) Rabbit mAb (Alexa Fluor<sup>®</sup> 555 Conjugate) #8046 does not cross-react with cytoplasmic  $\gamma$ -actin, or any other actin isoforms.

**Species predicted to react based on 100% sequence homology**

Hamster, Chicken, Dog, Horse, Rabbit

**Source / Purification**

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the amino-terminus of human  $\beta$ -actin protein.

**Description**

This Cell Signaling Technology antibody is conjugated to Alexa Fluor<sup>®</sup> 555 fluorescent dye and tested in-house for immunofluorescent analysis in monkey cells. The antibody is expected to exhibit the same species cross-reactivity as the unconjugated  $\beta$ -Actin (13E5) Rabbit mAb #4970.

**Background**

Actin, a ubiquitous eukaryotic protein, is the major component of the cytoskeleton. At least six isoforms are known in mammals. Nonmuscle  $\beta$ - and  $\gamma$ -actin, also known as cytoplasmic actin, are ubiquitously expressed, controlling cell structure and motility (1). While all actin isoforms are highly homologous, cytoplasmic  $\beta$ - and  $\gamma$ -actin protein sequences differ by only four biochemically similar amino acids (2). For this reason, antibodies raised to  $\beta$ -actin may cross-react with  $\gamma$ -actin, and vice versa.  $\alpha$ -cardiac and  $\alpha$ -skeletal actin are expressed in striated cardiac and skeletal muscles, respectively; two smooth muscle actins,  $\alpha$ - and  $\gamma$ -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).

**Background References**

1. Herman, I.M. (1993) *Curr. Opin. Cell Biol.* 5, 48-55.
2. Perrin, B.J. and Ervasti, J.M. (2010) *Cytoskeleton (Hoboken)* 67, 630-4.
3. Condeelis, J. (2001) *Trends Cell Biol* 11, 288-93.
4. Lim, Y.P. et al. (2004) *Clin Cancer Res* 10, 3980-7.
5. Kayalar, C. et al. (1996) *Proc Natl Acad Sci U S A* 93, 2234-8.
6. Communal, C. et al. (2002) *Proc Natl Acad Sci U S A* 99, 6252-6.
7. Du, J. et al. (2004) *J Clin Invest* 113, 115-23.

**Species Reactivity**

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

**Applications Key**

**IF-IC:** Immunofluorescence (Immunocytochemistry)

**Cross-Reactivity Key**

**H:** Human **M:** Mouse **R:** Rat **Mk:** Monkey **B:** Bovine **Pg:** Pig

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