SANTA CRUZ BIOTECHNOLOGY, INC.

Mg29 siRNA (m): sc-40745

BACKGROUND

Excitation-contraction (E-C) coupling in skeletal muscle is characterized by the conversion of the depolarization signal of the invaginated surface membrane, called the transverse (T-) tubule, to calcium release from the sarcoplasmic reticulum (SR). This process occurs at the junctional complex between the T-tubule and SR, designated the triad junction. Mitsugumin29 (Mg29), a novel member of the synaptophysin family, is an essential component of the triad junction. It is abundantly expressed in skeletal muscle and is also expressed at lower levels in kidney, specifically in cytoplasmic regions of the proximal and distal tubule cells. Mg29$^{-/-}$ mice display morphological abnormalities, such as swollen T-tubules, vacuolated SR networks and misalignment of triad junctions. Deletion of Mg29 is also associated with increased susceptibility of muscle to fatigue following stimulation. Therefore, Mg29 is critical for both refinement of the membrane structures and effective E-C coupling in skeletal muscle triad junctions.

REFERENCES

1. Takeshima, H., et al. 1998. Mitsugumin29, a novel synaptophysin family member from the triad junction in skeletal muscle. Biochem. J. 331: 317-322.
2. Shimuta, M., et al. 1998. Structure and expression of Mitsugumin29 gene. FEBS Lett. 431: 263-267.
3. Nishi, M., et al. 1999. Abnormal features in skeletal muscle from mice lacking Mitsugumin29. J. Cell Biol. 147: 1473-1480.
4. Komazaki, S., et al. 1999. Immunolocalization of Mitsugumin29 in developing skeletal muscle and effects of the protein expressed in amphibian embryonic cells. Dev. Dyn. 215: 87-95.
5. Nagaraj, R.Y., et al. 2000. Increased susceptibility to fatigue of slow- and fast-twitch muscles from mice lacking the Mg29 gene. Physiol. Genomics 4: 43-49.
6. Komazaki, S., et al. 2001. Abnormal formation of sarcoplasmic reticulum networks and triads during early development of skeletal muscle cells in Mitsugumin29-deficient mice. Dev. Growth Differ. 43: 717-723.
7. Pan, Z., et al. 2002. Dysfunction of store-operated calcium channel in muscle cells lacking Mg29. Nat. Cell Biol. 4: 379-383.

CHROMOSOMAL LOCATION

Genetic locus: Mg29 (mouse) mapping to 3 F2.3.

PRODUCT

Mg29 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Mg29 shRNA Plasmid (m): sc-40745-SH and Mg29 shRNA (m) Lentiviral Particles: sc-40745-V as alternate gene silencing products.

For independent verification of Mg29 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-40745A, sc-40745B and sc-40745C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Mg29 siRNA (m) is recommended for the inhibition of Mg29 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Mg29 gene expression knockdown using RT-PCR Primer: Mg29 (m)-PR: sc-40745-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

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.