Revision 4

#7391 Store at -20C

Phospho-Vimentin (Ser56) (D5H2) Rabbit mAb

Cell Signaling TECHNOLOGY®

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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-IC	H M R Mk	Endogenous	57	Rabbit IgG	#P08670	7431

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunofluorescence (Immunocytochemistry)	1:200

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 #18830.

Specificity/Sensitivity

Phospho-Vimentin (Ser56) (D5H2) Rabbit mAb recognizes endogenous levels of vimentin protein only when phosphorylated at Ser56.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser56 of human vimentin protein.

Background

The cytoskeleton consists of three types of cytosolic fibers: microfilaments (actin filaments), intermediate filaments, and microtubules. Major types of intermediate filaments are distinguished by their cell-specific expression: cytokeratins (epithelial cells), glial fibrillary acidic protein (GFAP) (glial cells), desmin (skeletal, visceral, and certain vascular smooth muscle cells), vimentin (mesenchyme origin), and neurofilaments (neurons). GFAP and vimentin form intermediate filaments in astroglial cells and modulate their motility and shape (1). In particular, vimentin filaments are present at early developmental stages, while GFAP filaments are characteristic of differentiated and mature brain astrocytes. Thus, GFAP is commonly used as a marker for intracranial and intraspinal tumors arising from astrocytes (2). Research studies have shown that vimentin is present in sarcomas, but not carcinomas, and its expression is examined in conjunction with that of other markers to distinguish between the two (3). Vimentin's dynamic structural changes and spatial re-organization in response to extracellular stimuli help to coordinate various signaling pathways (4). Phosphorylation of vimentin at Ser56 in smooth muscle cells regulates the structural arrangement of vimentin filaments in response to serotonin (5,6). Remodeling of vimentin and other intermediate filaments is important during lymphocyte adhesion and migration through the endothelium (7).

During mitosis, CDK1 phosphorylates vimentin at Ser56. This phosphorylation provides a PLK binding site for vimentin-PLK interaction. PLK further phosphorylates vimentin at Ser83, which might serve as a memory phosphorylation site and play a regulatory role in vimentin filament disassembly (8,9). Additionally, studies using various soft-tissue sarcoma cells have shown that phosphorylation of vimentin at Ser39 by Akt1 enhances cell migration and survival, suggesting that vimentin could be a potential target for soft-tissue sarcoma targeted therapy (10,11).

Background References

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3. Leader, M. et al. (1987) *Histopathology* 11, 63-72.
4. Helfand, B.T. et al. (2004) *J Cell Sci* 117, 133-41.
5. Tang, D.D. et al. (2005) *Biochem J* 388, 773-83.
6. Fomina, I.G. et al. (1990) *Klin Med (Mosk)* 68, 125-7.
7. Nieminen, M. et al. (2006) *Nat Cell Biol* 8, 156-62.
8. Yamaguchi, T. et al. (2005) *J Cell Biol* 171, 431-6.
9. Oguri, T. et al. (2006) *Genes Cells* 11, 531-40.
10. Zhu, Q.S. et al. (2011) *Oncogene* 30, 457-70.
11. Xue, G. and Hemmings, B.A. (2013) *J Natl Cancer Inst* 105, 393-404.

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-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

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

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Limited Uses