SANTA CRUZ BIOTECHNOLOGY, INC.

# RyR-2 siRNA (h): sc-72012

## 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 and 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. RyR-2 is primarily expressed in cardiac muscle but is also uniformly expressed in the brain. RyR-3 is expressed in the corpus striatum, thalamus and hippocampus as well as smooth muscle. The genes encoding human RyR-2 and RyR-3 map to chromosomes 1q42.1-q43 and 15q14-q15, respectively. Mutations in the gene encoding RyR2 may cause arrhythmogenic right ventricular dysplasia type 2 (ARVD2), an autosomal dominant cardiomyopathy characterized by partial degeneration of the myocardium of the right ventricle.

## REFERENCES


1. Otsu, K., et al. 1990. Molecular cloning of cDNA encoding the $Ca^{2+}$ release channel (ryanodine receptor) of rabbit cardiac muscle sarcoplasmic reticulum. J. Biol. Chem. 265: 13472-13483.
2. Hakamata, Y., et al. 1992. Primary structure and distribution of a novel ryanodine receptor/calcium release channel from rabbit brain. FEBS Lett. 312: 229-235.
3. Otsu, K., et al. 1993. Chromosome mapping of five human cardiac and skeletal muscle sarcoplasmic reticulum protein genes. Genomics 17: 507-509.
4. Sorrentino, V., et al. 1993. Localization of a novel ryanodine receptor gene (RYR3) to human chromosome 15q14-q15 by *in situ* hybridization. Genomics 18: 163-165.
5. Flucher, B.E., et al. 1996. Formation of junctions involved in excitation-contraction coupling in skeletal and cardiac muscle. Proc. Natl. Acad. Sci. USA 93: 8101-8106.


## CHROMOSOMAL LOCATION

Genetic locus: RYR2 (human) mapping to 1q43.

## PRODUCT

RyR-2 siRNA (h) 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 RyR-2 shRNA Plasmid (h): sc-72012-SH and RyR-2 shRNA (h) Lentiviral Particles: sc-72012-V as alternate gene silencing products.

For independent verification of RyR-2 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-72012A, sc-72012B and sc-72012C.

## 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

RyR-2 siRNA (h) is recommended for the inhibition of RyR-2 expression in human 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.

## GENE EXPRESSION MONITORING

RyR (F-1): sc-376507 is recommended as a control antibody for monitoring of RyR-2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor RyR-2 gene expression knockdown using RT-PCR Primer: RyR-2 (h)-PR: sc-72012-PR (20 µl, 585 bp). 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.