

RyR-1 (XA7): sc-65640

BACKGROUND

Dihydropyridine receptor (DHPR) and the sarcoplasmic reticulum ryanodine receptor (RyR) are two key components of the intracellular junctions, where depolarization of the surface membrane is converted into the release of Ca^{2+} from internal stores. The RyR family consists of RyR-1, RyR-2 and RyR-3, which are characterized respectively as skeletal muscle, cardiac and brain ryanodine receptors. RyR proteins are essential for calcium-dependent excitation. Cells that do not express RyR lack excitation-contraction coupling and exhibit a several-fold reduction in Ca^{2+} current density. RyR-1 is expressed in slow- and fast-twitch skeletal muscle. Activation of RyR-1 leads to the release of Ca^{2+} from the sarcoplasmic reticulum (SR) which, in turn, leads to muscle contraction. Mutations in the gene for this protein can result in a variety of muscle diseases, including Brody disease, malignant hyperthermia, cardiomyopathy and central core disease.

REFERENCES

1. Pincon-Raymond, M., Garcia, L., Romey, G., Houenou, L., Lazdunski, M. and Rieger, F. 1990. A genetic model for the study of abnormal nerve-muscle interactions at the level of excitation-contraction coupling: the mutation muscular dysgenesis. *J. Physiol.* 84: 82-87.
2. Lu, X., Xu, L. and Meissner, G. 1995. Phosphorylation of dihydropyridine receptor II-III loop peptide regulates skeletal muscle calcium release channel function. Evidence for an essential role of the β -OH group of Ser 687. *J. Biol. Chem.* 270: 18459-18464.
3. Fan, H., Brandt, N.R., Peng, M., Schwartz, A. and Caswell, A.H. 1995. Binding sites of monoclonal antibodies and dihydropyridine receptor α 1 subunit cytoplasmic II-III loop on skeletal muscle triadin fusion peptides. *Biochemistry* 34: 14893-14901.
4. Powell, J.A., Petherbridge, L. and Flucher, B.E. 1996. Formation of triads without the dihydropyridine receptor α subunits in cell lines from dysgenic skeletal muscle. *J. Cell Biol.* 134: 375-387.
5. Flucher, B.E. and Franzini-Armstrong, C. 1996. Formation of junctions involved in excitation-contraction coupling in skeletal and cardiac muscle. *Proc. Natl. Acad. Sci. USA* 93: 8101-8106.
6. Franzini-Armstrong, C. and Protasi, F. 1997. Ryanodine receptors of striated muscles: a complex channel capable of multiple interactions. *Physiol. Rev.* 77: 699-729.
7. Slavik, K.J., Wang, J.P., Aghdasi, B., Zhang, J.Z., Mandel, F., Malouf, N. and Hamilton, S.L. 1997. A carboxy-terminal peptide of the α 1 subunit of the dihydropyridine receptor inhibits Ca^{2+} -release channels. *Am. J. Physiol.* 272: 1475-1481.
8. Nakai, J., Ogura, T., Protasi, F., Franzini-Armstrong, C., Allen, P.D. and Beam, K.G. 1997. Functional nonequality of the cardiac and skeletal ryanodine receptors. *Proc. Natl. Acad. Sci. USA* 94: 1019-1022.

SOURCE

RyR-1 (XA7) is a mouse monoclonal antibody raised against skeletal muscle triads of rabbit origin.

PRODUCT

Each vial contains 200 μ g IgM in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

RyR-1 (XA7) is recommended for detection of skeletal muscle ryanodine receptor Ca^{2+} channel of mouse, rat, rabbit and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)].

Molecular Weight of RyR-1: 550 kDa.

Positive Controls: rat heart extract: sc-2393.

SELECT PRODUCT CITATIONS

1. Hammoud, Y., Rice, T. and Mackrill, J.J. 2013. Oxysterols modulate calcium signalling in the A7r5 aortic smooth muscle cell-line. *Biochimie* 95: 568-577.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

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