alomone labs
Your partner in ion channel research

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Anti-Ryanodine Receptor 2

Cardiac Ryanodine Receptor, RyR2

Antigen included | Shipped at room temp. | QC tested

Cat #: ARR-002 | **Size:** 25 µl, 50 µl, 0.2 ml | **Source:** Rabbit | **Type:** Polyclonal

Application: IH, WB
May also work in: IC, IFC, IP

Reactivity: H, M, R

Application key: CBE- Cell-based ELISA, FC- Flow cytometry, IC- Immunocytochemistry, IE- Indirect ELISA, IFC- Indirect flow cytometry, IH- Immunohistochemistry, IP- Immunoprecipitation, LCI- Live cell imaging, N- Neutralization, WB- Western blot
Species reactivity key: H- Human, M- Mouse, R- Rat

Control antigen included **Lyophilized powder**

General information

Alomone Labs is pleased to offer a highly specific antibody directed against an epitope of human Ryanodine receptor 2 (RyR2). **Anti-Ryanodine Receptor 2** antibody (#ARR-002) can be used in western blot analysis and immunohistochemistry applications. It has been designed to recognize RyR2 from human, rat and mouse samples.

Related products for control experiments:
Control peptide antigen (supplied with the antibody free of charge).

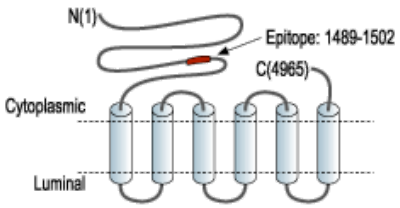
Anti-Ryanodine Receptor 2 antibody (#ARR-002) in the literature:
Western blot analysis (WB):
- Rat intrapulmonary artery lysate (1:400) (see Dahan, D. *et al.* (2012) in Product Citations).

Immunohistochemistry (IH):
- Rat heart sections (1:50) (see Zhu-Mauldin, X. *et al.* (2012) in Product Citations).
- Rat tibialis anterior muscle sections (1:100) (see Kraner, S.D. *et al.* (2011) in Product Citations).

If you know of a relevant citation for this product **please let us know**.

Specifications

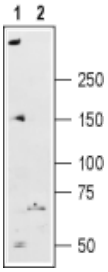
Immunogen Peptide CAGESMSPGQGRNN, corresponding to amino acid residues 1489-1502 of human Ryanodine Receptor 2 (Accession Q92736). Intracellular, N-terminus.



Homology	Rat, mouse - identical.
Purity	Affinity purified on immobilized antigen.
Formulation	Lyophilized powder. Reconstituted antibody contains phosphate buffered saline (PBS), pH 7.4, 1% BSA, 0.05% NaN_3.
Standard quality control of each lot	Western blot analysis.

Applications

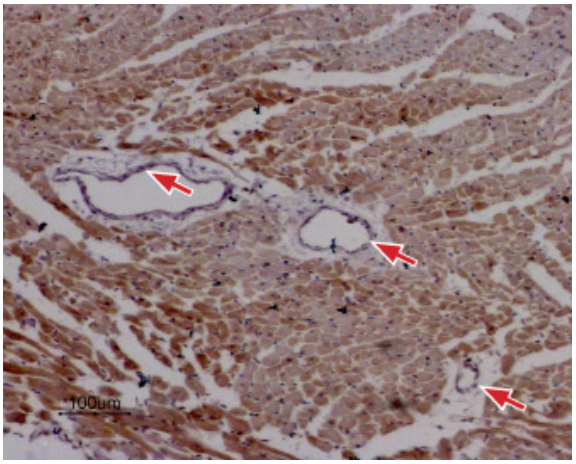
Western blot



Western blot analysis of rat heart membranes:

