SANTA CRUZ BIOTECHNOLOGY, INC.

α-Actin (733H2P): sc-517660

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

All eukaryotic cells express Actin, which often constitutes as much as 50% of total cellular protein. Actin filaments can form both stable and labile structures and are crucial components of microvilli and the contractile apparatus of muscle cells. While lower eukaryotes, such as yeast, have only one Actin gene, higher eukaryotes have several isoforms of Actin encoded by a family of genes. At least six types of Actin are present in mammalian tissues and fall into three classes, designated α-Actin, β-Actin and γ-Actin. ACTA1 (Actin, α skeletal muscle) is 377 amino acid protein belonging to the Actin family. Localizing to cytoplasm and ctyoskeleton, ACTA1 is ubiquitously expressed in eukaryotic cells. ACTA1 is essential for muscle contraction; mutations to this gene result in severe congenital-onset disease, with varying degrees of severity. Nemaline myopathy type 3 (NEM3), a muscular disorder resulting in muscle weakness and abnormal thread or rod-like structures in muscle fibers, is also associated with defects to ACTA1.

REFERENCES

1. Koy, A., et al. 2007. Nemaline myopathy with exclusively intranuclear rods and a novel mutation in ACTA1 (Q139H). Neuropediatrics 38: 282-286.
2. North, K.N., et al. 2008. Skeletal muscle α-Actin diseases. Adv. Exp. Med. Biol. 642: 15-27.
3. Laing, N.G., et al. 2009. Mutations and polymorphisms of the skeletal muscle α-Actin gene (ACTA1). Hum. Mutat. 30: 1267-1277.
4. Feng, J.J., et al. 2009. Genotype-phenotype correlations in ACTA1 mutations that cause congenital myopathies. Neuromuscul. Disord. 19: 6-16.
5. Garcia-Angarita, N., et al. 2009. Severe nemaline myopathy associated with consecutive mutations E74D and H75Y on a single ACTA1 allele. Neuromuscul. Disord. 19: 481-484.
6. Stenzel, W., et al. 2010. Fetal akinesia caused by a novel actin filament aggregate myopathy skeletal muscle actin gene (ACTA1) mutation. Neuromuscul. Disord. 20: 531-533.
7. Ravenscroft, G., et al. 2011. Mouse models of dominant ACTA1 disease recapitulate human disease and provide insight into therapies. Brain 134: 1101-1115.
8. Stern-Straeter, J., et al. 2011. Characterization of human myoblast differentiation for tissue-engineering purposes by quantitative gene expression analysis. J. Tissue Eng. Regen. Med. 5: e197-e206.
9. Ravenscroft, G., et al. 2011. A novel ACTA1 mutation resulting in a severe congenital myopathy with nemaline bodies, intranuclear rods and type I fibre predominance. Neuromuscul. Disord. 21: 31-36.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

CHROMOSOMAL LOCATION

Genetic locus: ACTA1 (human) mapping to 1q42.13.

SOURCE

α-Actin (733H2P) is a mouse monoclonal antibody raised against recombinant α-Actin of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

α-Actin (733H2P) is recommended for detection of α-Actin of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10^6 cells).

Suitable for use as control antibody for α-Actin siRNA (h): sc-108076, α-Actin shRNA Plasmid (h): sc-108076-SH and α-Actin shRNA (h) Lentiviral Particles: sc-108076-V.

Molecular Weight of α-Actin: 42 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 3) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

RESEARCH USE

For research use only, not for use in diagnostic procedures.