# SANTA CRUZ BIOTECHNOLOGY, INC.

# RyR (F-1): sc-376507



#### BACKGROUND

Dihydropyridine receptor (DHPR) is a surface membrane protein critical for the excitation-contraction coupling of striated muscle. 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<sup>2+</sup> from internal stores. The  $\alpha$ 1 subunit of the DHPR contains a cytoplasmic loop which is thought to be involved in the interactions with RyR. Phosphorylation of the DHPR  $\alpha$ 1 subunit is also thought to play a role in the functional interaction of DHPR and RyR. Mutation in DHPR  $\alpha$ 1 results in excitation-contraction uncoupling, leading to muscular dysgenesis, a complete inactivity in developing skeletal muscles. Cells that do not express RyR also lack excitation-contraction coupling and exhibit a several-fold reduction in Ca<sup>2+</sup> current density.

#### REFERENCES

- 1. Pincon-Raymond, M., et al. 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. Fan, H., et al. 1995. Binding sites of monoclonal antibodies and dihydropyridine receptor a1 subunit cytoplasmic II-III loop on skeletal muscle triadin fusion peptides. Biochemistry 34: 14893-14901.

#### SOURCE

RyR (F-1) is a mouse monoclonal antibody raised against amino acids 1-300 mapping at the N-terminus of RyR of human origin.

#### PRODUCT

Each vial contains 200  $\mu g\, lgG_1$  kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

RyR (F-1) is available conjugated to agarose (sc-376507 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376507 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376507 PE), fluorescein (sc-376507 FITC), Alexa Fluor<sup>®</sup> 488 (sc-376507 AF488), Alexa Fluor<sup>®</sup> 546 (sc-376507 AF546), Alexa Fluor<sup>®</sup> 594 (sc-376507 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-376507 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-376507 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-376507 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor $^{\circ}$  is a trademark of Molecular Probes, Inc., Oregon, USA

#### **APPLICATIONS**

RyR (F-1) is recommended for detection of skeletal muscle, cardiac muscle and brain ryanodine receptors of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of RyR-1/2/3: 550/565/552 kDa.

Positive Controls: Sol8 cell lysate: sc-2249, rat heart extract: sc-2393 or mouse brain extract: sc-2253.

#### STORAGE

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

### DATA





RyR (F-1): sc-376507. Western blot analysis of RyR expression in Sol8 whole cell lysate (A) and mouse brain tissue extract (B).

# RyR (F-1): sc-376507. Western blot analysis of RyR expression in rat heart tissue extract.

## SELECT PRODUCT CITATIONS

- Zuppinger, C., et al. 2017. Characterization of cytoskeleton features and maturation status of cultured human iPSC-derived cardiomyocytes. Eur. J. Histochem. 61: 2763.
- Meyer, P., et al. 2021. Skeletal ryanodine receptors are involved in impaired myogenic differentiation in duchenne muscular dystrophy patients. Int. J. Mol. Sci. 22: 12985.
- Desai, V.G., et al. 2022. Doxorubicin-induced delayed-onset subclinical cardiotoxicity in mice. J. Appl. Toxicol. 42: 778-792.
- Hopton, C., et al. 2022. Characterization of the mechanism by which a nonsense variant in RYR2 leads to disordered calcium handling. Physiol. Rep. 10: e15265.
- 5. Yuan, W., et al. 2022. Intracellular TMEM16A is necessary for myogenesis of skeletal muscle. iScience 25: 105446.
- Nikolaienko, R., et al. 2023. Cysteines 1078 and 2991 cross-linking plays a critical role in redox regulation of cardiac ryanodine receptor (RyR). Nat. Commun. 14: 4498.
- Nikolaou, P.E., et al. 2023. Hydrolytic activity of mitochondrial F1FO-ATP synthase as a target for myocardial ischemia-reperfusion injury: discovery and *in vitro* and *in vivo* evaluation of novel inhibitors. J. Med. Chem. 66: 15115-15140.
- 8. Czornobil, R., et al. 2023. The cardiac calcium handling machinery is remodeled in Friedreich's ataxia. bioRxiv. E-published.
- Seibert, T.A., et al. 2024. Molecular and clinical effects of aromatase inhibitor therapy on skeletal muscle function in early-stage breast cancer. Sci. Rep. 14: 1029.

# **RESEARCH USE**

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