



Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

Store at -20C
#5066

S100A1 Antibody

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

Applications: W	Reactivity: H	Sensitivity: Endogenous	MW (kDa): 12	Source/Isotype: Rabbit	UniProt ID: #P23297	Entrez-Gene Id: 6271
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Product Usage Information

Application

Western Blotting

Dilution

1:1000

Storage

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

Specificity/Sensitivity

S100A1 Antibody recognizes endogenous levels of total S100A1 protein. This antibody does not cross-react with other members of the S100 family.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Gln49 of human S100A1 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Despite their relatively small size (8-12 kDa) and uncomplicated architecture, S100 proteins regulate a variety of cellular processes, such as cell growth and motility, cell cycle progression, transcription, and differentiation. To date, 25 members have been identified, including S100A1-S100A18, trichohyalin, filaggrin, repetin, S100P, and S100Z, making it the largest group in the EF-hand, calcium-binding protein family. Interestingly, 14 S100 genes are clustered on human chromosome 1q21, a region of genomic instability. Research studies have demonstrated that significant correlation exists between aberrant S100 protein expression and cancer progression. S100 proteins primarily mediate immune responses in various tissue types but are also involved in neuronal development (1-4).

Each S100 monomer bears two EF-hand motifs and can bind up to two molecules of calcium (or other divalent cation in some instances). Structural evidence shows that S100 proteins form antiparallel homo- or heterodimers that coordinate binding partner proximity in a calcium-dependent (and sometimes calcium-independent) manner. Although structurally and functionally similar, individual members show restricted tissue distribution, are localized in specific cellular compartments, and display unique protein binding partners, which suggests that each plays a specific role in various signaling pathways. In addition to an intracellular role, some S100 proteins have been shown to act as receptors for extracellular ligands or are secreted and exhibit cytokine-like activities (1-4).

S100A1 is abundantly expressed in cardiac and skeletal muscle where it plays a major role in regulating calcium-dependent contractility (5,6). S100A1 and calmodulin bind and differentially regulate ryanodine receptors (RyRs), thereby modulating skeletal and cardiac muscle function (7). In addition to RyRs (RyR1 and RyR2), S100A1 has also been shown to interact with other components of the calcium-dependent cardiac signaling cascade including SERCA2a and phospholamban (8). Studies in animal models strongly suggest that S100A1 plays a significant role in the development of heart failure (1). In non-cardiac tissues, S100A1 has been shown to regulate cytoskeletal signaling, neurotransmitter release, enzymatic activity, transcription factors, and other calcium-binding proteins via direct interaction or via regulation of scaffolding and signaling components in each pathway (4).

Background References

1. Heizmann, C.W. et al. (2002) *Front Biosci* 7, d1356-68.
2. Donato, R. (2003) *Microsc Res Tech* 60, 540-51.
3. Marenholz, I. et al. (2004) *Biochem Biophys Res Commun* 322, 1111-22.
4. Santamaria-Kisiel, L. et al. (2006) *Biochem J* 396, 201-14.
5. Ritterhoff, J. and Most, P. (2012) *Gene Ther* , .
6. Völkers, M. et al. (2010) *J Biomed Biotechnol* 2010, 178614.
7. Prosser, B.L. et al. (2011) *Cell Calcium* 50, 323-31.
8. Wright, N.T. et al. (2009) *Curr Chem Biol* 3, 138-145.

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

Cross-Reactivity Key

H: Human

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