

#8153

## RyR1 (D4E1) Rabbit mAb



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**For Research Use Only. Not for Use in Diagnostic Procedures.**

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IF-F	H M R	Endogenous	~560	Rabbit IgG	#P21817	6261

### Product Usage Information

#### Application

Western Blotting  
Immunofluorescence (Frozen)

#### Dilution

1:1000  
1:100

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

For a carrier free (BSA and azide free) version of this product see product #19443.

### Specificity/Sensitivity

RyR1 (D4E1) Rabbit mAb recognizes endogenous levels of total RyR1 protein. This antibody does not cross-react with other ryanodine receptor proteins.

### Species predicted to react based on 100% sequence homology

Pig

### Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Arg830 of human RyR1 protein.

### Background

Ryanodine receptors (RyRs) are large (>500 kDa), intracellular calcium channels found in the sarcoplasmic/endoplasmic reticulum membrane and are responsible for the release of Ca<sup>2+</sup> from intracellular stores in excitable cells, such as muscle and neurons. RyRs exist as three mammalian isoforms (RyR1-3), all of which form homotetramers regulated by phosphorylation and/or direct or indirect interaction with a variety of proteins (L-type calcium channels, PKA, FKBP12/12.6, CaMKII, calmodulin, calsequestrin, junctin, and triadin) and ions (Mg<sup>2+</sup> and Ca<sup>2+</sup>). Regulation of the RyR channel by protein modulators occurs within the large cytoplasmic domain, whereas the carboxy-terminal portion of the protein forms the ion-binding and conducting pore (1,2). RyR1 and RyR2 are predominantly expressed in skeletal and cardiac muscle, respectively, where they localize exclusively to the sarcoplasmic reticulum (SR) and facilitate calcium-mediated communication between transverse-tubules and sarcoplasmic reticulum. Contraction of skeletal muscle is triggered by release of calcium ions from the SR following depolarization of T-tubules. Research studies have shown that defects in RyR1 are the cause of malignant hyperthermia susceptibility type 1 (MHS1), central core disease of muscle (CCD), multiminicore disease with external ophthalmoplegia, and congenital myopathy with fiber-type disproportion (CFTD), each of which is manifested by defects in muscle function, metabolism, and development (2). Investigators have shown that defects in RyR2 are the cause of familial arrhythmogenic right ventricular dysplasia type 2 (ARVD2) and catecholaminergic polymorphic ventricular tachycardia type 1 (CPVT1), both of which are implicated in sudden death syndromes as a result of electrical instability and degeneration of the ventricular myocardium or stress-induced ventricular tachycardia (2). Despite low levels of expression in skeletal and smooth muscle, RyR3 is the dominant isoform in neuronal cells (hippocampal neurons, thalamus, Purkinje cells) and has been implicated in synaptic plasticity, dendritic spine remodeling, and spatial memory formation (3). The role of RyR3 in neuronal function has been substantiated by mice lacking RyR3, which demonstrate normal motor function, but possess numerous behavioral and social defects (4).

### Background References

- Lanner, J.T. et al. (2010) *Cold Spring Harb Perspect Biol* 2, a003996.
- Betzenhauser, M.J. and Marks, A.R. (2010) *Pflugers Arch* 460, 467-80.
- Adasme, T. et al. (2011) *Proc Natl Acad Sci U S A* 108, 3029-34.
- Matsuo, N. et al. (2009) *Front Behav Neurosci* 3, 3.

### Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

### Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

### Applications Key

**W:** Western Blotting **IF-F:** Immunofluorescence (Frozen)

**Cross-Reactivity Key**

**H:** Human **M:** Mouse **R:** Rat

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