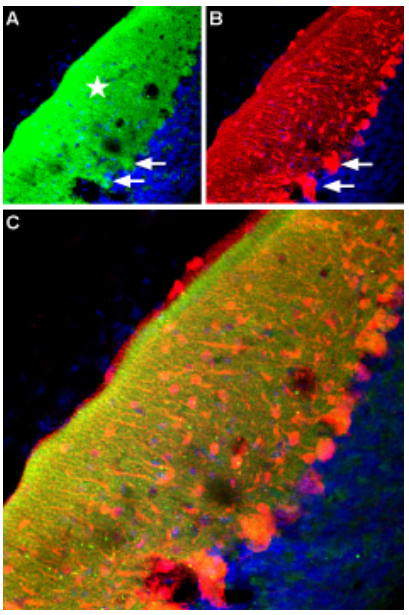
1. **Anti-Ryanodine Receptor 2** antibody (#ARR-002), (1:200).
2. Anti-Ryanodine Receptor 2 antibody, preincubated with the control peptide antigen.

Immunohistochemistry



Expression of Ryanodine Receptor 2 in rat cardiac muscle

Immunohistochemical staining of paraffin-embedded sections of rat *myocardium* using **Anti-Ryanodine Receptor 2** antibody (#ARR-002), (1:50). Staining is specific for cardiomyocytes while smooth muscles cells in the artery walls are negative (red arrows). Hematoxilin is used as the counterstain.



Expression of Ryanodine Receptor 2 in mouse cerebellum

Immunohistochemical staining of mouse cerebellum frozen sections with **Anti-Ryanodine Receptor 2** antibody (#ARR-002), (1:100), (green fluorescence). A. The highest expression of Ryanodine Receptor 2 is in the molecular layer (Asterisk) but there is also some expression in the soma of Purkinje cells (arrows). B. In the same section, there is staining for parvalbumin (red), a marker for Purkinje cells. C. Merged image of panels A and B demonstrates that Ryanodine Receptor 2 is localized both in the area surrounding the dendritic tree and in the soma of Purkinje cells. DAPI is used as the counterstain (blue).

Scientific background

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It is well established that cytosolic calcium (Ca^{2+}) acts as a key second messenger in many intracellular pathways including synaptic transmission, muscle contraction, hormonal secretion, cell growth and proliferation.[1,2] The primary intracellular Ca^{2+} storage/release organelle in most cells is the endoplasmic reticulum (ER) or the sarcoplasmic reticulum (SR) in striated muscle cells.

The ER and SR contain two Ca^{2+} release channels families, the Inositol trisphosphate receptors (IP3Rs) and the Ryanodine receptors (RyRs).[3]

The Ryanodine receptor family consists of three different isoforms: The skeletal muscle isoform, Ryanodine Receptor type 1 (RyR1); the cardiac muscle isoform, Ryanodine Receptor type 2 (RyR2) and the brain isoform, Ryanodine Receptor type 3 (RyR3).[3] The Ryanodine receptors are homotetrameric proteins. They play a key role in the mechanism of excitation-contraction coupling in striated muscle. Binding of Ryanodine to the Ryanodine Receptor causes to two major changes in the channel: a reduction in single-channel conductance and a marked increase in open state probability.

RyR2 serves as an intracellular Ca^{2+} channel in the SR membrane. It is predominantly expressed in cardiac muscle where it plays a central role in cardiac excitation-contraction coupling. RyR2 is also expressed in the brain. [1-4]

References

1. Chakrabarti, R. And Chakrabarti, R. (2006) *J.Cell. Biochem.* **99,** 1503.
2. Eisner, D.A. *et al.* (2005) *Exp.Physiol.* **90,** 3.
3. Bers, D.M. (2004) *J.Mol. Cell. Cardiol.* **37,** 417.
4. Fill, M. and Copello, J.A. (2002) *Physiol. Rev.* **82,** 893.

Product Citation

Publications using this product

1. Dahan, D. *et al.* (2012) *Am. J. Physiol.* **303,** L824.
2. Zhu-Mauldin, X. *et al.* (2012) *J. Biol. Chem.* **287,** 39094.
3. Kraner, S.D. *et al.* (2011) *Am. J. Physiol.* **300,** R1384.
4. Yoshida, S. *et al.* (2010) *Neurosci. Res.* **68,** 322.

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